

The Wireless World

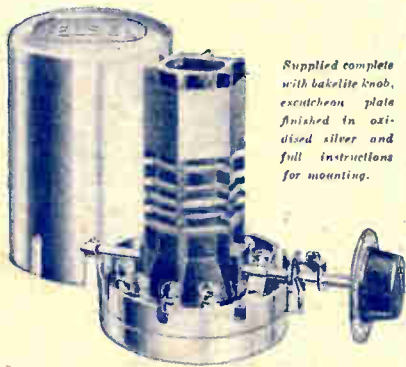
4^D

THE PRACTICAL RADIO JOURNAL

with Complete Foreign Programmes

Friday, March 3rd, 1933.

TELSEN SCREENED TUNING COILS



Supplied complete with bakelite knob, escutcheon plate finished in oxidised silver and full instructions for mounting.

SUITABLE as aerial coils, or as anode coils, following a S.G. valve, giving selectivity comparable with a well-designed band-pass filter.

Single Screened Coil	8/6
Twin Matched Coils	17 -
Triple Matched Coils	25.6



TELSEN RADIO COMPONENTS ARE 100% BRITISH

Announcement of the TELSEN ELECTRIC Co. Ltd., Aston, BIRMINGHAM

SONOCHORDE DUAL MATCHED SPEAKERS



Sonochorde announce the most complete range of dual matched and compensated speakers available. There is a combination to suit all requirements whether for operation direct from A.C. or D.C. mains, use as a choke or for operation from battery source of supply. The "Wireless World" has selected a pair of Sonochorde Speakers for use with the Modern A.C. Quality Amplifier described in the issue of 17th February because of their outstanding performance. Write to-day for particulars of complete range.

Sonochorde Reproducers Ltd.

1, Willesden Lane, London, N.W.6. Phone: Malka Vale 0066 (5 lines).

Distributors in Belgium—Van der Beek and Marsily, 40, Rempart Kildorp, Antwerp, Belgium, under the trade name SONOVOX.

BRITISH MADE

HIGHEST QUALITY AT LOWER PRICE LEVELS.

MOULDED MICA CONDENSERS Type 670

Prices: from 1/- to 2/-
Tested 500 volts A.C.
Sufficient for 250 volts D.C. working.

DUBILIER CONDENSERS

Exclusively Adopted and Recommended by

★ McMICHAEL, EDDYSTONE, G.E.C., PETO-SCOTT and PHILIPS, etc.

M-1 Anode Converters merely require connecting to a 6 or 12v. L.T. Battery to give smooth, constant H.T. and G.B. Current. Built to last, Models from £8.

Special Models for McMichael, G.E.C., Philips and Peto-Scott short-wave receivers £9.10.0. Eddystone Model £8.5.0.

GET H.T. CURRENT FROM L.T. BATTERY

WITH



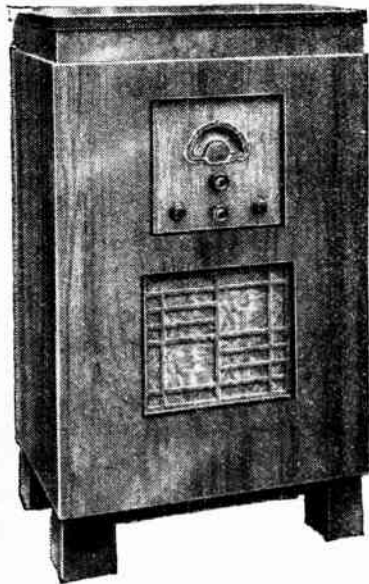
ANODE CONVERTERS

Write for Full Details post free from Dept. 1, ROTAX LTD., WILLESDEN, LONDON, N.W.10



Models to suit all long and short-wave receivers!

THE FAMOUS 137 MODEL IS NOW AVAILABLE IN CONSOLE FORM



PRICES :

TABLE MODEL	- - -	25 Gns.
CONSOLE	- - -	32 Gns.
RADIOGRAM	- - -	45 Gns.
RADIOGRAM with Automatic Record Changer	- - -	52 Gns.

ATWATER KENT

Brief Specification :

137 ALL ELECTRIC ATWATER KENT RADIO

CIRCUIT

Seven Valves are used in this revolutionary Superheterodyne circuit, of which four are of the Vari-Mu Super Pentode H.F. type, arranged as follows: Radio frequency stage, first detector, oscillator, intermediate frequency amplifier, second detector of the Twin Diode type (which also acts as automatic volume control stage), coupled to a power Pentode output valve giving an undistorted output of 2,500 milliwatts. A full wave valve rectifier is also included. The selectivity is more than adequate for any location the separation being 9 to 10 kc

TUNING

A full vision illuminated dial calibrated in kc and compensated to ensure equal separation over the entire tuning range, 201 2000 metres

AUTOMATIC VOLUME CONTROL

This important additional feature enables one to set the volume to the exact level required. Once set, all stations will be received on the same level. This ingenious Atwater Kent device eliminates fading—that decreasing volume generally associated with foreign or distant reception

THREE-POINT TONE SWITCH

This allows a choice of tone to suit individual tastes, either high, medium or low.

LOUD SPEAKER

Large mains energised moving coil, giving superb range of volume and tone.

GRAMOPHONE PICK-UP

Connections are provided to allow of easy conversion to radio-gramophone.

CABINET

A beautifully constructed cabinet in figured walnut.

GENERAL

Suitable for A.C. Mains, 100 230 volts. Please state voltage when ordering.

G. A. BRITAIN Ltd., 5, Hanover Square, London, W.1

Telephone: Mayfair 3466 7.

Telegrams: Atwakeno, Wesdo, London.

Also Sole Distributors for Irish Free State.

Dublin Depot: 40, Dawson Street.



ALL TYPES - INCLUDING PUBLIC ADDRESS

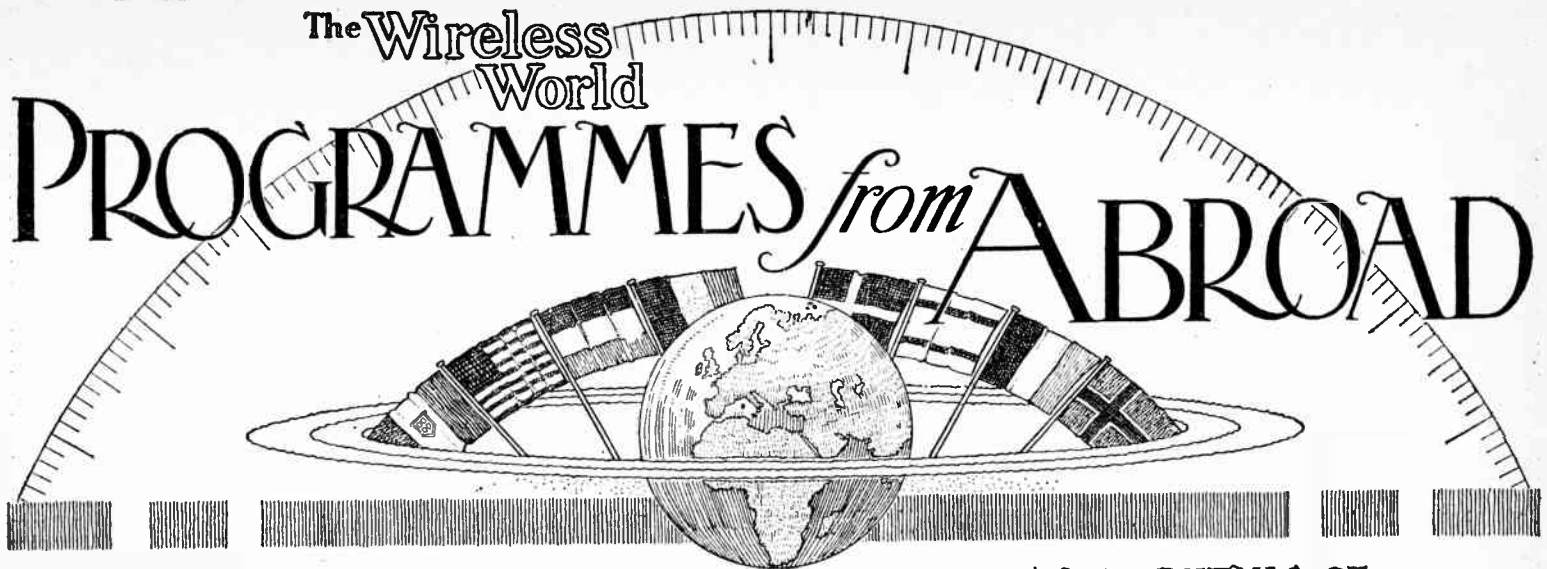
PARMEKO HIGH GRADE SPEAKERS

As manufacturers of all types of quality Speakers for larger work both indoors and out, we would welcome your enquiries and be pleased to give you any advice or assistance on this subject.

Our types include Directional, Semi-directional, Cinema Projection, and ordinary Moving Coil Speakers. Write for our catalogue "B" which also includes Amplifiers and other Public Address Equipment.

PARTRIDGE & MEE LTD.
 PARMEKO WORKS, AYLESTONE, LEICESTER
 (Phone: Aylestone 487)
 & 74, New Oxford St., LONDON, W.C.1 (Museum 5070)

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.



**BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH**

**TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS**

Metres.	Kc.	kW.	Station.	Tuning Positions.	Metres.	Kc.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania) .. .. .	.....	453.2	662	10	Odessa, RV13 (Russia) .. .. .	.....
1875	160	8.5	Hilversum (Holland) .. .. .	.....	447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Rjukan (0.15 kW.), Notodden (0.08 kW.) (Norway) (relays Oslo) .. .. .	.....
1796	167	40	Lahti (Finland) .. .. .	.....	441.2	680	50	Rome, IRO. (S.W. Station, 2RO on 25.4 m.) .. .. .	.....
1725	174	75	Radio Paris, C.F.R. .. .. .	.....	435.4	689	55	Stockholm, SASA (Sweden) .. .. .	.....
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (S.W. Sta. DJA on 31.38 m.) .. .. .	.....	430	698	2.5	Belgrade (Yugoslavia) .. .. .	.....
1554.4	193	30	Daventry National .. .. .	.....	424.3	707	2	Madrid, EAJ7 (Union Radio). (After 7.0 p.m.) .. .. .	.....
1538	195	7	Ankara (Angora) (Turkey) .. .. .	.....	424.3	707	100	Moscow, Inini Stalina (Russia) .. .. .	.....
1481	202.5	100	Moscow, RV1 (Old Komintern) (Russia) .. .. .	.....	419.5	715	1.5	Berlin, No. 1, Witzleben (Germany) .. .. .	.....
1446	207.5	13	Eiffel Tower, FL, Paris .. .. .	.....	416.4	720.5	5	Rabat (Morocco) .. .. .	.....
1412	212.5	120	Warsaw 1 (Poland) .. .. .	.....	413	725	60	Athlone (Irish Free State) .. .. .	.....
1380	217.5	100	Novosibirsk, RV6 (Russia) .. .. .	.....	408.7	734	16	Katowitz (Poland) .. .. .	.....
1348	222.5	30	Motala (Sweden). (Relays Stockholm) .. .. .	.....	403.8	743	25	Sottens (Radio Suisse Romande) (Switzerland) .. .. .	.....
1304	230	100	Moscow, WZSPS (Trade Union) (Russia) .. .. .	.....	398.9	752	25	Midland Regional .. .. .	.....
1275	235	0.5	Tunis-Kasbah (Tunisia) .. .. .	.....	394.2	761	12	Bucharest (Roumania) .. .. .	.....
1230	244	0.6	Boden (Sweden). (Relays Stockholm) .. .. .	.....	389.6	770	120	Leipzig (Germany) .. .. .	.....
1200	250	5	Stamboul (Turkey) .. .. .	.....	389.6	770	10	Archangel, RV36 (Russia) .. .. .	.....
1200	250	21	Reykjavik (Iceland) .. .. .	.....	385.1	779	8	Toulouse (Radiophonie du Midi) (France) .. .. .	.....
1170	256	25	Tashkent, RV11 (Russia) .. .. .	.....	385.1	779	10	Stalino, RV26 (Russia) .. .. .	.....
1154	260	7.5	Kalundborg (Denmark). (Relays Copenhagen) .. .. .	.....	381	788	16	Lwow (Lemberg) (Poland) .. .. .	.....
1117	268.5	40	Moscow, Popoff RV58 (Russia) .. .. .	.....	376.4	797	50	Scottish Regional (Falkirk) .. .. .	.....
1083	277	60	Oslo (Norway) .. .. .	.....	372.2	806	1.5	Hamburg (Germany) .. .. .	.....
1071	280	35	Tiflis, RV7 (Russia) .. .. .	.....	370.1	810.5	0.8	Radio, L.A., Paris .. .. .	.....
1035	290	36	Kiev, RV9 (Russia) .. .. .	.....	368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Hel- sinki (10 kW.) (Finland) (relays Lahti); Khar'kov, RV20 (10 kW.) (Russia) .. .. .	.....
1000	300	100	Moscow (Russia) .. .. .	.....	365.8	821	0.7	Fredriksstad (Norway). (Relays Oslo) .. .. .	.....
938	320	20	Khar'kov, RV4 (Russia) .. .. .	.....	364.1	824	1	Bergen (Norway) .. .. .	.....
857	350	100	Leningrad (Russia) .. .. .	.....	363.6	825	13	Algiers (Algeria) .. .. .	.....
840	357	18.5	Budapest (Hungary) .. .. .	.....	360.6	832	60	Mühlacker (Stuttgart) (Germany) .. .. .	.....
825	363.6	50	Sverdlovsk, RV5 (Russia) .. .. .	.....	355.9	843	50	London Regional (Brookmans Park) .. .. .	.....
770	389	0.6	Ostersund (Sweden). (Relays Stockholm) .. .. .	.....	352.1	852	7	Graz (Austria). (Relays Vienna) .. .. .	.....
760	395	1.3	Geneva (Switzerland). (Relays Sottens) .. .. .	.....	348.8	860	7.6	Barcelona, EAJ1 (Spain) .. .. .	.....
720	416.6	20	Moscow, RV2 (Experimental) (Russia) .. .. .	.....	348.8	860	10	Leningrad, RV70 (Russia) .. .. .	.....
690	434.6	1.5	Oulu (Uleaborg) (Finland) .. .. .	.....	345.2	869	11.5	Strasbourg, PTT (France) .. .. .	.....
680	441.2	0.6	Lausanne (Switzerland). (Relays Sottens) .. .. .	.....	341.7	878	35	Brno (Brunn) (Czechoslovakia) .. .. .	.....
574.7	522	0.7	Hamar (Norway). (Relays Oslo) .. .. .	.....	338.2	887	15	Brussels II, Velthem (Belgium). (In Flemish) .. .. .	.....
574.7	522	2.5	Ljubljana (Yugoslavia) .. .. .	.....	335	896	5	Cadiz (Spain) .. .. .	.....
569	527	0.25	Freiburg-im-Breisgau (Germany). (Relay Stn.) .. .. .	.....	334.4	897	1.9	Poznan (Poland) .. .. .	.....
568.1	528	2	Grenoble (France) .. .. .	.....	331.5	905	50	Milan (Italy). (Relays Turin) .. .. .	.....
566	530	0.25	Hanover (Germany). (Relays Hamburg) .. .. .	.....	328.2	914	60	Poste Parisien (France) .. .. .	.....
563	533	16	Wilno (Poland). (Relay Station) .. .. .	.....	325	923	60	Breslau (Germany) .. .. .	.....
560	536	0.25	Augsburg (Germany). (Relays Munich) .. .. .	.....	321.9	932	10	Göteborg (Sweden). (Relays Stockholm) .. .. .	.....
560	536	1.5	Kaiserslautern (Germany). (Relays Munich) .. .. .	.....	318.8	941	0.25	Dresden (Germany). (Relays Leipzig) .. .. .	.....
558.6	537	1	Tampere (Finland). (Relays Helsinki) .. .. .	.....	318.8	941	1.5	Naples, INA (Italy). (Relays Rome) .. .. .	.....
550	545	18.5	Budapest No. 1 Lakihegy (Hungary) .. .. .	.....	315.8	950	1.6	Marseilles, PTT (France) .. .. .	.....
542	554	10	Sundsvall (Sweden). (Relays Stockholm) .. .. .	.....	312.8	959	1.7	Cracow (Poland) .. .. .	.....
537.6	558	3	Pulerno (Italy) .. .. .	.....	312.8	959	10	Genoa, IGE (Italy). (Relays Turin) .. .. .	.....
533	563	60	Munich (Germany) .. .. .	.....	309.9	968	1	Cardiff .. .. .	.....
525	571	15	Riga (Latvia) .. .. .	.....	307	977	0.7	Radio Vitus (Paris). (S.W. Stn. on 43.75 m.) .. .. .	.....
517	580	15	Vicna (Rosenhügel) (Austria) .. .. .	.....	304	986	13	Bordeaux Lafayette, PTT (France) .. .. .	.....
509	589	15	Brussels No. 1, Velthem (Belgium). (In French) .. .. .	.....	301.5	995	50	North National (Manchester) .. .. .	.....
500.8	599	20	Florence, IFI (Italy). (Relays Turin) .. .. .	.....	298.8	1004	11	Tallinn (Estonia) .. .. .	.....
495.8	605	1.2	Trondheim (Norway) .. .. .	.....	296.1	1013	20	Huizen (Holland). (After 4.40 p.m.) .. .. .	.....
488.6	614	120	Prague, No. 1 (Czechoslovakia) .. .. .	.....	293.5	1022	0.7	Limoges, PTT (France) .. .. .	.....
480	625	50	North Regional (Manchester) .. .. .	.....	293.5	1022	2.6	Kosice (Czechoslovakia) .. .. .	.....
472.4	635	60	Längenberg (Germany) .. .. .	.....	291	1031	10	Viipuri (Viborg) (Finland). (Relays Helsinki) .. .. .	.....
467	642	0.4	Aalesund (Norway) .. .. .	.....	288.3	1040	50	Scottish National (Falkirk) .. .. .	.....
465.8	644	1.5	Lyons la Doua, PTT (France) .. .. .	.....	288.3	1040	—	British Relays (Bournemouth, Plymouth) .. .. .	.....
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland) .. .. .	.....	286	1049	0.8	Montpellier (France) .. .. .	.....
453.2	662		San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (relays Heilsberg); Klagenfurt (0.5 kW.) (Austria) (relays Vienna); Porsgrund (0.7 kW.) (relays Oslo); Tromsø (0.1 kW.), Hodö (0.5 kW.) (Norway); Upsala (0.15 kW.) (Sweden) (relays Stockholm) .. .. .	.....	285.1	1052	0.7	Lyons (Radio-Lyon) (France) .. .. .	.....

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Table with columns: Metres, Kc., kW., Station, Tuning Positions. Lists various international broadcasting stations and their technical specifications.

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent G.M.T.)

Table with columns: Metres, Kc., Call Sign, Station, Tuning Positions. Lists principal short-wave stations with call signs and transmission times.

FOREIGN SUNDAY PROGRAMMES

MARCH THE FIFTH

ATHLONE

413 metres; 60 kW.; and **CORK**, 224.4 metres.—8.30 p.m., Time Signal. 8.31, Carillon Recital by Dr. Staf Gebruers, relayed from St. Colman's Cathedral, Queenstown. 8.45, A Sketch by Paula Luby and Company. 9.15, Talk by C. M. McDowell, with illustrations by G. Crofts (Tenor). 9.30, The Station Orchestra. 10.0, Anglo-Irish Songs, by M. O'C. Maguire (Baritone). 10.15, Uilleann Pipe Solos, by Liam Breatnach. 10.30, Irish Music by the Station Orchestra. 11.0, Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call **EAJI**, 348.8 metres; 8 kW.—11.0 a.m., Chimes from the Cathedral and Weather Forecast. 1.0 p.m., Light Music on Gramophone Records. 1.30 (in an interval), Theatre Notes. 2.0, Film Review, followed by Concert by the Station Sextet. 3.0, Programme for Hospitals and Benevolent Institutions, with Gramophone Records. 4.0 to 5.30, Interval. 5.30, Agricultural Talk in Catalan, followed by Music by the Station Orchestra. 6.30, An Opera relayed from the Gran Teatro del Liceo. 9.0, A Musical Comedy on Gramophone Records. 10.45, Chess Lesson. 11.0, (approx.), Close Down.

BARI

270 metres; 20 kW.—9.45 a.m., Agricultural Notes. 10.5, Sacred Music. 10.30, Bible Reading. 12 Noon, Giornale Radio. 12.10 p.m., Popular Music on Gramophone Records. In the intervals at 12.55, Weather Report, and at 1.0, Time Signal and Announcements. 4.30 to 5.30, Light Music on Gramophone Records and Sports Notes. 7.0, Sports Notes and Giornale Radio. 7.30, Time Signal and Announcements. 7.35 (approx.), Concert. Soloists: Lino d'Angelo (Baritone), Mileno Barberio (Soprano), Moscovita (Lecari); Scene from I promessi sposi (Ponchielli); Soprano Solos: (a) Lusingo (de Curtis), (b) Di te (Trindelli); African Fantasia (Donati); Baritone Solo: Lella (Padilla); Soprano Solo: Vieni (Caristi); Selections from La Bohème (Puccini); Pattuglia di zigani (Ranzato); Serenade (Broggi); Baritone Solo: Il gobbo del Califfo (Casavola); Soprano Solo: Allerseeelen Saturnale (Escobar); Soprano Aria from Adrienne Lecouvreur (Gilea); Baritone Solo: Aria from The Force of Destiny (Verdi); Caccia (Magro). Talk in the interval. 9.30, Gramophone Records of Variety Music. 9.55, News Bulletin.

BASLE.—See *Schweizerischer Landessender*.

BERLIN

KONIGS WUSTERHAUSEN; 1,635 metres; 60 kW.—11.0 a.m., See *Breslau*. 11.55, Nauen Time Signal. 12 Noon, Concert from *Heilsberg*. 1.0 p.m., Talk for Parents. 1.30, Dramatic Programme for Children. 2.0, Wind Instrument Concert from London. 2.40, Hans Krelberg reads from his own Works. 3.0, Concert of Light Music. 3.30, Talk: The East Mark's Struggle for Life. 4.0, Chamber Music—Unfamiliar Piano-forte Music by Mozart; Overture in the Style of Handel; Variations on La belle Françoise; Four Little Pieces by the Eight Year Old Mozart; March in C; Adagio in B Minor; Rondo in F; German Dances. 4.45, Religious Address: Famous Germans and their Faith in God. 5.10, Rural Programme on Gramophone Records. 6.0, Programme from *Berlin (Witzleben)*. In the intervals at 9.30, Weather, News and Sports Notes, and at 9.45, Weather Report for Shipping.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—10.30 a.m., See *Leipzig*. 10.55, Radio Report: Berlin at the Polls. 11.5, Concert from *Breslau*. 12.45 p.m., Radio Report: Berlin at the Polls. 1.0, New Neighbours—Settler and Peasant meet. 2.0, Radio Report: Berlin at the Polls. 1.30, Fairy Tales for Children. 2.30, Orchestral Concert, conducted by Joe Balay; Overture, Rosamund (Schubert); German Dances (Beethoven); Suite, Auf der Wanderschaft (Klinghardt); Suite in Dance Form (Kieuz). 3.20, Alfred Mann reads from his own Short Stories. 3.35, Concert (contd.); Overture, Heimkehr aus der Fremde (Mendelssohn); Selection from Das Nachtlager von Granada (Kreutzer); Idyll, Biene Majja (Schneider); Last Movement from the Fifth Serenade (Fuchs); Military March (Schubert). 4.15, Radio Report: Berlin at the Polls. 4.30, Sonata in D, Op. 51 (Schubert). 5.0, Talk on the Election. 5.30, Herbert Lipp reads from his own Works. 5.50, Sports Notes. 5.55, Announcement. 6.0, Concert by the Berlin Wireless Orchestra and Choir. From 6 o'clock onwards, Announcements of Election Results. 9.0, Weather, News and Sports Notes, followed by Wind Instrument Concert and Light Music on Gramophone Records.

BERNE.—See *Schweizerischer Landessender*. **BEROMUNSTER**.—See *Schweizerischer Landessender*.

BODEN.—See *Stockholm*.

BODO.—See *Oslø*.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL "Science and the Idea of God," by Prof. Simpson. Devotional Service. Orchestral concert.
LONDON REGIONAL Service from Hasen Green Baptist Church, Ealing. Sunday orchestral concert.
MIDLAND REGIONAL Organ and pianoforte recital from Albert Hall, Nottingham. Service from St. Martin's Church, Birmingham.
NORTH REGIONAL Service from Holy Trinity Church, Leeds.
WEST REGIONAL Carolare No. 9. Orchestral concert.
SCOTTISH REGIONAL Service from St. Cuthbert's Church, Edinburgh.
BELFAST Service from Carlisle Memorial Methodist Church.

ABROAD

ATHLONE 8.31 p.m. Carillon recital by Dr. Staf Gebruers, relayed from St. Colman's Cathedral, Cobh.
BERO-MUNSTER 7 p.m. "Tiefland," an opera by d'Albert.
BRUSSELS (No. 1) 8.30 p.m. Light opera: "The Land of Smiles," by Lehár.
BRUSSELS (No. 2) 6.45 p.m. Bach organ recital, by Louis Joos, from the Carmelite Church.
COPENHAGEN LANGENBERG 7.1 p.m. Wind instrument concert.
MADRID (Union Radio) 6 p.m. Concert programme and Election Results from Berlin (Witzleben).
ROME 9.35 p.m. An evening of classical recitals.
 7.45 p.m. "L'Amore tra i pampini" (Love among the vine leaves), an operetta in three acts by Giulio de Micheli.

BRATISLAVA

279 metres; 14 kW.—4.45 p.m., Concert by the Station Orchestra, conducted by F. Dyk: Overture, Die schöne Galathée (Suppé); Potpourri of Russian Songs (Lindemann); By the Blue Hawaiian Waters (Kotelbey); Waltz (Iliza); Slav Caprice (Bayer); Polka (Ridky); Gallop, Petersburger Schlittenfahrt (Eilenberg); March, Don Quixote (Rupprecht). 5.45 to 7.0, Programme relayed from Banská Bystrica. 5.45, Song Recital. 6.0, Pianoforte Recital. 6.15, Talk. 6.30, Violin Recital. 6.45, Talk. 7.0, Popular Music on Gramophone Records. 7.10, See *Prague*. 10.0 (approx.), Close Down.

BREMEN.—See *Hamburg*.

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ**, 253 metres.—9.0 a.m., Catholic Service. 10.0, Reading: Für das deutsche Volk (Josef Görte). 10.30, See *Leipzig*. 11.0, Concert by the Station Orchestra, conducted by Franz Marszałk. 1.0 p.m., News. 1.10, Two Talks: (a) How to keep an Aquarium. (b) Remember the Birds. 1.35, Agricultural Talk. 1.50, Talk: The Mutual Duties of Master and Apprentice. 2.40, Reading: A Cruise with Sponge-Divers (Armin Schönberg). 3.0, Programme for Children. 3.30, See *Stuttgart*. 4.30, Talk: The French Disarmament Plan (the Herriot Plan). 4.55, Brahms Pianoforte Recital by Ydo Damert. Variations on Themes by Paganini; Two Intermezzi. Op. 118. 5.25, Hanns Grimm reads from his own Works. 6.0 till Close Down, See *Berlin (Witzleben)*.

BRNO

342 metres; 35 kW.—4.30 p.m., Gramophone Concert of Russian Music. 5.0, German Transmission: Concert by a Male Voice Choir conducted by Otto Hawran. 5.45, Talk: Correct Pronunciation. 6.0, See *Prague*. 6.15, See *Moravská-Ostrava*. 7.10, See *Pargue*. 10.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—10.0 a.m., Concert by the Small Station Orchestra, conducted by P. Leemans. Soloist: M. Wigy (Violin). Slav March (Tchaikovsky); Meditation (Glazunov); Campanella (Handel); Selection from Hérodiade (Massenet); Gramophone Record: Aria from La Traviata (Verdi); Violin Solo: Jota Navarra (Saravate); The Nutcracker Suite (Tchaikovsky). 11.0, Gramophone Concert of Popular Music. 12 Noon, Concert by the Radio Orchestra, conducted by Charles Walpot. 1.0 p.m., Journal Parlé. 1.10, Concert by Mickey's Club Jazz Attraction, conducted by Ludo Langlois. 1.30, Music inspired by Greece—Concert by the Large Symphony Concert Society, conducted by Armand Marsiek, relayed from *Liege (280 metres)*: Ballet Music from Prometheus (Beethoven); Air from Orpheus (Monteverdi); Final Scene from Act I of Akestis (Monteverdi); Symphonic Poem, Le jeunesse d'Hercule (Saint-Saëns); Selection from Antigone (Honegger); Gramophone Records (Debussy): (a) Réverie, (b) Jardins sous la pluie; Talk on Popular Greek Songs; Tableaux grecs (Marsick); Overture on Three Greek Themes (Glazunov). 5.0, Concert by the Symphony Orchestra, conducted by Jean Kumps. Soloist: Mme. Husson-Michaux (Pianoforte). Symphonic Variations on old Flemish Airs (Gilson); Fantasia for Pianoforte and Orchestra (Dregref); Divertissement (Dolcroix); Walloon Rhapsody (Brimmaigne). In the interval at 5.30 (approx.), Football Results. 6.0, Song Recital by Mme. Andriani; Plainte d'Ariane (Cocquard); Still wie die Nacht (Bohm); Von ewiger Liebe (Brahms); Ich liebe dich (Grieg). 6.15, Gramophone Records: Märchenerzählungen, Nos. 1 and 4 (Schumann); Waltz from Faust (Liszt). 6.30, Programme for Children. 7.0, "Cello Recital of Music by Andrey Iliashenko. 7.15, Religious Address. 7.30, Journal Parlé. 8.0, Gramophone Record: Italian Caprice (Tchaikovsky). 8.15, Blindfold—Radio Sketch (Jesek and Kosik), translated from the Czech. 8.30, Act I of The Land of Smiles—Operetta in Three Acts (Lehár). 9.30, Gramophone Concert of Light Music. 9.45, Act II of The Land of Smiles. 10.45, Journal Parlé. 10.55, Light Music on Gramophone Records. 11.10, Act III of The Land of Smiles. 11.40, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R.; 338.2 metres; 15 kW.—Programme in Flemish. 10.0 a.m., Gramophone Records of Classical Music. 11.0, Concert by the Small Station Orchestra, conducted by P. Leemans. 12 Noon, Concert by Mickey's Club Jazz Attraction, conducted by Ludo Langlois. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Radio Orchestra, conducted by Charles Walpot. 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot. In the interval at 5.15, Sports Notes. 6.0, Concert of Spanish Music, by the Station Orchestra, conducted by P. Leemans: Overture, Une Fête à Aranjuez (Demessenaun); Torcedor et Andalous (Rubinstein); Entr'acte from Carmen (Bizet); Spanish Serenade (Glazunov); Spanish Caprice for Pianoforte (Moszkovsky); Haba-

nara (Laparra); Suite, La Feria (Lacôme). 6.45, Bach Organ Recital by Louis Joos, from the Carmelite Church. 7.15, Religious Address. 7.30, Music Review by Paul Gilson. 8.0, Concert by the Station Orchestra, conducted by Jean Kumps. Soloist, M. Heirstraete (Songs), and Mlle. Tambuyser (Pianoforte). Rhapsody (Candell); Concert Piece for Pianoforte and Orchestra (Weber); Pastorale (D'Hayet); Selection from Saugz fleurie (d'Indy); Songs; Symphonic Sketches (Soudant) (a) Arabesque, (b) Quétude, (c) Fantasia; Songs; Two Marches (Iliashenko); Marche joyeuse (Chabrier). 10.0, Le Journal Parlé. 10.10, Gramophone Dance Music. 11.0, Concert by Willie Lewis, of the Penguin Club. 12 Midnight (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—5.25 p.m., Concert by the Marco Orchestra. 6.0, Talk: Romanian Industrial Policy. 6.40, Variety Music on Gramophone Records. 7.0, Viktoria and her Hussar—Operetta in Three Acts (Abraham). News in the interval.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 840 metres from 6.30 to 11.0 p.m.—8.0 a.m., News and Beauty Hints. 9.0, Evangelical Service Relay. 10.0, Sacred Music and Sermon, followed by Time, Weather, News, and Orchestral Concert. In the interval, Wireless Review. 1.0 p.m., Popular Music on Gramophone Records. 2.0, Agricultural Talk. 2.45, Educational Talk. 3.30, News. 3.35 (approx.), Military Band Concert conducted by Fricay; Selection from Orpheus in the Underworld (Offenbach); Waltz, The Blue Danube (Joh. Strauss); Hungaria (Leopold); Selection from Magnus Miska (Szirmai); Hungarian March (Fricay). 4.25, Ethnological Talk. 5.15, Concert by the Pali Pertis Cigány Band. 6.0, Humorous Talk. 6.45, Dramatic Programme. 8.30, Concert by a Cigány Band from the Hotel Hungaria. 9.15, Variety Entertainment from the Labriola Theatre, followed by Concert from the Hotel Hungaria (contd.). 11.0 (approx.), Close Down.

CASSEL.—See *Frankfurt*.

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBERG**, 1,153 metres; 7.5 kW.—11.0 a.m., Time Signal and Chimes from the Town Hall. 11.2, Concert by the Louis Prell's Instrumental Ensemble. 12.30 p.m., Talk in English. 12.50, Talk in German; German Authors. 1.10, Talk in French: The Town of Lyons. 1.30, Gramophone Concert of Variety Music. 1.55, Programme for Children. 2.25, Concert by the Radio Symphony Orchestra, relayed from the Oddfellows' Hall. 4.0 (also relayed by *Skamleback* on 31.51 metres), Divine Service, relayed from the Castle Church, Christiansborg. 5.20, Talk. 5.50, Weather. 6.0, News. 6.15, Time Signal and Sports Notes. 6.30, Talk for Workers. 7.0, Time Signal from the Town Hall. 7.1, Wind Instrument Concert, conducted by Launy Grönbladh; March (Arensberg); Waltz from Die Puppenfee (Bayer); Polonaise No. 2 (Liszt); Mazurka (Joh. Strauss); Overture, Der Königsleutnant (Till); Parademarsch (R. Strauss). 7.35, Sound Film—a Contemporary Satire, arranged for Radio by J. H. Rösler. 7.50, Wind Instrument Concert (contd.); Historical Military Marches. 8.25, Song Recital by Margrethe Krabbe Sadolin, with Guitar Accompaniment. 8.45, Wind Instrument Concert (contd.); Danish Music. 9.15, News. 9.25, Reading. 9.40, Wind Instrument Concert (contd.); Light Music. 10.0, Dance Music by the Teddy Petersen Band, relayed from the Wivex Restaurant. In the interval at 11.0, Time Signal and Chimes from the Town Hall. 11.30 (approx.), Close Down.

CORK.—See *Athlone*.

DANZIG.—See *Heilsberg*.

DRESDEN.—See *Leipzig*.

FECAMP

225.9 metres; 10 kW.—12 Noon, Radio Gazette and News. 12.30 p.m., Concert of Variety Music. 4.0 to 8.0, Programme in English by the I.B.C. Announcers: C. Dauvers Walker, R. Chene, and B. McNabb. 4.0, Programme for Children. 4.30, Children's Club Concert. 5.0, International Broadcasting Club Concert for Leeds Listeners: The Middy March (Alford); The Meynel Hunt; Special Message from Captain Leonard Plugge, President and Founder of the Club; Selection from Rigoletto (Verdi); National Emblem March; John Peel; The Elephant March; Oh! Star of Eve from Tannhäuser (Wagner); O who will ever be Down so free?; Fire Star; Torador Song from Carmen (Bizet); Britelodia Selection. 6.0, Octet Concert: Extase; The Picanninies' Picnic; Serenade; Twilight on the Waters; The Butterfly; Träumerei; The Grasshoppers' Dance; Humoresque. 6.30, Orchestral Concert: Selection from Les millions d'Arlequin (Drigo); Poor Butterfly; Waltzes from A Waltz Dream (O. Straus); March from Sylvia (Delibes); Old Spanish

MARCH 5th

SUNDAY

continued

Song (Aubert); Selection from The Student Prince (Rohberg); Sleepy Valley (Hanley). 7.0, Military Band Concert: Overture, Zampa (Hérod); The Squirrel Dance; The King's Guard; Tally Ho; Cradle Song; In a Persian Market (Ketelbey); Overture, Morning, Noon and Night (Suppé). 7.30, Vocal Concert: Overture Medley (arr. Carl Peters); Duet, The Moon hath raised her Lamps (Benedict); Asleep in the Deep (Lamb); The Village Blacksmith (Weiss); Duet; Watchman, what of the Night? (Sergeant); In Cellar cool (Traditional); The Windmill (Nelson); Orchestra: The Phantom Brigade (Myddleton). 8.0, Concert of Opera and Operetta Music. 9.0 till Close Down. Programme in English by the I.B.C. 9.0, Organ Recital: Indian Love Lyrics (Woodforde-Finden); Selection from Les millions d'Arlequin (Drigo); Bird Songs at Eventide (Coates); The Londonderry Air (Traditional); A Palace of Dreams (Walter); Ballet Egyptian (Luigini). 9.30, Concert of Light Classical Music: Overture, The Daughter of the Regiment (Donizetti); Duet: Lightly, Lightly, from Monsieur Beaucaire (Messager); Sea Shanty, Rio Grande (arr. Harris); Violin Solo: Hejre (Kati (Hubay)); Duet: Give me thy hand, oh fairest, from Don Juan (Mozart); Soprano Solo: The Pipes of Pan (Monekton); Hungarian Medley (arr. Leggatt). 10.0, Orchestral Concert: Selection from Merrie England (German); Waltz, Once on the Rhine (Ostermann); Danse Bagatelle (Bourdon); Woodland Peace (Favilla); Ginger Snaps (Bourdon); Selection from Wild Violets (Stolz). 10.30, Popular Half-Hour: I'm sure of Everything but you; What more can I ask? Brighter than the Sun; The World is so small; Mediterranean Madness; Cheerful little Earl; Overnight; Selection from The Merry Widow. 11.0, Song Recital: The Rosary; Killarney; Tom Bowling; Serenade (Pierne); Once Again; Terence's Farewell to Kathleen; Oft in the Stilly Night; Salut d'amour (Elgar). 11.30, Acordion Music: Selection from Carmen (Bizet); C'est un petit nid; J'aime la musique; La Javanette; Les bas à pointes; Mona Lisa; Tango, Señorita; Selection from Faust (Gomodo). 12 Midnight, International Broadcasting Club Concert for Leeds Listeners: The Middy March (Alford); The Meynel Hunt; Special Message from Captain Leonard Phuge, President and Founder of the Club; Selection from Rigoletto (Verdi); National Emblem March; John Peel; The Elephant March; Oh! Star of Eve, from Tannhäuser (Wagner); O who will o'er the Downs so free? Fire Star; Toreador Song from Carmen (Bizet); Bitelodia Selection. 1.0 a.m., (Monday), Variety Concert: Fall in and Follow the Band; Ironic Brothers; In the Train; Writing a Letter for Winnie; Blue Bells; You can't see the Sea to-day; Sir; Sally; Proverbs. 1.30, Songs: We're Friends again; Because; Ah, sweet Mystery of Life; I bring a Love Song; Song of the Islands; The Song of Songs; You will remember Vienna; You are my Heart's Delight. 2.0, Variety Music: By the Fireside; Hoch Caroline; Goodnight little Girl, Goodnight; Long Ago; Sing Brothers; Hummin' to Myself; When the Rest of the Crowd goes Home; What would you do; Let's all dance the Polka; We will always be Sweethearts; How are you? Night shall be filled with Music; Moonlight on the River; Marta; Song of the Harp; Shadows on the Window. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259 metres; 17 kW.; and CASSEL, 245.9 metres; and TRIER, 259.3 metres.—10.30 a.m., See Leipzig. 11.0, See Stuttgart. 12 Noon, See Langenberg. 1.30 p.m., Agricultural Hints. 1.40, Two Agricultural Talks. 2.30, See Stuttgart. 3.30, See Langenberg. 5.0, Talk: Welfare Work among Women in Protestant Parishes. 5.25, A Pleasant Interlude. 5.55, Sports Report. 6.0 till Close Down, See Berlin (Witzleben). 9.0 (in an interval), Time, News, Weather, and Sports Notes.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relay by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—10.30 a.m., See Leipzig. 11.0, Concert from the Deutsches Haus, Flensburg. 11.55 (in an interval), Time and News. 1.0 p.m., Programme for Children. 1.35, Reading of Modern Fairy Tales. 2.0 (from Hanover), Concert of Folk Music by the Station Orchestra and the Hanover Choral Society. 3.0, Talk: The Value of Cheerfulness. 3.25, Programme in North German Dialect. 4.0, Canoe—a Historical War Story in Dream Form for the Centenary of the Birth of Field-Marshal Schlieffen. 5.0, Pianoforte Recital of Modern Lyric Pieces: Aus meinem

Tagebuch (Max Reger): (a) Sostenuito in F, (b) Moderato in E, Impressions intimes (Federico Monpon); In der Nacht (Ernst Bloch); Dance Air from Forgotten Melodies (Nicholas Metner). 5.30, Dialogue on Sports. 5.40, Sports Notes. 5.55, Weather. 6.0, Concert from Berlin (Witzleben). In the interval, Report on Elections. 9.0, News Bulletin. 9.20, Concert and Election Results from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—11.0 a.m., Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky; Soloists: Hans Erich Riebensalm (Pianoforte); Overture, Titus (Mozart); Suite (Julius Bittner); Variations for Pianoforte and Orchestra (Chopin); Overture, In der Natur—for Orchestra (Dvorak); Concert Piece in F Minor, Op. 79 for Pianoforte and Orchestra (Weber); Ballet Music from The Demon (Rubinstein); Pizzicato-Polka (Joh. Strauss); Sasehinka—An arrangement of Russian Gipsy Melodies and Dances (Schirmann). 1.0 p.m., Talk on Chess. 1.30 (from Danzig), Talk for Young People. 2.0, Concert of Old and New Children's Songs by the Radio Choir and the Little Orag Orchestra. 2.40, Topical Review. 2.50, Orchestral Concert, conducted by Eugen Wilcken. Sports Notes in the Interval. 4.30, Talk: The German Artists' Colony in Majorca. 5.0, Songs of Early Spring—Recital by Gertrud von Borzestowski (Soprano). 5.30, Reading: Thoughts on Famous Musicians (Carl Reinicke). 6.0, Programme from Berlin (Witzleben).

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.55 a.m. to 3.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Sextet. 1.45 p.m., Political Talk. 2.10, Military Band Concert, conducted by S. van Leeuwen. 3.40, Programme for Invalids. 4.40 to 7.25, Programme of the Christian Radio Society (N.C.R.V.). 4.40, Divine Service, relayed from a Church in Voorschoten. 6.5, Sacred Music on Gramophone Records. 6.25, Divine Service and Songs by the N.C.R.V. Women's Choir. 7.25 till Close Down, K.R.O. Programme. 7.25, Talk. 7.50, Football Results. 7.55, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen; Soloist: A. Moszkovsky (Violin); Overture, Egmont (Beethoven); Concerto for Violin in D, Op. 61 (Beethoven). 8.40, News Bulletin. 8.45, Violin Solos by A. Moszkovsky. 9.10, Agricultural Talk. 9.40, Concert (cont'd.): Overture, La belle Hélène (Offenbach); Selection from The Count of Luxembourg (Lehar). 9.55, News Bulletin. 10.0, Concert (cont'd.): Selection from A Waltz Dream (O. Straus); Minuet (Boecherini); N.E.O. March (Maas). 10.20, Epilogue by the Choir. 10.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW. 8.57 to 11.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). Relay of the Socialist Congress at Nymegen; Addresses by J. Albarda and A. Kleerekoper. 11.40 to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.41, Concert by the Wireless Orchestra, conducted by Nico Treep, and a Mixed Choir, conducted by Jacob Hamel; Soloists: Die Moorlag (Soprano), and Johan Nelissen (Baritone); March, Stars and Stripes (Souza); Oriental Suite (Poppy); Miriam's Siegesgesang (Schubert); Paysage d'automne (Waldteufel); La danza (Rossini); Schön Ellen (Bruch); Slav Dance (Dvorak); March Potpourri (Cieci). 1.25 p.m., Book Review. 1.55, Running Commentary on the International Football Match, Holland v. Hungary. 3.40, Popular Music on Gramophone Records. 4.25, Light Music on Gramophone Records. 4.40, Programme of the Workers' Radio Society (V.A.R.A.). Programme for Children. 5.40 to 7.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 5.40, Review of New Books. 6.10, Concert by the Amsterdam Vocal Quartet. 6.25, Divine Service and Songs by a Vocal Quartet. 7.25, Vocal Quartet Concert. 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time Signal. 7.41, News Bulletin. 7.55, Concert by the Wireless Orchestra, conducted by Nico Treep; Soloist: Hermann Leidensdorff (Violin). 8.40, Recitations. 9.0, Concert by the Wireless Orchestra, conducted by Nico Treep; Soloist: Hekke Cals (Soprano). 9.40, Recitations. 10.0, Concert by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte. 10.40, Variety Music on Gramophone Records. 10.55, Orchestral Concert (cont'd.). 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLagenfurt.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

473 metres; 60 kW.—10.30 a.m., See Leipzig. 11.0, Talk: Missionary Work in South West Africa. 11.20, The World on Gramophone Records—In Southern Tyrol. 11.45, Talk: The Music of the Week. 12 Noon, Concert by the West German Chamber Orchestra, conducted by Spitz. 1.30 p.m., Shorthand Dictation. 1.50, Astronomical Talk. 2.25, Chess Lesson. 2.50, Talk for Gardeners. 3.10, Extracts from Books and Periodicals for Women. 3.30, Orchestral Concert, conducted by Kuhn, Festliche Musik (Brandts-Buys); Overture, The Barber of Bagdad (Cornelius); Tone Pictures from Tristan and Isolde (Wagner-Hoffmann); Invitation to the Dance (Weber-Bellioz); Selection from Der Kuhreigen (Kienzl); Ballet Music from Ricci (Wagner); Waltz, Seid umschlungen, Millionen (Strauss). 5.0, Variety Programme. 5.45, Sports Notes. 6.0 till Close Down, See Berlin (Witzleben). In the interval at 9.0, News and Sports Notes.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319 metres.—10.30 a.m., Ich bin vergnügt mit meinem Glück—Cantata (Bach), by the Municipal and Gewandhaus Orchestras, the Choir of St. Thomas, and Soloists. 11.0, Concert by the Dresden Philharmonic Orchestra. 1 p.m., Weather and Time. 1.5, Programme Announcements. 1.25, Agricultural Notes. 1.35, Cello and Pianoforte Recital by Walter Schilling and Hedwig Meyer: Seven Variations for Cello and Pianoforte on Themes from Mozart's Magic Flute (Beethoven); Sonata in C, Op. 102, No. 1 (Beethoven). 2.10, Reading: Happy Childhood (Marianne Handell). 2.50, Ludwig Thuille Song Recital by Ellen Beck (Soprano): In goldener Fülle; Devotionale; Des Narren Regenlied; Der Spinnerin Lied; Ich wollt ein Sträußlein binden; Lied der jungen Hexe; Spinnerlied; Komm, süßer Schlaf; Die Insel der Vergangenheit. 3.25, Humorous Dialogues: Little Comedies of Love. 4.45, Concert by the Dresden Soloists' Ensemble, with Flute Solos by Fritz Rucker; Minuet and Allegro vivace from String Quartet No. 3 in E Flat (Mozart); Flute Solos: (a) Tambourin (Hasse), (b) Gavotte (Gossek), (c) Minuet, Der Kanarienvogel (Mozart); Scene from the Section Act of Das Nachtlager in Granada (Kreutzer); Piece for Flute and Pianoforte (Theodor Blumer); (a) Ständchen from Op. 54, (b) Fuchslied and Flug der Vögel from Aus der Tierwelt, Op. 57a; Waltz, Die guten, alten Zeiten (Jos. Strauss). 5.30, Harry Langwiesch reads from Der Götterlied-Ruf (S. Fink). 6.0, Programme from Berlin (Witzleben). In the interval at 9.15, News.

LINZ.—See Vienna.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—10.30, Variety Concert. 10.45, Humorous Talk. 11.0, Variety Concert (cont'd.). 11.35, Talk. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—8.0 to 9.0 a.m., Topical Review. 2.0 p.m., Chimes from the Cathedral, Time Signal, Theatre Notes, and Concert by the Arts Orchestra. 4.0 to 7.0, Interval. 7.0, Chimes and Dance Music relayed from the Ritz Hotel. 7.30 (in an interval), Agricultural Talk. 8.30 to 9.30, Interval. 9.30, Chimes and Time Signal. 9.35 (approx.), Concert. Part I: Pianoforte Recital by Margarita Albert; Sonata in D (Haydn); Le conon (Daquin); Berceuse (Chopin); Fantaisie Impromptu (Chopin); La maja y el ruiseñor from Goyescas (Granados). Part II: Interlude by Ramon Gomez de la Serna. Part III: Song Recital by Maria Luchs; Der Erlkönig (Schubert); Heidenröslein (Schubert); Ave Maria, from Otello (Verdi); Petenaras, from La Marchenera (Mureno Torroba); Leyenda de la góndola, from Las hilanderas (Serrano); Nana (Falla). 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—3.10 p.m., Popular Concert by the Station Orchestra, conducted by B. Tvrdy. 4.30 to 5.45, See Prague. 6.0, See Prague. 6.15, Military Band Concert. 7.10, See Prague. 10.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relay by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—10.30 a.m., See Leipzig. 11.0, Wind Instrument Concert. 12.5 p.m., Time, Weather and Programme Announcements. 12.15, Agricultural Talk. 12.35, Gramophone Concert of Romantic Music. 1.30, Elementary Chess Lesson. 2.15, Talk

for Women. 2.35, Concert by the Augsburg Concert Orchestra, conducted by Gustav Heuer. Soloist: Isabella Schmitz (Violin). 3.45, Topical Talk. 4.5, The Seven Deadly Sins—Three One-Act Plays from a Cycle (Franz Kræwittter). 5.10 (from Nürnberg); Concert of Chamber Music by the Horvath Quartet: String Quartet in D (Mozart); Quartet Movement in C minor (Schubert). 6.0, See Berlin (Witzleben). 9.0 (approx.), News. 9.15, Concert of Light Music from Berlin (Witzleben).

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relay by Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—9.15 a.m., Weather Forecast and Road Report. 10.0, Divine Service, relayed from the Castle Chapel. 2.0 p.m., Running Commentary on the International Ski-jumping Championship, relayed from Holmenkollen. 4.0, Concert, conducted by M. Backe, relayed from the Grand Hotel: Overture, The Merry Wives of Windsor (Nicolaï); Schatzwalzer (Joh. Strauss); Selection from La Bohème (Leoncavallo); Gavotte and Minuet from Manon (Massenet); Intermezzo and Barcarolle from The Tales of Hoffmann (Offenbach). 5.0, Talk on Hans Adolf Brorsom—the Psalm Writer, relayed from Stavanger (240.6 metres). 5.30, Recitations in German. 6.0, Parliamentary Notes. 6.15, Weather and News. 6.30, Pianoforte Recital. 7.0, Time Signal. 7.1, Talk on the Skiing at Trysil. 7.30, Concert of Popular Music by the Station Orchestra. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Songs and Humorous Review of the Week. 9.45, Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

537.6 metres; 3 kW.—9.25 a.m., Bible Reading. 9.40, Sacred Music. 10.5, Agricultural Talk. 11.45, Giornale Radio. 12 Noon to 1.0 p.m., Concert. In the intervals at 12.30 p.m., Time, Announcements, and Weather. 4.30 to 5.30, Popular Music on Gramophone Records. 7.0, Dopolavoro Notes and Giornale Radio. 7.20, Sports Notes. 7.30, Time and Announcements. 7.45, Symphony Concert, conducted by A. La Rosa Parodi. Soloist: Gabriella Scaja (Pianoforte). Symphony No. 2 in D (Brahms); Suite No. 3 for Strings (Respighi); Toccata for Pianoforte and Orchestra (Respighi); Three Symphonic Sketches, La mer (Debussy). In an interval, Reading. After the concert, Art Notes. 9.0 (approx.), Variety Songs. 9.55, News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—12.30 p.m., Concert relayed from Paris (Ecole Supérieure) (447.1 metres). 1.0 to 2.0, Concert by the Rex Orchestra. 5.45, Le Journal Parlé. 6.45, Programme for Children. 7.20, Weather Report. 7.30, Gramophone Concert. Part I—Music by Victor Massé. Part II—Light Music. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—9.45 a.m., Bible Reading. 10.0, News. 10.5, Sponsored Concert. 11.5, Film Stars—Sponsored Programme. 11.40, Sponsored Gramophone Concert. 12.15 p.m., Sponsored Concert. 12.45, Half an Hour of Fantasy by Paul Weill. 1.15, Interval. 1.30, Sponsored Programme. 2.0 to 6.45, Interval. 6.45, Journal Parlé. 7.0, Sports Notes. 7.15, Popular Music on Gramophone Records. 7.30, Catholic Review. 8.0, Interval. 8.15, Chamber Music. 8.45, Interval. 9.0, Concert. 9.45, Interval. 9.50, Orchestral Concert. 10.50, News.

PARIS

RADIO PARIS, Call CTR, 1,725 metres; 75 kW.—7.45 a.m., Gramophone Records. 8.0, Press Review and Weather. 8.30, Physical Culture. 10.0, Elementary Book-keeping Lesson. 10.20, Advanced Book-keeping Lesson. 10.40, Spanish Lesson. 11.0 to 11.30 Interval. 11.30 to 12 Noon, Programme in English by the I.B.C. Concert of Imperial and Broadcast Records. Mr. T. St. A. Romald announcing. Songs from the Shows, Part II, by the Embassy Musical Comedy Company with Orchestra and Compe; Don't say Good-bye, from Wild Violets (Stolz); by Tom Burke; Fiddler Joe, by Leslie Holmes; Linger a little Longer in the Twilight, by Bidgood's Novelty Accordion Band; San, by Red (Pepper) Sam with Pianoforte and Ukelele Accompaniment; Hits from The Big Broadcast, Part II, by Ned Fox's Film Fans, with Vocal Retrain; I may never pass your Way again, by Morton Downey (Tenor); Waltz, A Little Street where old Friends meet, by Jack Payne and his Band with Vocal Chorus. 12 Noon, Religious Address. 12.20 p.m., Sacred Music. 12.30, Bilboquet moves in. 12.45, Press Review, News and Weather. 1.0, Concert of Light Music. 1.30 to 5.0, Programme in English by the I.B.C. 1.30, Gramophone Records, Silence, by the Russian Gipsy Vagabonds; How deep is the

MARCH 5th

SUNDAY

continued

Ocean? by the Southern Sisters; Butterflies in the Rain, by Maurice Winnick and his Orchestra; Please, by Bing Crosby; A Boy and a Girl were dancing, by Sam Browne and his Accordion; Street of Dreams, by Guy Lombardo and his Royal Canadians; Time on my Hands, by Connie Boswell; Passion Flowers, by Bobby Brown and his Accordion Band; Can't we meet again, by Jack Hylton and his Orchestra; Play, Fiddle, Play, by the Street Singer; Wheezy Aunt, by Roy Fox and his Band; The Rosary, by Donald Novis (Tenor); Amoureuse, by Armand Crabbe (Baritone); What more can I ask by Eric Bertner (Tenor); In Santa Lucia, by Lew Stone and the Monseigneur Band; Her Name is Mary, by Harold Ramsay at the World's Mightiest Wurlitzer Organ at the Gramad Cinema; Tooting; Look what you have done, by Ozzie Nelson and his Orchestra; Sitting on the Ice in the Ice Rink, by George Formby (Comedian); April Showers, by Al Jolson, with Guy Lombardo and his Royal Canadians; Bless this House, by Frank Titterton (Tenor); Try a little Tenderness, by Bing Crosby; The Stars were shining, by Franz Volker (Tenor); Take me away from the River, by Maurice Elwin; Selection from Samson and Delilah (Saint-Saëns), by the Grand Symphony Orchestra, conducted by Manfred Gurlitt, 3.0, Concert, March, Colonel Bogey (Alford); Selection from The Mikado (Sullivan); The Last Waltz (O. Straus); Wonder Bar (Katscher); The Gondoliers (Sullivan); The Girl in the Taxi (Gilbert); and The Maid of the Mountains (Fraser-Simpson), 3.30, Concert of Light Music, Nobody else but Elsie; Some one to care for; Gipsy Air; The Two Guitars; Rumba; African Lament; Moonlight on the Riviera; Rainbow; Brighter than the Sun, 4.0, Tea-Time Variety Hour, Mr. S. H. C. Williams announcing, 5.0, Concert by the Radio Orchestra, 5.30 to 8.0, Programme in English by the I.B.C., 5.30, Variety Hour, Announcer, Mr. Glynn Williams, Foundation Member No. 29 of the International Broadcasting Club, 6.30, Concert of Light Music; You're telling me; Love is the sweetest thing; Nina Rosa; First Waltz (Nicolais); Martha; Tap your feet, 7.0, Film Fans Hour, Mr. S. H. C. Williams announcing, 8.0, Radio Paris Music Hall, The Station Orchestra, conducted by Maurice André, Soloists Mme. La Regia and M. Léjal. In the intervals at 8.30, News, Sports Notes, and Weather, and at 9.15, Press Review and News.

PITTSBURGH
WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XK on 48.86

metres; and 25.27 metres.—9.0 p.m., Temple of Song, from New York. 9.30, Vesper Services from Shadyside Presbyterian Church, 10.30, Pages of Romance, from New York. 11.0, Sealed Power, from New York. 11.30, Time Signal. 11.31, Weather Report. 11.32, Teaberry Sport Review. 11.37, Press News Recler. 11.42, Strange Facts. 11.44, Temperature Report. 11.45, Programme to be Announced. 12 Midnight, Time Signal and Programme to be Announced. 12.30 to 3.45 a.m. (Monday), New York relay. 12.30, Great Moments in History. 1.0, L'Heure Exquise. 1.30, Mexican Symphonic Marimba Orchestra. 2.0, Twenty Thousand Years in Sing Sing. 2.30, Walter Winchell. 2.45, Mary Steele. 3.0, D. W. Griffith's Hollywood. 3.15, Real Silk. 3.45, Westinghouse Glee Club. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News. 4.20, Alexander Roy (Tenor). 4.30, Jesse Crawford (Organist), from New York. 5.0, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—11.0 a.m., Chimes, 11.5, Military Band Concert, conducted by Jan Pesta. 12.30 p.m., Agricultural Report. 1.0, Agricultural Programme. 1.15, Talk for Workers. 1.25 to 3.0, Interval. 3.0, Talk: The Masaryk Anti-Tuberculosis League. 3.10, See Moravská-Ostrava. 4.30, Talk by Dr. Hubert Slouka. 4.45, Variety Music on Gramophone Records. 5.0, German Transmission: Scenes from Student Life, based on a Russian Drama by Andrejev, with Music by the Station Orchestra. In the Interval, News in German. 6.0, Reading. 6.15, See Moravská-Ostrava. 7.10, Dialogue (Courteline). 7.35, Accordion Duets by M. Mrazkova and G. Rambarterova. 8.0, Time Signal. 8.1, Concert of Music by Pilsen Composers, relayed from Pilsen; Conductor: E. Kumpers; Symphonic Focm (Palla); Three Pieces (Kubal); (a) Romance, (b) Slovak Song for Violin and Orchestra, (c) Minuet; Symphonic Poem, Conductor (Brtovsky); Overture, Op. 3 (for Orchestra) (Janacek). 9.0, Time Signal. 9.1, News Bulletin. 9.20, Jazz on Two Pianofortes by E. Schulhoff and O. Letus. 10.0 (approx.). Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.: LAUSANNE, 680 metres; and GENEVA, 760 metres.—8.55 a.m. (from Lausanne), Chimes. 9.0 (from Geneva), Protestant Service, relayed from the Oratory. 10.0 (from Geneva), Popular Music on Gramophone Records. 11.0 (from Geneva), Readings. 11.30, News Bulletin and Weather Forecast. 11.40 (from Geneva), Light Music on Gramophone Records. 1.0 to 1.45, Interval. 1.45 p.m. (from Geneva), Concert by the Municipal Band, conducted by M. Ludwig and the Harmonic nautique Choir, relayed from the Victoria Hall. 4.30 to 5.30, Interval. 5.30 (from Lausanne), Catholic Service. 6.0 (from Lausanne), Violin and Pianoforte Recital. 6.40 (from Lausanne), Sports Notes, News and Announcements. 7.0 (from Geneva), Song Recital by Mme. Viollette Andréssi. In the interval, Melodies (Dupare). 7.35 (from Geneva), Reading. 7.45, Concert by the Station Orchestra. 9.0, News and Weather. 9.15 (approx.). Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 2RO, 25.4 metres.—9.10 a.m., News, Sports Notes, and Amusement Guide. 9.30, Agricultural Notes. 9.45, Bible Reading. 10.0 to 11.0 and 11.30 to 1.30 p.m., See Turin. In an interval at 12 Noon, Time and Announcements. 2.45 (Naples), Programme for Children, Weather and Sports Notes. 3.0, Football Results. 3.15 to 5.30, Orchestral Concert, with Songs, Sports Notes in the interval. 6.30, Sports Notes, Football Results, Dopolavoro Notes and News. 7.0, Time and Announcements. 7.30, Sports Notes. 7.45, L'amore tra i pampini (Love among the Vine Leaves) Operetta in Three Acts (Giulio de Micheli). In the intervals, Talk and Theatre Notes. News after the Operetta.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—7.0 p.m. to 12.30 a.m. (Monday), New York relay. 7.0, International Radio Forum. 7.15, Clyde Doerr and his saxophone Octet. 7.30, Moonshine and Honey-

suckle. 8.0, Wayne King's Orchestra. 8.30, Hour of Worship. 12 Midnight, Borrah Minevitch and his Harmonica Rascals. 1.15 a.m., Wheatona Ville—Sketch with Ray Knight. 12.30, Horse Sense Philosophy. 12.45 to 2.30, New York relay. 12.45, Smith Brothers' Programme. 1.0, Chase and Sanborn Hour. 2.0, General Electric Sunday Circle Concerts. 2.30, American Album of Familiar Music and Programme Resume.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; BASLE, 244.1 metres; and BERNE, 245.9 metres.—9.0 a.m., (from Basle), Catholic Address. 9.45 (from Basle), Chamber Music on Historic Instruments. 10.30 (from Basle), Bernhard Moser reads from his own Works. 11.0, Concert by the Radio Orchestra. 11.28, Time and Weather. 11.30, News Bulletin. 11.40, Concert by the Radio Orchestra. 12.30 p.m. (from Basle), Concert by the Alpengruss Ländler Band, conducted by Jules Bohrer. 1.30 to 2.30, Interval. 2.30 (from Basle), Zither Duets by Lindenmaier and Fischer. 3.0, Italian-Swiss Programme. 3.35, Italian Folk Music on Gramophone Records. 4.0 to 5.30, Interval. 5.30 (from Basle), Talk in Italian: Leonardo da Vinci as a Scientific Genius. 6.0, Time, Weather, and Sports Notes. 6.15 (from Basle), Talk: Tendencies of the Day. 6.45 (from Basle), Talk on the following Transmission. 7.0 (from Basle), Tiefland—Opera in Two Acts and a Prelude (d'Albert). In the interval at 8.30, Weather and News. 9.30, Sports Notes and Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—10.0 a.m., Divine Service. 11.45, Weather. 1.0 p.m., Choral Concert, conducted by Emil Carlsén, relayed from the Royal Academy. Soloists: Karl Schylling and Knut Ohrström. 2.0, Provincial Programme. 2.30, Programme for Children. 3.0, Dialogue on Alcohol. 3.45, Variety Music on Gramophone Records. 4.30, Talk. 5.0, Evensong. 6.30, Orchestral Concert, relayed from Helsingborg, 232.2 metres. Conductor, Olof Lindner. Soloist: Birgit Engell. Second Symphony in B Flat (Schubert). Songs: Aria from Acis e Galatea (Handel),

ROLA

the World's Finest Reproducers

To obtain the best results from the following receivers use ROLA Speakers as under:—

- "WIRELESS WORLD" MODERN A.C. QUALITY AMPLIFIER.
Rola Dual Balanced Pair consisting of one F6-2500 and one F7-2500 Speaker with 00B Transformer £4 5 0
- "WIRELESS WORLD" A.C. MONODIAL SUPER.
Rola Type F6-2500 35/-
or Dual Balanced Pair F6-2500 and F7-PM with class C0B Transformer £4 12 6
- "WIRELESS WORLD" MODERN STRAIGHT FIVE AMPLIFIER.
Same as A.C. Monodial Super.
- "WIRELESS WORLD" BABY SUPER.
Rola Type F6-P2500 35/-
- "WIRELESS CONSTRUCTOR" A.C. S.T.400.
Rola Special Model F6-S.T.400 35/-
- "WIRELESS MAGAZINE" WORDS & MUSIC RADIOGRAM DE LUXE.
Rola Type F5-PM 32/6
- "WIRELESS MAGAZINE" A.C. QUALITY GEM.
Rola Type F6-P2000 35/-
- "WIRELESS MAGAZINE" WORDS & MUSIC Q.P.P. RADIOGRAM.
Rola Type F5-PM 32/6

Rola Speakers are chosen by nearly all British Radio manufacturers and "constructor set" designers. Follow their example. Write for the Rola Folder to-day.

ROLA SPEAKERS

for better Radio Reception

TREBLE

BASS

THE BRITISH ROLA CO., LTD.,
Brondebury Works,
179, High Rd., Kilburn, N.W.8
Telephone: Maida Vale 5017-8-9

THE GREATEST AID TO BETTER RADIO EVER INVENTED

A NOTE FOR EVERY LISTENER

The selectivity of your set can be improved by fixing a PIX in the aerial lead-in. Even if a pre-set aerial condenser is fitted inside your set, a PIX will give better and sharper tuning. With a PIX in your aerial you can cut out the local station and get foreign concerts. Even in America with its super selective sets thousands of PIX are being sold.

2/-

NO MORE DUAL PROGRAMMES

Why suffer the inconvenience of dual and mixed programmes? Fix a PIX and separate them and enjoy pure reception. A PIX can be fitted to any set, crystal, battery or all mains and will improve reception of any set. No skill is required to fix a PIX. For 2/- any set can get super-het selectivity. From your local dealer or send postal order to manufacturers.

PIX CLIP 6d.

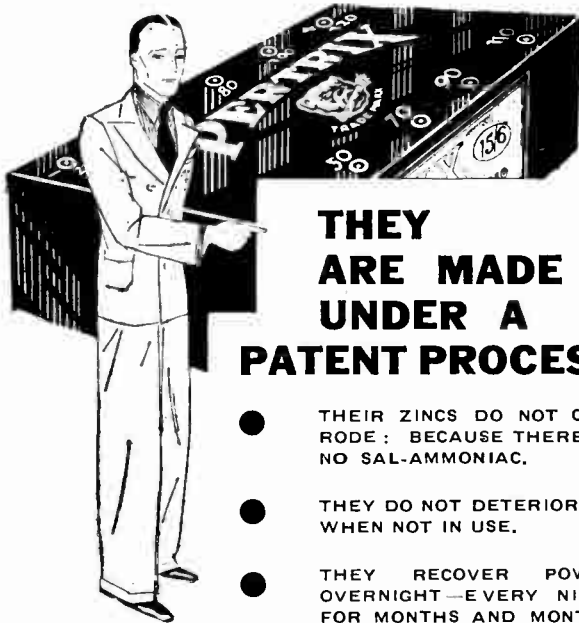
Holds the PIX securely in position fitted to set, wall, or window ledge. Insulated base; drilled with screws.

The BRITISH PIX COMPANY, Ltd.
Dept. 457.
118, Southwark Street, London, E.E.1.

1,500,000 USERS IN ENGLAND, AMERICA, FRANCE, GERMANY, ETC.

You'll be amazed!
at their long life

PERTRIX
TRADE MARK
H.T. BATTERIES



THEY ARE MADE UNDER A PATENT PROCESS

- THEIR ZINCS DO NOT CORRODE: BECAUSE THERE IS NO SAL-AMMONIAC.
- THEY DO NOT DETERIORATE WHEN NOT IN USE.
- THEY RECOVER POWER OVERNIGHT—EVERY NIGHT FOR MONTHS AND MONTHS.
- THEY GIVE CLEANER CURRENT AND HIGHER VOLTAGE FOR A LONGER TIME.
- They are superior in every way to the common sal-ammoniac battery. For long, trouble-free service and clear radio rendering, the patent Pertrix is obviously the only high tension battery a discriminating person will use.

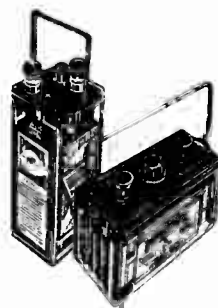
COMPLETE THE EQUIPMENT WITH
PERTRIX
TRADE MARK
ACCUMULATORS

BRITANNIA BATTERIES LTD

233, Shaftesbury Avenue,
London, W.C.2.

Works: Redditch.

Pertrix Batteries are obtainable at all dealers.



Pertrix Accumulators are built on clean engineering lines; the glass boxes are solidly cast; the plates are massive; they have heavy lugs; fool-proof terminals, and a permanent carrying handle known as the "Kaptive Karrier." See them at your Pertrix Dealers.

(b) Aria from Il re pastore (Mozart); Marosszeke Tánze (Kodály); Three Songs (Mahler); Carnaval de Paris (Svendson). 8.0, Radio Play (Kjellgren). 9.0, Concert of Chamber Music, relayed from Göteborg. Conductor: Tor Mann. Soloist: Heinz Freudenthal (Viola). Introduction for String Orchestra (Roman); Three Pieces for String Orchestra (Bocherini); Concertino for Viola and Orchestra (Gerster); Serenade for String Orchestra (Elgar). 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—9.30 a.m., Orchestral Concert, conducted by Maurice de Villers: Overture, Undine (Lortzing); Waltz from Eugene Onegin (Tchaikovsky); Orchestral Suite from Ives (Pierné); Selection from Rigoletto (Verdi); Slav Dances Nos. 1 and 3 (Dvorák); Ballet Egyptian (Luigini); Divertissement on Russian Songs (Rabaud); French March (Filippucci). 10.45, Protestant Service, relayed from St. Stephen's Church, Mülheim. 11.30, Catholic Service Relay. 12 Noon, Gramophone Concert of Classical Music. 12.45, News. 1.0 p.m., Time, and Light Music on Gramophone Records. 2.0, Talk: Hygiene and Domestic Animals. 2.30, Concert, relayed from Paris. 4.30, Pasdeloup Symphony Concert, relayed from the Théâtre des Champs-Élysées, Paris. 6.45, Medical Talk in French. 7.0, Sports Notes. 7.15, Popular Music on Gramophone Records. 7.30, Time, News, and Sports Notes. 7.45, Divine Service Relay in German. 8.30, Lottery Results. 8.45, Dramatic Programme: A Bond—Radio Sketch (Claude Orly); Ce qu'ils font de nos femmes—Comedy in One Act (Claude Orly); Six mois de calme—Comedy in Three Acts (Jean Boydeaux). 10.30, Jazz Music, relayed from the Savoy. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER; 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—10.30 a.m., See Leipzig. 11.0 (from Freiburg), Concert by the Freiburg Concert Orchestra conducted by Richard Fried, Soloist: Julius Weismann (Pianoforte). 12 Noon (from Freiburg), Handel-Haydn-Mozart Concert by the Freiburg Chamber Orchestra, conducted by Heinrich Pfaff, Soloists: Marea Wöhler-Spiess (Violin) and Hugo Stöckel (Viola). Concerto for Viola (Handel); Symphony No. 18 in F Sharp Minor (Haydn); Concertante Symphony for Violin and Viola with Orchestral Accompaniment (Mozart). 1.0 p.m., Agricultural Talk. 1.30, Extracts from Parsifal—Opera (Wagner) on Gramophone Records. 2.30, Programme for Young People: Chronik des Pizarro—a Radio Play in Verse (Otto Rombach). 3.30, Organ Recital of Old Music, relayed from the Christuskirche, Mannheim. 4.30, Choral Concert of Leuten Music, relayed from the Church of St. Francis, Pforzheim: Part I—Music by Palestrina: O bone Jesu; O Domine Stabat Mater and Adoramus. Part II: Tantum ergo; Te Deum factae sunt (Michael Haydn); Old Passion Song. Gethsemane; Seventeenth Century Choral: Das Leiden des Herrn; O Haupt voll Blut und Wunden (Bach); O Christi Wunden rot (Schweitzer). 5.0, Sports Report. 5.20, Running Commentary on the Rifle Shooting Competitions, relayed from Buchenbach. 6.0 till Close Down, See Berlin (Witzleben). In the interval at 9.0, Time, Weather, News, Programme Announcements and Sports Report.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—12.15 p.m., News Bulletin. 12.30, Catholic Service. 1.0, Orchestral Music. 1.15, Operetta Music. 1.30, Viennese Music. 1.40, Agricultural Report. 1.45, Protestant Service. 2.15, News. 2.20, Orchestral Music. 2.30, Manon—Opera in Five Acts (Massenet). In the intervals, News and Racing Results. 5.15, News and Racing Results. 5.30, Dance Music. 6.0, News. 6.15, Popular Songs. 6.30 to 7.0, Programme in English by the I.B.C.: Healy Concert of Dance Music; Sweethearts of Yesterday; It's the darndest thing; Singin' the blues; I'll never be the same; As long as Love lives on; If I could be with you; Shine; When day is done. 7.0, Light Music. 7.15, Racing Results, Market Prices and News. 7.25, Local News. 7.30, Music by an Argentine Orchestra. 7.45, Operetta Music. 8.0, Light Music. 8.15, Music by a Viennese Orchestra. 8.45, Songs from Sound Films. 9.15, Opera Music. 9.30, Accordion Music. 9.45, Three Pieces for Orchestra. 10.0, Concert for Listeners in Morocco. In the interval at 10.15, North African News. 10.30, Popular Programme. 11.0 to 12 Midnight, Programme in English by the I.B.C. 11.0, Fagot Song Recital. Selection from A Waltz Dream (O. Strauss). Songs: (a) Love will find a way, from The Maid of the Mountains (Fraser-Simpson), (b) You are my Heart's delight, from The Land of Smiles (Léhar); Ol' Man River, from Show Boat (Kern); Song of the Vagabonds, from the Vagabond King (Friml); Songs: (a) Just two Hearts (Stolz), (b) Bohemia (Rubens); The Skaters' Waltz (Waldteufel). 11.30, Songs: Ma curly-headed

Babby; I want your Heart; Song of Songs; Old Time Potpourri; Bird Songs at Eventide; Trees; Minuet from Berenice (Handel). 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 p.m. (Monday), Military Music. 12.15, Jazz. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—8.40 a.m., See Turin. 8.55, Mass from the Cathedral of San Giusto. 10.0 to 10.20, Agricultural Talk. 11.0 till Close Down See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW.—Relayed by Milan, 31.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—8.40 a.m., Giornale Radio. 8.55 to 9.40, Interval. 9.40, Agricultural Talk. 10.0, Mass from the Church of the Annunciation, Florence. 11.0 to 11.15, Bible Reading. 11.30, Orchestral Concert conducted by Ugo Tansini. In an interval at 12 Noon, Time and Announcements. 12.30 to 1.30, Orchestral Concert. 2.0, Relay of an Opera. In the intervals, Giornale Radio and Sports Notes. 6.0, Dopolavoro Notes. 6.5, Variety Programme on Gramophone Records. In an interval at 6.30, Time and Announcements. 7.0, Giornale Radio, Sports Notes, and Light Music on Gramophone Records. 8.0, Programme to be Announced. In the intervals, Talk, Notes on the Theatre, and Giornale Radio.

VIENNA

517 metres; 15 kW.—Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—9.30 a.m., Brahms Song Recital by Hedda Kux (Soprano). 10.0, Technical Wireless Talk. 10.30, see Leipzig. 11.0, Talk by Archbishop Theodor Innitzer: The Catholic Conference of 1933. 11.4-1.10 p.m., Concert by the Vienna Symphony Orchestra, conducted by Max Schönewerk: Overture, Les Cloches de Corneville (Chauquette); Four Orchestral Melodies (Ambrosio); (a) Andantino, (b) Paysanne, (c) Ronde des lutins, (d) Tarantella; Piedmontese Dances (Sinigaglia); Overture, Der Tal der Liebe (O. Strauss); Waltz, Freudengrüsse (Jos. Strauss); Entr'actes: Joh. Strauss from: (a) Aschenbrödel, (b) Jakaba; Selection from Der arme Jonathan (Millöcker); Russian Dance from Tatjana (Lehar); Ballet Scene from Die Bacchusnacht (Granichestaeden); Waltz, Leben und Lieben (Fall); Selection from Der Teufelsreiter (Kálmán). 2.0, Time and Programme Announcements. 2.5, Reading (Leo Weismantel). 2.30, Chamber Music. 3.25, talk: Rambling in the South of France. 3.50, Concert of Songs and Orchestral Music. 5.20, Kurt Martens reads from his own Works, with Introductory Talk. 5.50, Time, Programme Announcements and Sports Notes. 6.0, see Berlin (Witzleben). 9.0, News Bulletin. 9.25, see Berlin (Witzleben).

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Weather Forecast. 11.15, Concert by the Warsaw Philharmonic Orchestra, conducted by Casimir Wilkomirski: Soloists: E. Heiner (Soprano) and W. Kochanski (Violin); Overture, Marya (Statkowski); Concerto for Violin and Pianoforte (Saint-Saens); Songs; Symphony in G minor (Maliszewski). In the interval, Talk. 1.0 p.m., Agricultural Notes. 1.20, Light Music, relayed from Katowice (408 metres). 1.40, Agricultural Talk. 2.0, Light Music (contd.). 3.0, Programme for Young People. 3.25, Popular Music on Gramophone Records. 3.45, Talk of the Polish Language. 4.0, Violin and Song Recital by E. Szalowska-Gedeonow and E. Maj (Baritone); Suite in A Minor for Violin and Pianoforte (Sinding); Songs: (a) Don Juan's Serenade (Naprawnik), (b) Aria from Dinorah (Meyerbeer), (c) Song from Hamlet (Thomas); Violin Solos: (a) Irish Song (arr. Kreisler), (b) Humoresque (Tchaikovsky), (c) Meditation (Glazunov), (d) Scherzo (Tchaikovsky); Songs: (a) Aria from The Haunted Castle (Moniuszko), (b) Aria from Verbum Nobile (Moniuszko), (c) Quand je traverse le Village (Malinowski), (d) Soldier's Song (Gall). In the interval, Announcements and News. 4.55, Programme Announcements. 5.0, Programme for the Eleventh Anniversary of the Pope's Coronation, relayed from the Town Hall. 5.1, Miscellaneous Items. 6.25, Dramatic Programme. 7.0, Concert of Light Music by the Jurand Choir and the Odem Orchestra. 8.5, Concert by the Radio Orchestra, conducted by Oziminski; Soloists: J. Dzwierzapolska (Soprano); Polonaise in E flat (Kurpinski); Berceuse (Marzynski); Selection from Matury (Paderevsky); Six Songs (Marzynski); Algerian Suite (Saint-Saens); Songs: (a) Two Arias from Lakme (Delibes), (b) Song from Louise (Charpentier); Walpurgis Night from Faust (Gomodo). 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music.

ZURICH.—See Schweizerischer Landesender.

ATHLONE
418 metres; 60 kW.; and **GORK**, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.45, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Talk on Poultry Keeping. 8.0, Concert by the Station Orchestra. 8.20, Tenor Solos by Patrick Kirwan. 8.30, The House Next Door—Sketch by F. Macdonald and Company. 9.0, The Station Orchestra. 9.15, Mezzo-soprano Solos by Cecily Kenny. 9.30, Traditional Fiddle Music. 9.45, Tenor Solos by Patrick Kirwan. 9.55, The Station Orchestra. 10.30, Time Signal, News, Weather Report, and Close Down.

BARCELONA
RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert: Selection from Thaïs (Massenet); Minuet (Handel); Selection from The Tales of Hoffmann (Offenbach); A Wedding Day on Troldhaugen (Grieg); Serenata (Staffelli); Waltz in A (d'Ambrosio). 7.0, Request Gramophone Records. 7.20, Sports Notes. 7.30, Exchange Quotations and Talk in Catalan. 8.0, Popular Music on Gramophone Records and News. 9.0, Chimes from the Cathedral, Weather Forecast, and Market Prices. 9.5, Humorous Review of the Week in Verse. 9.15, Concert of Sardanias. 10.0, Concert by the Station Orchestra. In an interval at 10.30, Catalan News Bulletin; and at 11.0, Press Review. 11.30, Dance Music by the Melody Boys, relayed from the Excelsior Dance Hall. 12 Midnight (approx.), Close Down.

BARI
270 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Notes, and Dopelavoro Announcements. 7.20, Giornale Radio and Press Review. 7.30, Time and Announcements. 7.35, André Chenier—Opera (Giordano), on Gramophone Records. In the intervals, Talk and Notes on Art. News after the Opera.

BASLE.—See *Schweizerischer Landessender*.

BELGRADE
430.4 metres; 2.8 kW.—3.0 p.m., Orchestral Concert: Overture, Beim Tanz (Urban); Aus Nisch und Umgebung (Brodil); Selection from The Tales of Hoffmann (Offenbach); Ballet égyptien (Luigini); Clair de lune (Ketelbey); Spanish Boston Waltz (Smatek). 4.0, Dialogue in German. 5.55, Time and Programme Announcements. 6.0, Talk. 6.40, Popular Music on Gramophone Records. 6.50, Introductory Talk to the following Relay. 7.0, Relay of an Opera from the National Theatre. In an interval at 8.30 (approx.), News.

BERLIN
KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—2.0, Talk for Women: Coming Fashions. 2.30, Weather and Exchange. 2.45, Review of Books. 3.0, Educational Talk. 3.30, Concert from Berlin (Witzleben). 4.10, Talk: German Elections since 1912. 4.30, Robert Franz Song Recital by Ingrid Brobeck (Soprano): Weisst Du noch?; Genesung; Auf dem Meere; Aus meinen grossen Schmerzen; Er ist gekommen; Gute Nacht; Frühling und Liebe; Widmung; Der Schmetterling ist in die Rose verliebt; Denk ich Dein!; Es hat die Rose sich beklagt; Mein Schatz ist auf der Wanderschaft. 5.0, Talk on German Art. 5.30, Making Music with Invisible Partners. 5.55, Weather and Announcements. 6.0, French Lesson. 6.30, A Poem. 6.35, Concert of Light Music by the Bohème Band, relayed from the Café Corso at the Zoo. 7.30, Talk: The Strength of the Modern State. 8.10, Contemporary Music for Chamber Orchestra. Conductor: Rudolf Schulz-Dornburg. Apollo musagètes (Igor Stravinsky); Jacob and Esau (Wagner-Esau); Music for Strings (Ludwig Weber); Spielmusik (Kurt Thomas); Tafelmusik (Erwin Lendvai). 9.10, Weather, News and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Cigány Music from Budapest. 11.0 (approx.), Close Down.

BERLIN
WITZLEBEN, 419.5 metres; 1.5 kW.—2.35 p.m., Brahms Pianoforte Recital; Pianoforte Pieces, Op. 119, Intermezzi in B Minor, E Minor and C; Rhapsody in E Flat. 2.55, Songs to the Lute—Recital by Walter Bartoschek. Kuriose Geschichte; Blume und Schmetterling; Sechse, Sieben oder Acht; Das Versehen; Das Wärtchen Ja (Walter Bartoschek); Drei Kässe (Schmid-Kayser). 3.15, Talk on Trees. 3.30, Concert by the Ferdj Kaufmann Orchestra. A Humorous Suite, Emil and the Detective (Gray); Liebeslied (Schmalstich); Bines (d'Albert); Der Pan tanzt (Juel-Fredrikson); Waltz, Mein Ideal (Blon); Overture (Künnecke); Mein Herz (Pataky); Die Zigeuner (Königsberger); Potpourri of Viennese Music, Alt Wien (Pachernegg). 4.25, Topical Talk. 4.45, Talk for Young People. 5.5, Violin Concerto, in E (Bach), by Arnold Hess and the Berlin Wireless Orchestra, conducted by Eugen Jochem. 5.25, Talk: Literature and Early Death—Wilhelm Waiblinger. 5.45, Talk on Music. 5.55, The Witzleben Station informs its Listeners. . . . 6.0, Topical Talk. 6.15, Talk: Mankind and Politics. 6.40, Help for the Unemployed—Talk by Friedrich Syrup. 7.5, Sehnsucht.

MONDAY

MARCH THE SIXTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** B.B.C. chamber concert. "Moonlight 'n Everything," a Pre-War Pierrot Potpourri. Famous ballads. Band concert. "Radio Scrapbook," collected by Leslie W. A. Baily.
- LONDON REGIONAL** String orchestral concert from Queen's College, Birmingham.
- MIDLAND REGIONAL** "Radio Scrapbook," by Leslie W. A. Baily.
- NORTH REGIONAL**
- WEST REGIONAL** Orchestral concert from the National Museum of Wales.
- SCOTTISH REGIONAL** Recital of Jewish folk songs.

ABROAD

- BERO-MUNSTER** 7.30 p.m. Carnival programme with yodels and accordion solos. Songs to the lute and a Ländler Band.
- BRUSSELS (No. 1)** 10.10 p.m. Hot jazz, with commentary.
- COPENHAGEN** 8.30 p.m. Harpsichord solo: Suite No. 11, in C (Scarlatti).
- LANGENBERG** 7 p.m. Concert of light Viennese music, from Düsseldorf. 9.30 p.m. Serenade.
- LEIPZIG** 9.20 p.m. Light music by the Leipzig Symphony Orchestra.
- ROME** 4.30 p.m. Concert from the Royal Philharmonic Academy.
- STRASBOURG** 8.30 p.m. Five-year-old Josette Durivaux (violin) in concert by the Cercle artistique de l'Est, from the Exchange, Nancy.

Op. 40 (George Schumann), relayed from the Singakademie. The Singakademie Choir and the Berlin Philharmonic Orchestra. Conductor: The Composer. 7.25, Concert of Light Music and Dance Music by Hans Bund and his Jazz Orchestra. 8.25, Announcements. 8.30, Der jüngste Tag—Oratorio (Otto Jochum), relayed from the Singakademie. The Berlin Philharmonic Orchestra, conducted by Prof. Georg Schumann, the Berlin Singakademie Choir, Henry Wolff (Soprano), André Knechtuff (Tenor), Fred Drissen (Bari-tone), and Wilhelm Guttman (Bass-Bari-tone). 9.10, Weather, News and Sports Notes, followed by Dance Music from the Europa Pavilion. 11.0 (also on Zszen, 31.38 metres), Schlägler-Play (Hans Johst), on Gramophone Records.

BERNE.—See *Schweizerischer Landessender*.

BEROMUNSTER.—See *Schweizerischer Landessender*.

BODEN.—See *Stockholm*.

BODO.—See *Oslo*.

BORDEAUX-LAFAYETTE
304 metres; 13 kW.—7.30 p.m., News Bulletin, Exchange Quotations and Market Prices. 7.40, Talk: Bordeaux a Century Ago. 7.55, Lottery Results. 8.0, Talk on Hygiene. 8.15, Charades. 8.20, News, Exchange and Weather Forecast. 8.30, Concert by a Symphony Orchestra and Soloists.

BRATISLAVA
275 metres; 11 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by F. Dyk: Rhapsody in A Minor (Dvorak); Selection from The Snaken Bell (Respighi); Petite Suite (Debussy). 4.10, See *Prague*. 4.50, Light Music on Gramophone Records. 5.0, Chamber Music by the Station String Quartet: Quartet in G, Op. 8 (Fibich); Quartet in D, Op. 35 (Novak). 6.0, See *Prague*. 6.10, Music Review. 6.25, See *Prague*. 6.10, See *Brno*. 7.45, See *Prague*. 8.0, See *Brno*. 9.0, See *Prague*. 9.15 (approx.), Close Down.

BREMEN.—See *Hamburg*.

BRESLAU
325 metres; 60 kW.; and **GLEIWITZ**, 253 metres.—12.10 p.m., Sound Film Music on Gramophone Records. 12.45, Time, Weather, News, Exchange and Shipping Notes. 1.5, Gramophone Concert. Tone Poem, Finlandia (Sibelius); Quartet from Rigoletto (Verdi); Scherzo from The Tale of Czar Saltan (Rimsky-Korsakov); Polonaise in A Flat, Op. 53 (Chopin); Song, Ich liebe dich (Beethoven); Waltz of the Hours and Czardas from Coppélia (Delibes); Vergebliches Ständchen (Brahms); Daisy Waltz (Diéres). 1.45, Programme arranged by the Post Office with Gramophone Records. 2.10, Agricultural Prices. 2.40, Book Review.

3.0, Reading: Happy People (Hoffer Reichmann). 3.20, Orchestral Concert, conducted by Paul Hindler. March of the South-West African Cavalry (Reuss); Overture, Ilka (Doppler); Selection from The Cricket on the Hearth (Goldmark); Waltz from Eva (Lehár); Two Little Pieces (Forster-Tavan); Idyll, Dämmerstündchen; Serenade for Strings (Fellam); Two Rosenlieder (Eulenburg); Potpourri, Servus Wien (Dostal). 4.30, Agricultural Prices. 4.35, Two Talks: (a) Newton's Discovery of the Law of Gravitation, (b) The Heavens in March. 5.0, Talk by Dr. Hans Jung. 5.20, English Lesson. 5.40, Topical Talk. 6.0, Dialogue: Theory and Practice—School and Life. 6.30, Weather and Market Prices. 6.35, Concert from Leipzig. 7.30, Die Grottkamer Vesper—a Sequence of Old Silesian Folk Songs, Op. 14 (Friedrich Koschinsky). The Station Choir, the Station Orchestra and Soloists. 8.20, News Bulletin. 8.30, Instrumental Concert with Henri Marteau. Partita for Flute and Viola (Marteau); Divertimento in B Flat for Two Violins, Viola, Cello, Bass and Two Horns (Mozart). 9.30, Time, Weather, News, Sports Notes, Market Prices and Programme Announcements. 9.55, Answers to Correspondents on Technical Questions. 10.5, Talk: The Southern Part of the Black Forest. 10.20 (approx.), Close Down.

BRNO
342 metres; 35 kW.—5.0 p.m., Talk on Gymnastics and Sport. 5.15, See *Prague*. 5.25, German Transmission: News, French Lesson for Beginners and Talk on Chemistry. 6.0 See *Prague*. 6.25, Hungarian Fantasia, Op. 26 for Flute (Hoppler). 6.40, Concert of Old Songs. 7.45, See *Prague*. 8.0, Dramatic Programme. 9.0, See *Prague*. 9.15, Talk in Esperanto on President T. G. Masaryk as a Philosopher, with Readings from his Works. 9.30 (approx.), Close Down.

BRUSSELS (No. 1)
I.N.R., 509 metres; 15 kW.—12 Noon, Gramophone Concert: Selection from Mignon (Thomas); Hungarian March (Berlioz). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans. French Comedy Overture (Kéler-Béla); Petite Suite (Chaminade); Sardanà, Minyoneta (de Sévère); Minuet from the Concerto for Cello (Saint-Saëns); Selection from Le Petit Duc (Leocq); Russian Fantasia (Donizet). 2.0, Educational Programme. 5.0, Dance Music from the St. Sauveur Palais de Danse. 6.0, Talk: The Linen Industry. 6.15, Gramophone Records: Kinderszenen for Pianoforte (Schumann); Rondo (Popper). 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, Titus (Mozart); Adagio (Mendelssohn); Romance (Sibelius). 6.45, A Good Nurse—Radio Sketch (Lauville). 7.0, Concert (cont'd.). Divertissement Rhapsodique (Leemans); Serenade (Samazeuilh); Madrigal

(Gaubert). 7.15, Talk: Political Parties in Europe. 7.30, Theatre and Cinema Review. 8.0, Concert by the Radio Orchestra, conducted by Franz André. Soloists: Mme. Marville and M. de Gerlor (Songs) and M. Steurs (Accordion); Chinese March (Demaele); Vibraphone Solo, Romance vibraphone (Léhr); Le coup du sort (Lénoir); Parlez-moi d'amour (Lénoir); Onestep, The Great Four (Robrecht). 8.15, Variety Programme. 8.45, Concert (cont'd.): Marche baroque (Goyens) Tango, Oh Donna Clara (Petersburgsky); M. de Gerlor in his Repertoire; Walloun Airs (Wangermée); Songs (Goubier): (a) Le mendiant d'amour, (b) Que ne peut-on rêver toujours?; Waltz, La petite de Montparnasse (Wachsmann); Foxtrot, Love me to-night (Brown); M. de Gerlor in his Repertoire; Rumba, Azor (Gabaroché); Foxtrot, Antoinette (Oberfeld); Sur l'arrière de l'opéra (Scott). 10.0, Le Journal Parlé. 10.10, Hot Jazz with Commentary. 10.30, Light Music on Gramophone Records. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)
N.I.R., 338.2 metres; 15 kW. Programme in Finnish.—12 Noon, Concert of Italian Music by the Station Orchestra, conducted by P. Leemans: Overture, Norma (Bellini); Selection from The Barber of Seville (Rossini); Prelude and Allegro for Violin (Pugnani-Kreisler); Paraphrase on Themes from Rigoletto (Verdi-Liszt); Intermezzo from Cavalleria rusticana (Mascagni); Minuet (Bozoni); Selection from Il Carillon magique (Pek-Mangiagalli); March from Aida (Verdi). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert: Overture, La Classe du jeune Henri (Méhul); Selection from L'Africaine (Meyerbeer); Selection from I Pagliacci (Leoncavallo); A Vichella (Posti); Potpourri, Fortissimo (Kálmán); Hymn (Bellando de Castro); O Sole mio (Di Capua); Ballet Music from Les Deux Pigeons (Messager). 2.0, Educational Programme. 5.0, Concert by the Radio Orchestra, conducted by Mr. André. 5.45, Programme for Children. 6.30, Gramophone Records: Marche du Seizième de Ligne (Mees); Slav Dance No. 2 (Dvorák-Kreisler); Sevilla (Albeniz); Russian Gipsy Song; Mazurka Fantasia (de Natte); Polka, Myrto (Petit); Selection from The Fair at Sorotchinsk (Musorgsky); Spanish Dance No. 4 (Sarasate); March; Serenade in B Flat (Schubert-Liszt); Serenade passionnée (Silesu). 7.15, Talk: Lepers in the Belgian Colonies. 7.30, Le Journal Parlé. 8.0, Concert by the Symphony Orchestra, conducted by Arthur Meulemans: Overture, Euryanthe (Weber); Selection from Tannhäuser (Wagner); Overture, Carnival roman (Berlioz); Funeral March (De Boeck); Piece (Van Durme); Canadian Fantasia (Gillon); Gramophone Records (Rich, Strauss): (a) Morgen, (b) Ständchen; Herdersdicht (Van Nieuwenhuys); Aan de Leie (Utenhove); Feestliedken (Verheyden). In an interval at 8.45, Talk. 10.0, Le Journal Parlé. 10.10, Old and Modern Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

BUCHAREST
394 metres; 12 kW.—5.25 p.m., Orchestral Concert. 6.0, Talk on Romania. 6.40 p.m., Popular Music on Gramophone Records. 7.0, Quartet in D Minor (Haydn), by the Theodorosco Quartet. 7.30, Talk. 7.45, Harp Solos by Mme. Pessione. 8.5, Quartet in G (Bionarmici) by the Theodorosco Quartet. 8.35, Concert by Dimico and his Orchestra, from the Enesco Restaurant. 9.0, News Bulletin.

BUDAPEST
550 metres; 18.5 kW.—Programme also relayed on 840 metres from 6.30 to 11.0 p.m.—4.30 p.m., Pianoforte Recital by Maria K. Comensoli. Organ Fantasia and Fugue (Bach); Fantasia (Chopin); Two Preludes (Chopin); Etude (Chopin); Waltz from Die Fl-Dermands (Joh. Strauss-Dohnányi). 5.0, German Lesson. 5.20, Concert by a Cigány Band. 6.0, Programme by Koloman Kittenberger. 6.40, Brahms Concert by the Philharmonic Orchestra, relayed from the Royal Hungarian Opera House. Conductor: Ernst Dohnányi. Soloist: Maria Basildes (Songs). Pianoforte Concerto in B Flat; Songs; Symphony No. 2 in D. 8.50, News. 8.55 (approx.), Concert by the Karl Bura (Cigány) Band, relayed from the Hotel Metropole. 11.0 (approx.), Close Down.

CASSEL.—See *Frankfurt*.

COPENHAGEN
281 metres; 0.75 kW.; and **KALUNDBORG**, 1,153 metres; 7.5 kW.—11.0 a.m., Time Signal and Chimes from the Town Hall. 11.2, Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. 2.20, Talk for Housewives. 2.30, Concert by Carl Rydahl's Instrumental Ensemble; Soloist: Augusta Haugstedt (Pianoforte); March, Uncle Teddy (Furik); Comedy Overture (Kéler-Béla); Waltz, Hoffnungsstrahlen (Lauer); Selection from Lilac Time (Schubert); Minuet in old Style (Burnmaster); Ideslo (Fosti); Spanish Dance (Moszkowsky); Pianoforte Solos: (a) Two Intermezzi, Op. 117 (Brahms); (b) Three Pieces from Bilder aus dem Volksleben (Grieg); Waltz, Carmina (Pecking); Selection from The Merry Widow (Lehar); Berceuse (Henriques); Fantasia, Dream Pictures (Lauville); Melody (Finck); Overture, A Waltz Dream (O. Straus). 4.40, Exchange and Fish Market

MARCH 6th

MONDAY

continued

Prices. 4.50, Talk. 5.20, English Lesson. 5.50, Weather. 6.0, News. 6.15, Time. 6.30, Talk on Mohammed. 7.0, Time Signal from the Town Hall. 7.1, The Hansen Family—Sketch (Jens Locher). 7.15, Serenade in F, Op. 24, for Strings (Kleengel). 7.45, From the Stage-coach to the Aeroplane—Literary and Musical Programme. 8.30, Harpsichord Solo: Suite No. 11 in C (Scarlatti). 8.45, Gramophone Concert of Variety Music. 9.0, News Bulletin. 9.45, Dance Music by the Jens Waryn Band, relayed from the Nibab Restaurant. In an interval at 11.0, Time and Chimes from the Town Hall. 11.30 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Popular Concert. 6.0 to 7.0, Programme in English by the I.B.C.: C. Danvers Walker, R. Chene and B. McNabb Announcing. 6.0, Quartet Concert for Hastings' Listeners: Gavotte from Mignon (Thomas); Molly on the Shore (Grainger); Orientale (Cui); Cherry Ripe. Violin Solo: Hymn to the Sun (Rimsky-Korsakov); Siciliana; Ständchen (Heykens); Andante Cantabile (Tchaikovsky). 6.30, Concert for Eastbourne Listeners: The Whistler and his Dog (Pryor); Song: Up with the Lark; Smiling Irish Eyes; The Warbler's Serenade (Perry); You're Calling me over the Sea; Wandering around; When the Lilac Blooms Again; Sari Waltz (Kálmán). 7.0, Local News and Popular Music on Gramophone Records. 7.30, Radio Gazette. 8.0, The Listeners' Hour and News. 9.0, Variety Programme, relayed from Berck. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music: Them There Eyes; There's Something about an Old-Fashioned Girl; Swingin' in a Hammock; Okay Baby; Beware of Love; O Donna Clara; What a Perfect Night for Love; My Future Just Passed; Moonlight on the Colorado; Sous les toits de Paris; You are the Melody; Harmonica Harry; A Little Love Song; Soldier on the Shelf; The Kiss Waltz. 11.0, Orchestral Concert: Poème (Fibich); Wedgwood Blue (Ketchum); Babes in Toyland (Herbert); Erstes Walzer (Robrecht); Reconciliation (Drigo); Piano Solo: Rangoon Rice Carriers (Hollrooke); O Frühling, wie bist du so schön (Lincke). 11.30, Vocal and Orchestral Concert: Songs of Other Days; Chorus: (a) Songs by the Camp Fireside, (b) Because (d'Hardelot); Quartet: (a) Ould John Bradleum, (b) John Peel; Chorus: Songs of the Army; Quartet: On Ikla Moor baht aht; Song Memories. 12 Midnight, Variety Concert: She jumped on her Pushbike and Pedalled Away; Down the River; Where Rainbows Rest; Is Izzy always wozzy?; Medley of Welsh Airs; I'm always round at Freda's; Koppa-ka-Banna; Irish Jigs. 12.30 a.m. (Tuesday), Concert of Songs: My Fate is in Your Hands; Darling Old Mother of Mine; Dark Red Roses; Orchestra: Selection from Viktoria and her Hussar; Mona; I wish I had died in my Cradle; Give me my Heart. 1.0, Concert by an Accordion Band (Señorita Tango (Alexander); Javanette (de Bozi); Volante (Alexander); The Waltz that made you Mine; Bertina Waltz; 'Leven pounds of Heaven (Malneck); After the Ball (Harris); Lullaby of the Leaves (Young). 1.30, Concert of Songs: Painting the Clouds with Sunshine; Tiptoe through the Tulips; I've finished with Lily; Trio: Mia Bella Rosa; I've never seen a Smile Like Yours; My Rose of Stamboul; First you say Yes; Trio: Will you Forget. 2.0, Dance Music: Two Little Blue Little Eyes; That's When I learned to Love; I Love You. Believe me I love you; Gipsy Dream Rose; My Heart belongs to the Girl who belongs to Somebody Else; The Moon is Low; Beside an open Fireplace; Kitty from Kansas City; Reminiscing; My Cigarette Lady; I still Remember; It must be You; M-A-R-Y I Love You; If I had a Girl like You; Just a little Closer; You're just a Lover. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259 metres; 17 kW.; CASSEL, 245.9 metres; and TRIER, 259.3 metres.—5.25 p.m., Dialogue: The Place of Woman in Man's Life. 5.50, English Lesson. 6.15 Time, Programme Announcements, Weather and Exchange. 6.20, Ten Minutes' Instruction in Traffic Problems. 6.30, The Veils Fall—a Radio Play about Modern Turkey (Karl Klinghardt). 7.10, Brahms Concert by the Municipal Musical Society, relayed from Trier. Conductor: Hans Rosband. Soloist: Emmi Leisner (Contralto). Tragic Overture, Op. 81; Three Songs with Orchestral Accompaniment: (a) Wie bist du meine Königin; (b) Immer leiser wird mein Schlummer; (c) Sandmännchen; Schicksalslied, Op. 54, for Choir and Orchestra; Three Songs with Orchestral Accompaniment: (a) Von ewiger Liebe, (b) Feldeinsamkeit, (c) Ständchen; Symphony No. 1 in C Minor, Op. 68. 8.35, Otto Gmelin discusses his Book, Sommer mit Cordelia. 8.55, Recital of German Ballads. 9.20, Time, Weather, News and Sports Notes. 9.30, Cigány Music from Budapest.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse). 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—6.5 p.m., Talk on the Unemployed. 6.25, Weather Report. 6.30, Kurt Genke reads from his own Works. 7.5 (from Bremen), Concert by the Oldenburg Landes-theater Orchestra. Conductor: Philip Wüst. Soloist: Annemarie Sottmann (Soprano). Concerto grosso in G Minor, No. 17 (Händel). Soprano Solos: Two Airs from Die Bekehrung des heiligen Augustinus (J. A. Hasse); Symphonic Poem, Don Juan, Op. 20 (R. Strauss); Exultate jubilate for Soprano and Orchestra (Mozart); Symphonic Poem, Death and Transfiguration, Op. 24 (R. Strauss). In the interval, First General News. 8.45, Topical Talk. 9.0, News Bulletin. 9.20, Concert from the Stadtshänke. 9.50 (in an interval), Ice Report. 10.5, Concert from the Café Wallhof.

HANOVER.—See Hamburg.

HEILSBURG

275.5 metres, 60 kW.; and DANZIG, 453.2 metres.—12.5 to 1.30 p.m., Gramophone Concert of Popular Music. In the interval at 12.20, News. 2.0, Exchange and Market Prices. 2.30, Readings from the Best Essays on When was I really afraid? 3.0, Concert by the Little Orag Orchestra, conducted by Eugen Wilken; Rakoczy Overture (Keler-Bela); Fantasia on Music by Godard; Rhapsody No. 1 in F Minor (Liszt); Waltz from The Veil of Pierrette (Dohnányi); Overture, A Life for the Caar (Glika); Ballet Suite (Poppy); Waltz, Solitude (Waldteufel); Légende d'amour (Becker); Wasserspiele (Rusch); Selection from Heheit tanzt Walzer (Ascher). 4.0 (in an interval), Talk, Memorable Days of the Week. 4.45, Talk: Gliding. 5.15, Market Prices. 5.20, Ice Report. 5.30 (from Danzig), Talk: Danzig Burghermasters of the Sixteenth Century. 6.0, Elementary English Lesson. 6.25, Weather and News. 6.30, Programme from Frankfurt. 7.10, Weather and news. 7.15, (from Danzig), Chamber Music: Ten Variations on the Song, Ich bin der Schneider Kakadu (Wenzel Müller); for Pianoforte, Violin and Cello, Op. 121a; Quintet in F Minor for Pianoforte, two Violins, Viola and Cello, Op. 34 (Brahms). 8.15 (from Danzig), Walter von Molo reads from his own Works. 8.40, Concert by the Königsberg Baptist Male Voice Choir: O Heimat, wie bist du so wunderschön (Adolf Egler); Folk Song, Im schönsten Wiesengrunde (Eighteenth Century); Wenn ich den Wanderer frage (Fried. Brückner); Ueber allen Gipfeln ist Ruh (Kuhlo); Die Abendglöcken läuten (Franz Aht); Folk Melody, Müde bin ich, geh' zur Ruh; Hymn to Night (Beethoven). 9.10, Weather, News and Sports Notes.

HILVERSUM

(Announced HUIZEN). 296.1 metres; 20 kW. (7kW. up to 4.40 p.m.).—Programme of the Christian Radio Society (N.C.R.V.). 11.10 a.m., Light Music on Gramophone Records. 11.40, Police Announcements. 11.55, Light Music (cont'd.). 12.10 p.m., Organ Recital by Jan Zwart: Toccata in C Minor (Boellmann); Voix céleste (Batiste); Toccata in D (Renaud); Psalms and Religious Songs (arr. Zwart); Scherzo from the Second Symphony (Viérne); Pontifical March from the First Symphony (Widor); Scherzo from Sonata No. 8 (Guilmant); Suite (Zwart); Andante religioso (Dreyschoek); Minuet (Salomé); Invocation (Guilmant); Suite No. 4 (Zwart). 1.40, Programme for Schools. 2.15, Talk. 2.55, Dressmaking Lesson. 3.10, Millinery Lesson. 3.25, Interval. 3.40, Bible Reading, followed by Songs by J. H. Smit (Inzyentkunst (Baritone) and Organ Solos by H. Duyzentkunst. 4.40, Variety Music on Gramophone Records. 5.10, Trio Concert: C. Dekker (Accordion), Th. Verwey (Accordion), and J. Smit (Drum and Xylophone). In the intervals, Gramophone Records. 6.10, The Letter Box. 7.10, Police Announcements. 7.25, Religious Information. 7.40, Concert by a Women's Choir. 8.40, Talk. 9.10, Organ Recital. 9.40, News. 9.50, Concert by the Utrecht String Quartette: Quartet in A Minor, Op. 29 (Schubert); Gramophone Records: Quartet, Op. 96 in F (Dvorák). 10.50, Light Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

(Announced HILVERSUM). 1,875 metres; 8.5 kW.—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Concert by the Little V.A.R.A. Orchestra, conducted by P. Duchant; Servus Wien (Komzak); Paysage d'automne (Wald-

teufel); Die Mühle im Tal (Rhode); Chinese March (Schytte); Serenata (Toselli); Hochzeitszug in Lilliput (Translatour); Variety Music on Gramophone Records: Donauwellen (Ivanovici); Cracovienne (Moszkowski); Russian Dance (Nakehounian); Tarantella (Rossini); Waltz, Over the Waves (Rosas); Stettiner Kreuzpolka (Schlichting); Bahn frei (Ed. Strauss); Two Swabian Dances (Urbach); Light Music on Gramophone Records: Selection from Boccaccio (Suppé); Selection from The Merry Peasant (Fall); March (Bird). 1.40 to 2.10 p.m., Interval. 2.10, Pianoforte Recital by Theja Schwartz: Polonaise in D Minor, Op. 71, No. 1 (Chopin); Trois Ecosaises, Op. 72, No. 3 (Chopin); Andante (Szymanowski); Two Mazurkas (Szymanowski). 2.25, Variety Music on Gramophone Records. 2.30, Pianoforte Recital (cont'd.): Tarantella, Op. 43 (Chopin); Two Mazurkas (Chopin); Berceuse (Tansmann); Oberek (Tansmann). 2.40, Recitations. 3.10, Light Music on Gramophone Records. 4.20, Programme for Children. 4.50, Concert by De Notenkrakers, conducted by D. Wius; Zar-das No. 8 (Mielhies); The Pigeon (Yradier); Two Swabian Dances (Urbach); Adoration (Bianco); International Suite (Tchaikovsky); Gramophone Records: Launisches Glück (Strauss-Bürger); Serenade (Bose). Gramophone Records: Romantic Waltz (Heinecke); Chiquita (Yradier); Poem (Charmon); Peterchens Mondfahrt (Schmalstieg); Congojas (Bianco); Memories of the Ukraine (Ferraris); Gramophone Records: Gipsy Dance (Baldi); Russian Dance (Nakehounian); Servus Wien (Dostal). 6.40, Concert from Budapest. 8.40, Talk on Music. 9.40, News Bulletin. 9.50, Concert by the Flickeflüters, conducted by Hugo de Groot. Soloist: E. Philipse (Songs). 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.15 p.m., Announcements and Gramophone Records. 6.25, Announcements. 7.0, Light Music. 7.15, See Warsaw. 10.0, Dance Music from the Café Astoria.

KAUNAS

1,935 metres; 7 kW.—6.0 p.m., Time, Weather and News. 6.30, Instrumental Concert: Clarinet Solo: Concertino (Reissiger); Violin Solo: Corelli Variations (Tartini); Pianoforte Solo: Scherzo (Simkus). 7.0, Educational Talk. 7.20, String Quartet (Beethoven). 7.50, Talk on Banking. 8.10, Variety Programme. 8.50, Sports Notes. 9.0, Ballet Suite from The Sleeping Beauty (Tchaikovsky). 9.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 40 kW.; and HELSINKI, 368.1 metres.—5.55 p.m., Talk. 6.20, Introductory Talk to the following Transmission. 6.30, Concert of Modern Austrian Music by the Station Orchestra, conducted by Toivo Haapanen, and Soloists. 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert conducted by Eysoldt. Jubel-Ouverture (Bach); Träume (Wagner); Liebesfeier (Weingartner); Fantasia, Godard-Zyklus (Urbach); Romantic Suite (Armandola); Old Dance Melody (Amadei); Annen-Polka (Strauss); Waltz, Träume auf dem Ozean (Gungl); Selection from Heheit tanzt Walzer (Ascher); Felsenfest-Marsch (Lenz-wald). In the interval at 1.0 p.m., News. 1.30, Meat Market Prices. 2.30, Economic Notes and Time. 2.50, Programme for Children. 3.20, Programme for Young People. 4.0, See Munich. 5.20, Talk: The Seasons. 5.45, Weather, Time, Economic Notes and Sports Results. 6.0, Talk for Women. 6.20, Reading of Unpublished Poems. 6.30, Talk on Autonomy. 6.55, News. 7.0, Concert of Light Viennese Music, relayed from Düsseldorf. The Düsseldorf Chamber Orchestra, conducted by Dr. Alfred Fröhlich. Soloists: Lisbet Engels-Neumann (Soprano and Guitar); Josef Schönmmer (Tenor), and Karl Oeschatz (Accordion). Overture, Indigo and the Forty Thieves (Joh. Strauss); Waltz, Nachtfalter (Strauss); Annen-Polka (Strauss); Polka, Hoch Ungarn (Strauss); Tenor Solo: Traunwalzer from Der Feldprediger (Millöcker); Selection from Boccaccio (Suppé); Waltz, Faschingskinder (Zieler); Deutschnmeister-Marsch (Jurek); Wiener Künstler Marsch (Schrammel); Waltz, Weana G'müat (Schrammel); Tenor Solo: Ausser Rand und Band (Kutscher); Soprano Solos: (a) Buama, Madeln, Bleameu und a Wein, (b) Der Herrgott muss a Weana sein (Engel-Berger); Nussdortler Marsch (Lorenz). 9.5, News and Sports Notes. 9.30, Serenade, conducted by Eysoldt.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319

metres.—12.15 p.m., Bizet Music on Gramophone Records: Prelude to Carmen; Agnus Dei; Little Orchestral Suite; Two Arias from The Pearl Fishers; Suite from L'Arlesienne; Exchange Quotations after the Concert. 1.0 p.m., Art and Film Review. 1.30, Advice for the Unemployed. 1.45, Tadijo Kondhella reads from Heinrich Zerkulen's Novel, Rautenkranz und Schwerter. 2.35, Exchange and Market Prices. 3.0, Concert by the Station Orchestra, conducted by Ilmar Weber; Overture, Jean de Paris (Boieldieu); Orchestral Suite, Aus Thüringen (Raff); Bran-Walzer (Kochsat); Selection from Das süsse Mädel (Reinhardt); Intermezzo, Trauerreuther Porzellan (Lincke); March, Heidenthut (Steizig); Ball Scene from Die Abenteuer einer Neujahrsmacht (Hebenberger). 4.30, Weather and Time. 4.50, Exchange Quotations. 5.0, Educational Talk. 5.30, Talk: A Thousand Years of German Literature—The Humanists. 5.50, Talk: The Propagation of German Culture in Other Countries. 6.30, Recital of Loewe Ballads by Wilhelm Kode, Archibald Douglas, Odins Meeresritt, Glockentürmers Tochterlein. 7.0, Concert of Light Music by the Emde Orchestra. 8.30, Reading (Jo van Amers-killler). 9.5, News Bulletin. 9.20 (approx.), Concert of Light Music by the Leipzig Symphony Orchestra, conducted by Alois Melichar: Court Festival and Love Song from Das Herz (Pfitzner); Waltz Scene and Entrance Music from Intermezzo (Richard Strauss); Romantic Suite, Op. 125 (Max Reger). 10.30 (approx.), Close Down.

LINZ.—See Vienna.

LWOW

381 metres; 16 kW.—6.0 p.m., Talk on History. 6.15, Miscellaneous Items. 6.30, See Warsaw. 7.0, Feuilleton. 7.15 to 11.0, See Warsaw. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South East. 8.30, Instrumental and Vocal Concert, conducted by Charles Strony. After the Concert, News Bulletin.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—10.30, Popular Music. 11.0, Popular Music (cont'd.). 11.35, Sports and Bull-fighting Notes. 11.55, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO; Call EAJ7; 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, and Request Gramophone Concert. 8.15, News Bulletin. 8.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—4.50 p.m., Popular Music on Gramophone Records. 5.0, Book Review. 5.15, Talk for Workers. 5.25, See Prague. 5.30, German Transmission: Talk on Wieland and Reading from his Works. 6.0, See Prague. 6.40, See Brno. 7.45, See Prague. 8.0, See Brno. 9.0, See Prague. 9.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—3.0 p.m., Concert and Answers to Correspondents. 5.0, Relay of a Meeting for Women Workers.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres and Nürnberg, 239 metres.—4.0 p.m., Concert, conducted by Erich Kloss. Overture, Lucio Silla (Mozart); Andante from the Octet (Schubert); Musical Scenes from Die Königin (Humperdinck); Wiegendorf and Scherzo (R. Strauss); Selection from Der Teufelsteiner (Kálmán); Serenade (Krk); Gondola Song (Scharwenka); Mazurka brillante (Liszt). 5.15, Talk: Pictures from the History of Transport. 5.35, Talk for Workers. 5.55, Time, Weather and Agricultural Notes. 6.5, Talk by Josef Bayerlechner; My Teaching Experiences. 6.30, See Leipzig. 7.35, Talk: In an Aeroplane over Garmisch-Partenkirchen. 7.55, Symphony Concert, conducted by Hans A. Welter. Soloist: Franz Dorfmeister (Pianoforte). Overture, Manfred (Schumann); Concert No. 1 in C for Pianoforte and Orchestra (Beethoven); Symphony No. 5 in E Minor (Tchaikovsky). 9.20, Time, Weather, News and Sports Notes. 9.45, Concert from Langenberg. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—4.0 p.m., Concert of Chamber Music by the Station Ensemble. 6.0, German Lesson. 5.30, Talk. 6.0, Announcements, Weather, and News. 6.30, Geological Talk. 7.0, Time Signal. 7.1,

Pianoforte and Cello Recital. 8.10, Political Review. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Talk on Popular Songs of Brittany, with Illustrations, by Mme. Borg-hild Moss Johansen (Soprano). 9.45 (approx.). Close Down.

OSTERSUND.—See Stockholm.

PALERMO

537.6 metres; 3 kW.—7.0 p.m., Dopplavoro Notes, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society, and Giornale Radio. 7.20, Popular Music on Gramophone Records. In an interval at 7.30, Time and Announcements. 7.45, Concert of Chamber Music. Soloists: Marisa Bentivegna (Pianoforte), Clara Bentivegna (Violin), and Pollicino (Tenor). Sonata in G for Piano-forte and Violin (Beethoven); Songs: (a) Vezosette e care (Falconieri), (b) Dormi bella (Bassani); Pianoforte Solos (Castel-novo Tedesco): (a) Romanza senza parole, (b) Studio sulle note false, (c) Tango, (d) Fox-trot; Songs: (a) Arisa (Cavalli), (b) Danza fanciulla (Durrante); Violin Solo: Sixth Sonata (Bach); Pianoforte Solos (Chopin): (a) Nocturne, (b) Ballad in A Minor (Chopin). After the Concert, Light Music on Gramophone Records. 9.55, News.

PARIS

EIFFEL TOWER; Call **FILE;** 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Le Journal Parlé. 7.20, Weather Report. 7.30, Roger and Varnay. Operetta Concert. Airs from Les Monsequétaires au Convent, La Femme à Nerissee, Le papa de Francine and Les Vingt-huit jours de Chairette. 8.30, Songs of the Renaissance and Folk Songs. Concert by the G Major Vocal Quartet. Allons say bergère (Costeley); Petite nymphe folâtre (Jannequin); Grisélidis; Bonjour mon cœur (de Lassus); Ce mois de mai (Jannequin); Duet: Tu ne dis pas, jeune Lisette; La Marquise empoisonnée (arr. Philip); Les danseurs noyés (arr. Philip); La Vache égarée; L'Abandonnée. 9.0 (Approx.). Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Hot Jazz on Gramophone Records. 7.30, Sponsored Concert. 8.0, Talk by Dr. Ombredane. 8.5, Talk on Aviation. 8.15, Interval. 8.30, Variety Concert. 9.40, Sponsored Concert. 10.40, News.

PARIS

RADIO PARIS, Call **CFR,** 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records: (a) Overture, Mirella (Gounod); (b) Overture, Die Fledermaus (Joh. Strauss). 8.0, Press Review and Weather. 12 Noon, Concert of Opera and Ballet Music by the Radio Orchestra: Overture, The Magic Flute (Mozart); Selection from Hippolyte et Aricie (Rameau); Minuet from Orpheus (Gluck); Gramophone Records (Meyerbeer): (a) Aria from Robert le Diable, (b) Cavatina from The Prophet, (c) Recitative and Choral from The Huguenots; Ballet Music from Henry VIII (Saint-Saëns); Gramophone Records (Massenet): (a) Aria from Eschlarmonde, (b) Death of Don Quixote from Don Quixote, (c) Duet from Thais; Selection from Nonna Vanna (Février); Selection from Le Miracle (Hue); Melodies from La Fête chez Thérèse (Hahn). In the intervals at 1.0 p.m., Exchange, News, and Weather; and at 1.30, Exchange, 2.0, Exchange, 3.45, Exchange and Market Prices, 6.10, Agricultural Talk. 6.30, Elementary English Lesson. 6.50, Film Review. 7.0, Book Review. 7.20, Concert by the Radio Orchestra: Orchestral Suite (Lazzari); Chant du Soir (Schmitt); Marche du Synode (Saint-Saëns). 7.45, Commercial Prices and News. 7.50, Horticultural Talk. 8.0, La Petite Marie—Operetta (Lecocq). In the intervals at 8.30, News, Weather, and Sports Notes; at 8.40, Review by Paul Reboux; and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by **W8XK** on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Report. 9.45, Piano-forte Interlude. 9.53, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Programme to be announced. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Booth Tarkington's Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Temperature Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Weather Report. 11.30, KDKA Orchestra. 11.45 to 3.30 a.m. (Tuesday), New York Relay. 11.45, To-day's News, by Lowell Thomas. 12.0 midnight, Pepsodent Amos 'n' Andy. 12.15 a.m. (Tuesday), Tastyest Jesters. 12.30, Five Star Theatre—Marx Brothers. 1.0, Cluquet Club Eskimos. 1.30, Time Signal and Don Carney—A Talk for Dog Lovers. 1.45, Phillips Lord in The Country Doctor. 2.0, Sinclair Minstrels. 2.50, Jack Frost Melody Moments. 3.0, The Sizzlers. 3.15, Vic and Sade. 3.30, Bridge School of the Air, by E. Hall Downes. 3.45, Samuel Di Primio (Tenor). and Bradley Kincaid. 4.0, Time Signal.

MARCH 6th

MONDAY

continued

4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Smith Baller and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, Hotel Bismarck Orchestra, from New York. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Bratislava. 4.10, Talk: Reminiscences of Josef Holobek. 4.20, Talk: The Teacher and the Wireless. 4.30, Programme for Children. 4.50, Variety Music on Gramophone Records. 5.5, Agricultural Report. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Talk on Flowers and Insects. 6.0, Chimes. 6.1, News. 6.10, English Conversation. 6.25, Talk: Reminiscences of Life and the Theatre, by F. Bohuslav. 6.40, See Brno. 7.45, Talk: President Masaryk. 8.0, Time signal. 8.1, See Brno. 9.0, Time Signal. 9.1, News Bulletin. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

403 metres; 25 kW.; **LAUSANNE,** 680 metres; and **GENEVA,** 760 metres.—5.30 p.m. (from Lausanne), German Lesson. 6.0 (from Geneva), Weather Forecast, News and Announcements. 6.30 (from Lausanne), Lesson for Farmers. 7.0 (from Lausanne), Song Recital by Mlle. Francine Boichot. 7.20 (from Lausanne), Introductory Talk to the following Concert. 7.30 (from Lausanne), Symphony Concert by the Station Orchestra, conducted by Ernest Ansermet, relayed from the Municipal Theatre; Soloist: Mme. Cecilia Hansen (Violin); Sinfonia brevis, de Bello Gallico (Vincent d'Indy); Concerto in B Minor for Violin and Orchestra (Saint-Saëns); Quand le printemps s'éveille (Dénéreaz); La Mar (Debussy). In the interval at 8.15 (approx.), News and Weather. 9.20 (from Geneva), Talk: The Work of the League of Nations. 9.40 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Concert and Announcements. 9.0, Chimes and News. 9.30, Reading. 10.0, Popular Concert by the Station Quartet with Songs.

RIGA

525 metres; 15 kW.—5.0 p.m., Saxophone Recital: Canzonetta (Tchaikovsky); Humoresque (Dvorák); Serenade (Drigo); Saxophonia (Widoeft). 5.30, English Lesson. 6.0, Weather Forecast. 6.5, Brahms Concert by the Station Orchestra, conducted by Prof. Medins. Tragic Overture; Songs; Serenade in D. 7.0, News Bulletin. 7.20, Concert by the Station Orchestra, conducted by Prof. Medins. In the Steppes of Central Asia (Borodin); Suite, A Thousand and One Nights (Bortkiewicz); Overture, My Home (Dvorák); Prelude, Choral and Fugue (Franck). In an interval at 8.0, Weather and News. 8.30, Dance Music. 9.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call **IRO,** 441 metres; 50 kW. Relayed by **Naples,** 319 metres; and **BR,** 25.4 metres.—7.0 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon to 1.15 p.m., Concert from Turin. In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30, Concert from the Royal Philharmonic Academy. 6.0 (Naples), Shipping and Sports Notes. 6.10, Agricultural and Dopplavoro Notes. 6.20, Giornale Radio. 7.0, Time, Announcements and Light Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 7.45, Concert of Light Music. Talk in the interval and after the Programme. 9.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on 31.48 metres and by **W2XAD** on 19.56 metres.—7.30 p.m., The Revolving Stage, from New York. 8.0, Olsen Instrumental Trio. 8.15, Antoinette Halstead (Contracto). 8.30, W2XAD Sign Off. 12 Midnight, (Tuesday), Stock Reports. 12.30 to 2.30, New York relay. 12.30, Van and Don—Comedy Team. 12.45, The Goldbergs. 1.0, Socynland Sketch. 1.30, Voice of Firestone. 2.0, A. & P. Gipsies. 2.30, Buick Programme, Whiteman's Orchestra, followed by Programme Resumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER; 459 metres; 60 kW.; **BASLE,** 241.1 metres; and **BERNE,** 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Carnival Programme, on Gramophone Records. 12 Noon (from Basle), 'S Buebezigli—Dialect Reading. 12.20 p.m.,

Popular Music on Gramophone Records. 12.35 to 12.45, Weather and Exchange. 2.30 (from Zürich), Concert by the Echo vom Mythen Ländler Orchestra. 3.15, Sound Film Music on Gramophone Records. 4.0, English Military Music on Gramophone Records. 4.30 to 4.35, Weather. 5.30, (from Zürich), Talk: Carnival Customs in Switzerland. 6.0, Time and Weather. 6.15 (from Zürich), English Conversation Lesson. 6.45 (from Zürich), Carnival Programme. 7.30, Carnival Programme, with Yodels and Accordion Solos, Songs to the Lute, and Music by the Radio Orchestra and a Ländler Band. 8.30, Weather and News. 8.40, Carnival Programme. 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call **SASA,** 436 metres; 55 kW. Relayed by **Boden,** 1,229.5 metres; **Göteborg,** 322 metres; **Hörby,** 257 metres; **Motala,** 1,354.4 metres; **Ostersund,** 770 metres; and **Sundsvall,** 542 metres.—12 Noon, Broadcast for Schools. 4.5 p.m., Accordion Music from Göteborg. 4.30, Talk: Acrobatic Skating. 5.0, Popular Music on Gramophone Records. 5.55, Parla-entary Review. 6.30, Concert of Operetta Music. Introduction; Duet from Don Cesar (Delinger); Song from The Cinema Star (Gilbert); Duet from The Dollar Princess (Fall); Waltz from The Girl in the Taxi (Gilbert); Duet from Red Roses (Lehar); Duet from The Count of Luxembourg (Lehar). 7.15, Concert of Swedish Music by the Radio Orchestra. Soloist: Set Svanholm (Songs). Orchestral Suite No. 2, from Pintoparun (Erik Atterberg); Two Songs with Orchestra (Erik Atterberg); Piece for Cello and Orchestra: Regret (Hagerstrand); Two Miniatures (Seymour); Rhapsody, Dala (Kallstenius). 8.15, Talk: The Wavelength Problem. 9.0, Concert of Light Music. Variations on a Carnival in Venice (Ritzau); I skynningen (Sedström); Waltz, Vinetagen (Lindskog-Thiemer); Selection from Sicilian Vespers (Mascagni); Tango (Markush); Potpourri (Tanby); Valse breuvée (de Micheli); Pasodoble (Doelle). 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Gramophone Concert of Light Music. 2.0 to 5.0, Interval. 5.0, Concert of Jazz Music, conducted by M. Roskam. 6.0, Literary Talk in French. 6.15, Review of the Week in German. 6.30, Chamber Music Concert: Trio in G Minor for Piano-forte, Violin, and Cello (Chausson); Suite for Violin and Piano-forte (Erb); Quartet for Strings (Mendelssohn); Concerts royaux for Violin, Cello, and Piano-forte (Couperin). In the interval at 7.30, Time and News. 8.20, Lottery Results. 8.30, Concert by the Cercle artistique de l'est, relayed from the Exchange, Nancy; Soloists: Mmc. Ferdinand Houze (Recitations), Mme. Ginette Gobert (Songs), Marguerite Greff (Piano-forte), Josette Durivaux, age five (Violin), and Marcel Durivaux (Oboe); Piano-forte Solos: (a) Etude in F Minor (Chopin), (b) Prelude (Debussy); Songs: (a) Aria from The Magic Flute (Mozart), (b) Mer grise from Poèmes maritimes (Hue); Violin Solos: (a) Minuet (Bocherini), (b) Rondo (Mozart); Concerto for Oboe (de Brandvold); Recitation, La Neize (Fabié); Piano-forte Solos: (a) Invocation, from Iberia (Albéniz), (b) Toccata from Le tombeau de Couperin (Ravel); Songs: (a) Dans le jardin multicolore (Hue), (b) O! mon champ bien aimé (Rachmaninov); Violin Solo: Concertino (Huber); Recitation, Le pardon (William Chaumet). After the concert, Talk on Art by M. Hunziker. 10.15 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG,** 570 metres.—11.0 a.m., Concert by the Station Orchestra, conducted by Gustav Gürlich. Soloist: The Italian Girl in (Viola). Overture, The Italian Girl in the Algiers (Rossini); Suite, Dances of the Nations (Mannfeld); Three Short Pieces for Violin and Orchestra: (a) Moment musical (Schubert), (b) Waltz (Brahms), (c) Canzonetta (d'Ambrosio); March of the Tin Soldiers from the Ballet Andersen (Nedbal); Waltz, Red Roses (Lehar); Potpourri of Viennese Operetta Music (Robrecht). 12.15 p.m., Time, Weather, News and Programme Announcements. 12.30, Concert from Langenberg. 1.0, Concert arranged by the Post Office. 1.30, Spanish Lesson. 2.0, Elementary English Lesson. 3.30, Reading: Mariechen (Heinrich Stilling). 4.0, See Munich. 5.15, Time, Weather, and Agricultural Notes. 5.25, Talk: South-German Industries—Musical Instruments and Toys. 5.50, See Frankfurt. 6.15, Time and News. 6.30, Radio Report on an Old Alemannic Festival on the Dreifaltigkeitsberg, Spaichingen. 7.10 (from Freiburg), Concert by the Municipal Theatre Orchestra, conducted by Balzer. Soloist: Poldi Miltner (Piano-forte). Academic Festival Overture (Brahms); Concerto in D Minor for Piano-forte and Orchestra (Brahms); Suite from Faust (Busoni); Suite from the Ballet Schlagschaber (Richard Strauss). 9.9, Time, News, Weather and Programme Announcements. 9.20, Chess Lesson. 9.45, Serenade

from Langenberg. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Opera Music: Air from Mirella (Gounod); Quintet from Carmen (Bizet); Song from Sappho (Massenet). 6.30, Symphonic Poem: Till Eulenspiegels Merry Pranks (Richard Strauss). 6.45, Accordion Music. 7.0, Tourist Talk. 7.15, Racing Results and News Bulletin. 7.25, Local News. 7.30, Dance Music. 7.45, Song, from the Sound Films. 8.0, Music by a Viennese Orchestra. 8.30, Light Music. 8.45, Orchestral Music. 9.0, Scheherazade (Rimsky-Korsakov). 9.30, Popular Concert. Part I, Operetta Music: Songs from (a) Kadubec (Yvain), (b) Begonia (Mericier), (c) Rose Marie (Friml). Part II: Popular Melodies. 10.0, Opera Music: Selection from (a) The Valkyries (Wagner), (b) The Huguenots (Meyerbeer), (c) Boris Godonov (Musorgsky). 10.15, North African News. 10.30, Concert for Li-teneers in Morocco: Waltz (Ziehrer); Song from Si j'étais roi (Adam); Selection from Miss Decima (Audran); Ne dis rien (Fairman); Melody (Chiron). 11.0, Popular Concert. 11.30 to 12 Midnight, Programme in English by the I.B.C., Mr. H. K. Hitchcock announcing. 11.30, Songs from the Films: On the Sunny-side of the Street; If I had a Talking Picture of you; Body and Soul; Sunny Side Up; Exactly like you; I'm a Dreamer; Sometime's I'm happy; Spring is here. 11.57, I.B.C. Goodnight Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Tuesday), Dance Music. 12.15, Military Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.30 to 6.0 p.m., See Turin. 6.0, Light Music on Gramophone Records. 6.20, See Turin. 6.35, Orchestral Concert from the Café Dante. 7.0 (approx.) till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by **Milan,** 331.5 metres; **Genoa,** 312.8 metres; and **Florence,** 500.8 metres.—4.30 p.m., See Roma. 6.0, Variety Music on Gramophone Records. 6.20, Giornale Radio. 6.30, Time, Announcements, Tourist Report, and Light Music on Gramophone Records. 7.0, Giornale Radio. Weather, and Gramophone Records (contd.). 7.30, Choral Concert. 8.20, A One-Act Comedy. 10.0, Orchestral Concert conducted by Ugo Tansini. Overture, L'épave villageoise (Grétry); Serenata (Gentili); Sarabande (Bettinelli); Concertino from the Idillio (Wolf-Ferrari); Hungarian Dances (Brahms); Overture, The Daughter of the Regiment (Donizetti). 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in Italian. 7.0 to 7.16 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by **Graz,** 352.1 metres; **Innsbruck,** 243 metres; **Klagenfurt,** 453.2 metres; **Linz,** 295.9 metres; and **Salzburg,** 218.5 metres.—8.25 p.m., Programme for Young People. 3.50, Talk: First Aid at the Winter Sports at Wienerwald. 4.5, Concert by the Edi Seidl Orchestra. Celtic Overture (Foulds); Waltz, Perlen der Liebe (Jos. Strauss); Slav Rhapsody No. 1 (Friedmann); Scenes from Manon (Massenet); Airs (Blon); (a) Traunwehen, (b) In den Dünen, (c) Dolchzug und Schlangenbeschwörerin; Rühme Pictures (Bizet-Göhler); Potpourri, A—B—C (Komzak); March, Mann an Bord (Wacek). 5.25, Dramatic Criticism. 5.45, Books of Reference in Connection with the Week's Talks. 5.50, Talk: The Spanish Painters Goya and Zuloaga. 6.15, Time, Weather and Programme Announcements. 6.25, La Cenerentola—Opera (Rossini), relayed from the State Opera House. 8.55, News, Weather and Announcements. 9.10, Dance Music by the Astoria Band, relayed from the Westminster Café.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Popular Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Traffic Report. 2.35, Answers to Correspondence. 2.50, Light Music on Gramophone Records. 3.25, Elementary French Lesson. 3.40, Talk on Economics. 4.0, Concert by the Calvet Quartet: Quartet No. 4 (J. C. F. Bach); Quartet (Ravel). In the Interval, Announcements. 4.55, Programme Announcements. 5.0, Talk on Polish Literature: Alexander Fredro. 5.20, News. 5.25, Concert of Light Music from the Café Gastronomica. 6.0, Miscellaneous Items. 6.20, Agricultural Correspondence. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Technical Correspondence. 7.15, Aida—Opera (Verdi) on Gramophone Records by the (Cast of the Scala, Milan. 9.55, Weather Report and Pops Notes. 10.0, Dance Music from the Adria Dance Hall.

ZÜRICH.—See Schweizerischer Landessender.

ATHLONE

413 metres 60 kW.; and CORK, 224.8 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.15, News and British Market Report. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Reading of Poems. 8.0, The Station Orchestra. 8.20, Song Recital by Mamie Galloway (Contralto). 8.35, Harp Solos by Annie Fagan. 8.50, Violin Solos by Richard Kiernan. 9.10, The Station Orchestra. 9.30, Gaelic Song Recital. 10.0, The Station Orchestra. 10.30, Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations and Talk on Art. 8.0, Popular Music on Gramophone Records and News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, and Messages to Seamen. 9.10, An Opera, relayed from the Gran Teatro del Liceo. 11.0 (in an interval), News Bulletin.

BARI

270 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Talk, and Populavoto Announcements. 7.20, Giornale Radio and Press Review. 7.30, Time and Announcements. 7.35 (approx.), Choral Concert, conducted by Biagio Grimaldi; Song for Four Equal Voices; Hodie Christus natus est (Palestrina); Song for Three Equal Voices; Song (Mendelssohn); Song for Four Equal Voices; Cante romagnolo (Baililla Pratella); Song for Three Male Voices; La tarantella (Bolzoni). 8.30, Concert by the Station Quintet. In the interval: Talk. 7.30, Dance Music, relayed from the Grand Hotel Moderno. 9.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.8 kW.—3.0 p.m., Orchestral Concert of Slav Music: March (Petrovic); Serbian Dance No. 1 (Krstic); Overture, Litusa (Smetana); The Nutcracker Suite (Tchaikovsky). 4.0, Popular Music on Gramophone Records. 5.55, Time and Programme Announcements. 6.0, Talk. 6.40, Variety Music on Gramophone Records. 7.0, Choral Concert by the Czechoslovak Society. 7.30, Briand Festival Programme, relayed from Paris. 9.0, News.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert of Music from Parsifal (Wagner) from Berlin (Witzleben). 2.0, Talk for Young People. 2.30, Weather and Exchange. 2.45, Ria Weil reads from her own works. 3.0, Talks for Women. 3.30, See Leipzig. 4.10, Night and Morning—a Soliloquy of the Woods. 4.30, Viola Recital by Herbert Zydatis; Sonata in E flat (von Dittersdorf); Four Waltzes (Schubert); Minuet (Martini); Gavotte (Gustav Holländer). 5.0, Talk: The State and Industry. 5.30, Illustrated Talk: The Same Verse to different Musical Settings—The German Lied.—1. 5.55, Weather and Announcements. 6.0, Talk: Thoughts on a German National Theatre. 6.30, A Poem. 6.35, Political Press Review. 7.0, Concert of Light Music from the Eden Pavilion. 7.30, Concert by a Marine Band, relayed from the Clou Konzerthaus. Conductor: Alexander Flessburg. Overture (Weber); Intermezzo, Falter and Rosen (Koekerl); Historic Marches from many Lands (Boettge); Hunting Fantasia (Prager); March, Admiral von Holtzendorf (Flessburg); March, Admiral von Holtzendorf (Flessburg); Potpourri, Sonne über Deutschland (Lindemann). 8.30, A Radio Sequence from the Works of the Poet Ernst Stadler, who fell in 1914. 9.10, Weather, News and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Concert from Hamburg. 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—6.0 p.m., Topical Talk. 6.15, Talk: The Origin of Life on the Earth. 6.40, Announcement. 6.45, Concert by a Marine Band, relayed from the Clou Konzerthaus: March, Deutschlands Helden (Blankenburg); Fantasia on Four German Songs (Schmidt); Präsentiermarsch der Marine; March, Tausere Marine (Thiele); Alle Tage ist kein Sonntag (Lindsay - Theimer); Parade Marches: (a) Helenenmarsch (Lühbert), (b) Petersburgermarsch, (c) York March (Beethoven); Revue March (Reckling); Badenweiler-Marsch (Fürst); March, In Treue fest (Teike). 7.30, Bunter Abend, relayed from the Municipal Theatre, Halberstadt. 8.15 (in an interval), A Discussion. 9.15, Weather, News, and Sports Notes, followed by Dance Music and Light Music from the Café Berlin. 11.0 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

TUESDAY

MARCH THE SEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL "Biology in Everyday Life," Dr. John Baker. MacDowell programme, vocal and instrumental.

LONDON REGIONAL "Moonlight 'n Everything," a Pre-War Pierrot Potpourri. Military Band concert.

MIDLAND REGIONAL Military Band and orchestral programmes.

NORTH REGIONAL Concert from Houldsworth Hall, Manchester.

WEST REGIONAL Police Band concert. "Cue for Number," feature programme.

SCOTTISH REGIONAL Orchestral concert.

BELFAST Orchestral and choral concert.

ABROAD

HEILSBERG 7.10 p.m. "A Little of All Sorts," a variety programme.

HILVERSUM (announced Huizen) 9.15 p.m. "Cello and pianoforte recital.

LANGENBERG 7 p.m. Recital on two pianofortes, by Egbert Grape and Dr. Karl Lenzen.

LYONS-la-DOUA 8.30 p.m. Programme in memory of Aristide Briand, relayed from Paris.

PRAGUE 6.30 p.m. "The Jacobin," three-act opera, by Dvorak, relayed from the National Theatre in honour of President Masaryk's birthday.

RADIO PARIS 7.45 p.m. Review of the British Press.

STOCKHOLM 9 p.m. String orchestral concert.

TURIN and TRIESTE 7.30 p.m. "Eva," operetta by Lehár.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News Bulletin and Exchange Quotations. 7.40, Talk for Women. 7.55, Lottery Results. 8.0, Talk on Pines. 8.15, News Bulletin and Weather Forecast. 8.30, Briand Memorial Programme, relayed from Lyons.

BRATISLAVA

279 metres; 14 kW.—5.55 p.m., Dramatic Programme in Honour of President Masaryk's Birthday. 6.20, Light Music on Gramophone Records. 6.50, Introductory Talk on the Following Transmission. 7.0, Concert in Honour of President Masaryk's Birthday, relayed from the Slovak National Theatre. The Bratislava Symphony Orchestra. Conductor: Karel Nedbal. Soloist: Eva Hadrabova-Neckalová (Soprano). Symphony in G, Op. 95 (Nesvera); Song of Peace (Kálik); Symphony (Mozes). 9.0, See Prague. 9.15, Popular Music on Gramophone Records. 10.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 60 kW.; and GLEIWITZ, 253 metres.—12.10 p.m., Music of the Baroque and Rococo Periods on Gramophone Records. The Harmonious Blacksmith (Händel); Air (Matheson); Tenor Solo from Anadis (Lully); Gigue (Bull); Hornpipe (Purcell); Largo from the Second Concerto (Frederick the Great); Sonata in A (Searlatti); Aria from Figaro (Mozart); Turkish March (Mozart). 12.45, Time, Weather, News and Exchange. 1.5, Gramophone Concert. Foxtrot and Rumba from Die glückliche Reise (Künneke); Foxtrot from A Honeycomb for Three (Nelson); Vocal Tango from Ball im Savoy (Abraham); Pasodoble from Der grosse Bluff (Grothe); Hof-Serenade (Roland); Marie, Marie (Roland); Das Glockenspiel von Rouen (Cons); Folk Song, Schwarzbrenn ist die Haschuss; Foxtrot (Plessow). 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Programme for Children. 3.10, Wolf and Mabler Song Recital by Gerda Werthien (Contralto). Six Songs (Wolf); (a) Anakreons Grab, (b) Blumenruss, (c) Der Schäfer, (d) Verlassenes Magdelein, (e) Lebe wohl, (f) Er ist's; Four Songs (Mahler); (a) Ich bin der Welt abhanden gekommen, (b) Wer hat dies Liedlein erdacht, (c) Rheinleingedenken, (d) Hans und Grete. 3.40, Concert from Leipzig. 4.30, Agricultural Prices. 4.35, Review of Books on German Literature. 4.50, Talk: Alice Freilin von Krane—the Life Work of an Octogenarian. 5.20, Programme to be announced. 5.50, Talk: How to eliminate Radio interference. 6.0, Dialogue: Personal Talents as a Means of Livelihood. 6.30, Weather and Market Prices. 6.35, Concert from Hamburg. 7.30, Political Review. 8.0, See Frankfurt. 9.0, Time, Weather, News, Sports Notes and Programme Announcements. 9.20, Theatre Talk. 9.35, Talk:

News from The Zoo. 9.50, Concert from Hamburg. 11.0 (approx.), Close Down.

BRNO

342 metres; 35 kW.—5.0 p.m., Music Review. 5.15, Talk: President Masaryk and the Worker. 5.25, German Transmission: News Reading and Talk. 5.55, See Prague. 9.15, Light Music on Gramophone Records. 10.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Italian Music on Gramophone Records: Tarantella, I fidanzati (Gabavermi); Waltz, La Strega (Arditi); Neapolitan Tarantella (Rossini); Maria, Mari (di Capua); Mama mia (di Capua); Napoli (Charpentier); Two Symphonic Dances (Coppola): (a) Habanera, (b) Blues; Tarantella and Dances from La Giara (Casella). 12.40 p.m., Songs by M. Jaquier (Tenor); Amons-nous (Saint-Saëns); Serenade from L'Amant Jaloux (Grétry); Paysage (Ihaha). 1.0, Le Journal Parlé. 1.10, Saint-Saëns Concert by the Small Station Orchestra, conducted by P. Leemans: Marche militaire; Suite for Small Orchestra; Cavatina; Allegro appassionato; Prelude to Le Déluge; La Cloche; Prélude and Cortège from Déjanire; March from Etienne Marcel. 5.0, Concert of Viennese Music by the Radio Orchestra, conducted by Franz André; Wiener Operetten Revue (Robrecht); Selection from Der Orlov (Granichestaefiten); Grand Potpourri (Eysler); Potpourri Fortissimo (Kálmán); Selection from Die Zigeunerprimas (Kálmán); Selection from Paganini (Lehar). 5.30, Programme for Children. 6.5, Literary Review. 6.15, Pini di Roma (Re-pighi) on Gramophone Records. 6.30, Sacred Music. 7.15, Film Review. 7.30, Talk for Women. 8.0, Concert by the Radio Orchestra, conducted by Franz André; Soloist: Santi Valenti (Violin); Summer Days Suite (E. Coates); Rhapsody in Blue (Gershwin); Burlesque (Poot); Violin Solos: (a) Melody (Joachim), (b) Tzigane (Ravel). 8.45, Talk: The Women and the Crisis. 9.0, Concert (contd.): Concerto (Nardini); Symphonie fantastique (Berlioz). 9.45, Gramophone Records: Chamber Music (Bach); Chamber Music (Händel); La Poule (Rameau); Sarabande and Gavotte from the Third Suite (Bach). 10.0, Le Journal Parlé. 10.10, Request Gramophone Records: The Hunters' Chorus from Der Freischütz (Weber); Index from Mors et Vita (Gounod); The Death of Aase (Grieg); Dances from La Vida breve (Fallá); Norwegian Rhapsody (Lalo); Air from Placée (Rameau); Sarabande (Ferrand); Prelude to Christopher Columbus (Carillo). 10.55, Christus Vincit (Liszt).

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW.—12 Noon, Programme in Flemish.—12.0 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans. Overture, The Bohemian Girl

(Balle); Ballet Music from Les deux pigeons (Messager); A Musical Snuff Box (Nivolaiewsky); Pianoforte Solos: (a) (Sevilla (Albéniz), (b) Asturias (Albéniz); Violin Solo: Habanera (Sarasate); Waltz: Then you'll remember Vienna (Romberg). Selection from Ein einzige Nacht (Stolz). 1.0 p.m., Journal Parlé. 1.10, Gramophone Concert of Opera Music. Overture and Bell Song from Lakmé (Delibes); Ari from Manon (Massenet); Meditation from Thaïs (Massenet); Arias (Verdi) from: (a) La Traviata, (b) Rigoletto; Selection from Rigoletto (Verdi); Aria, Adieu, notre petit table, from Manon (Massenet); Aria from Mirella (Gounod); Overture, Mirella (Gounod). 5.0, Concert by the Symphony Orchestra, conducted by Jean Kumpke. Suite pour mes petits amis (Pierné); Danse enfantine (Honegger); L'enfant et les sortilèges (Ravel); Scène enfantine (Brussekens); L'enfant prodigue (Debussy); Suite Children's Corner (Debussy). 6.45, Programme for Children. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans. Soloists: Wigy and Michot (Violines) and Douliez (Pianoforte). Carnival Overture (Dvorak); Elegiac Melodie (Grieg); Humoresque for Two Violins and Pianoforte (Douliez); Pianoforte Solo. Le livre des petits (Lemaire); Slav Rhapsody No. 2 (Friedemann). 7.15, Monthly Talk by Mil Frantzen. 7.30, Journal Parlé. 8.0, Variety Concert. Louis Belloy (Recitations), Van Looy (Saxophone), Albert Remes (Humorous Items) and the Havana Jazz Band. March, Alte Kameraden (Teike); Selection from Les Saltimbanques (Ganne); Selection from White Horse Inn (Benatzky); Recitation, The Unknown Soldier (Bogschis); Saxophone Solo: Waltz, Vanity (Wiedoeft); Tango, Was ist denn dabei (Simek); Selection from The Merry Widow (Lehar); Potpourri, Einfachfabelfhaft (Dostal); Recitations: Saxophone Solo, Liebefreund (Kreiser); Waltz, Meine Liebe hält alle Jahre (Salzer). In an interval, Talk: The Village Carpenter. 10.0, Journal Parlé. 10.10, Concert (contd.). Foxtrot (Bee); Foxtrot, One Day (Packay); Humorous Items; Foxtrot, Black Heaven (Bee); Potpourri, 1800-1900; Humorous Items; National Melody. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—5.25 p.m., Concert by the Motai Orchestra. 6.0, Talk on Romanian Industries. 6.40, Variety Music on Gramophone Records. 7.0, Song Recital by Ellen Sarsen: Agnus Dei (Mozart); Aria and Elegy from Wertler (Massenet); Down in the Forest (Landon Ronald); Es muss ein Wunderbares sein (Liszt); Song (Grieg); Snow (Lie); Maria Wiedenried (Reger). 7.20, Symphony Concert, conducted by T. Rogalski. Soloists: E. Stein (Pianoforte) and T. Lupu (Cello). Overture (Sibiano); Concerto in 2 minor for Pianoforte and Orchestra (Mozart); Symphonic Variations for Cello and Orchestra (Bohmann). 8.0, Talk. 8.15, Concert (contd.): Second Symphony in 2 (Schumann). 8.45, News.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on 840 metres from 6.25 to 11.0 p.m. 4.0 p.m., Song Recital by Josef Sateranyi and Astri Kalsch: Duet from Hamlet (Thomas); Song from The Barber of Seville (Rossini); Nedda's Song from I Pagliacci (Leoncavallo); Farewell from Dorottya (Kacsoli); Song from Bánk bán (Erkel); Song from Der Freischütz (Weber); Duet from Rigoletto (Verdi). 4.45, Reading. 5.15, Light Music on Gramophone Records. 6.0, Programme by Albin Lingauer. 6.30, La Traviata—Opera (Verdi), relayed from the Royal Hungarian Opera House. In the intervals, News. After the Programme, Cigány Music from the Hotel Britannia. 11.0 (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORGH, 1,153 metres; 7.5 kW.—11.0 a.m., Time and Chimes from the Town Hall. 11.2, Concert by the Harald Andersen String Ensemble, relayed from the Bellevue Strandhotel. 1.0 to 2.0 p.m., Interval. 2.0, Concert by the Radio Orchestra, conducted by Lamy Gröndahl: Turkish March from The Ruins of Athens (Beethoven); Overture, Leonora Christina (Salomon); Waltz, Manola (Walltenfel); Kermesse and Chaconne (Durand); Fantasia on Polish Songs and Dances (arr. Leopold); Athalia Polka (Lauzky); Prelude to Act. 11 of Saul and David (Carl Nielsen); Two Danish Folk Songs arranged for Strigs (Gröndahl); Waltz, Moss Rose (Bosc); Ballet Music from La Juite (Halvay); Festival Polonaise (Poulenc). 4.0, Programme for Children. 4.40, Exchange and Fish Market Prices. 4.50, Gardening Talk. 5.20, German Lesson. 5.30, Weather. 6.0, News. 6.15, Time. 6.30, Talk. 7.0, Time Signal from the Town Hall. 7.1, Orchestral Concert of French Opera Music, conducted by Emil Reesen: Overture, Mignon (Thomas); Ballet Music from Ari Baba (Cherubini); Overture, La dame blanche (Boieldieu); Entr'acte and Bachelante from Philémon et Baucis (Gounod); Ballet Music from The Cid (Massenet); March from The Queen of Sheba (Gounod). 7.45, The Quiet Room—Radio Play in Three Acts (Sven Lange). 9.20, Gramophone Records of Joseph Hislop: Aria, Addio alla madre, from Cavalleria Rusticana (Mascagni); Aria, Che gelida manina, from La

MARCH 7th TUESDAY continued

Bohème (Puccini); Mary (Richardson); Ewig dig Lil Hjertet trykke. 9.30, News. 9.45, Violin Recital by Christian Esbensen; Londonderry Air (Kreisler); Spanish Dance (Granados-Kreisler); Andalusian Romance (de Sarasate); Malaguena (Albéniz). 10.5, Dance Music by the Tommy Boston Band, relayed from the Lodger Restaurant. In an interval at 11.0, Time Signal and Chimes from the Town Hall. 11.30 (approx.), Close Down.

CORK.—See Athlone. DANZIG.—See Heilsberg. DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—12.0 Noon, Military Music. 12.30 p.m., News Bulletin. 12.45, Sound Film Music. 6.0 to 7.0, Programme in English by the I.B.C., C. Danvers Walker, R. Chene and B. McNab announcing. 6.0, Military Band Concert for Worthing Listeners: March, Step Lightly; In a Chinese Temple Garden (Kettelbey); Wiesbaden March; Overture, La Dame blanche (Boieldieu); Sanctuary of the Heart (Kettelbey); Bosnia; Medley of Leslie Stuart's Songs; Bandmaster March. 6.30, Concert for Boznoy Listeners. Trio: A Night of Happiness; Songs: (a) A Cuban Love Song, (b) In Old Madrid, (c) Falling in love again; Trio: The Wedding in the Ark; Songs: (a) Just one of my Dreams, (b) Take away the Moon, (c) Home. 7.0, Local News and Popular Music on Gramophone Records. 7.30, Radio Gazette. 8.0, The Listeners' Quarter of an Hour and News. 8.15, Talk. 8.30, Concert, relayed from Le Havre. 10.0 p.m. (till Close Down, Programme in English by the I.B.C. 10.0, Dance Music: I wanna sing about you; Little Girl; Ragamuffin Romeo; Three little words; The longer that you linger in Virginia; Go home and tell your Mother; Who am I? Wabash Moon; In a little Rendez-vous; The Match Parade; Two little blue little eyes; Say a little prayer for me; Dancing with the Devil; When the Moon comes over the Mountain; Down Sunnyside Lane; Funny, dear, what Love can do. 11.0, Orchestral Selections: Waltzes from Vienna (arr. Griffiths); Sunny (Kern); La belle Héline (Offenbach); Frederica (Lehár); The Merry Widow (Lehár); You are my heart's delight, from The Land of Smiles (Lehár). 11.30, Concert of Italian Songs: Overture, Figaro (Mozart); Ah si ben mio; O quella Pigi; La Donna e mobile, from Rigoletto (Verdi); Selection from Il Seraglio (Mozart); Una furtiva lagrima, from L'Elisir d'Amore (Donizetti); Addio, Mignon, from Mignon (Thomas); M'appari tutt' amor. 12 Midnight, Variety Concert: You rascal you; Sweet Caroline; Mein keddle Boy; The Golden Bird; Baby won't you please come home; Murphy's Hotel; Laughing Gigolo; Will anybody have a drink? 12.30 a.m. (Wednesday), Scottish Songs; Annie Laurie (Traditional); Violin Solo: The Loxie o' Buchan; Loch Lomond (Traditional); March of the Cameron Men (Moffatt); Violin Solo: John Anderson; Duncan Gray (Traditional); Ye banks and braes (Traditional); The Piper o' Dundee. 1.0, Accordion Solos: Petit Jean (Cuvellier); March, Return of Johnnie; Triumph of Eros (Cuvellier); Waltz, Mirella (Charlier); La Java de Doudonne; Ragtime Medley; The Skaters' Waltz (Waldfenfel). 1.30, Concert of Songs: Meet me in my dreams to-night; Charming; Dream Lover; Orchestra; Ragpicker's Party; Shepherd's Serenade; My Love Parade; Excuse me, Lady. 2.0, Dance Music: After your Kiss; Any time's the time to fall in love; Happy Feet; On the Sunny-side of the Street; The Gipsy Melody; Once in a while; The Harboring of the heart; If I had a girl like you; Sitting on a Rainbow; Song of Swanee; Sweeping the clouds away; A Bench in the Park; Exactly like you; Meet me in my dreams to-night; One Mad Kiss; Hallehujah. 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

259 metres; 17 kW; CASSEL, 245.9 metres; and TRIER, 259.3 metres.—5.25 p.m., Nineteenth Century Home Life—Sketches by Dr. Helene Turman. 5.50, Dialogue: Hessian Soldiers in France. 6.15, Time, Programme Announcements, Weather, and Exchange. 6.30 to 8.0, See Stuttgart. 8.0, Concert of Operetta Music by the Station Orchestra, conducted by Reinhold Merten. 9.0, Time, News, Weather and Sports Notes. 9.30, See Stuttgart. 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayd by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hannover, 566 metres; and Kiel, 232.2 metres.—6.0 p.m., Agricultural Talk. 6.25, Weather Report. 6.30, Concert of Folk Music by the Station Orchestra, conducted

by Adolf Secker: Husarenritt (Spindler); Potpourri, Musikalische Täuschungen (Schreiner); Still wie die Nacht (Bohno); Der kreuzförmige (Kupferschmid (Peter); Potpourri of Rheinländers (Kernbach); The Mill in the Black Forest (Eilenberg); Berliner Kreuzpolka (Daase); Alsatian Pseudon Dances (Morkling); March, Washington Post (Souza). 7.30, De Dörpdokter—Play in Three Acts (Jan Fabricius) (Translated into North German Dialect by Hermann Quistorf). 9.0, News Bulletin. 9.20, Topical Talk. 9.30 (from Flensburg), Concert of German Music by the Municipal Orchestra, conducted by Kurt Barth; Overture, Beherrschter der Geister (Weber); Third Movement from the Ninth Symphony (Beethoven); Choral Variations on Ein feste Burg (von Waltershausen); Four Movements from the Serenade Mit dem Posthorn (Mozart); Fantasia in F Minor (Schubert-Mottl); Two Pieces from Kinderzonen (Schumann); Polonaise (Svendson). 10.20 (in an interval), Ice Report.

HANOVER.—See Hamburg. HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—12.5 p.m., Gramophone Concert of Popular Music. In the interval at 12.20, News. 1.30, Sponsored Programme with Gramophone Records. 2.0, Exchange and Market Prices. 2.30, Musical Improvisation for Children. 3.0, Concert by the Little Orag Orchestra, conducted by Eugen Wilcken. Overture, Giovinetta allegria (Cortopassi); Waltz, Illusions (Waldfenfel); Ballet des Parfums (Poppy); Potpourri of Offenbach Music (Urbach); suite campestre (Amadei); Waltz, O schöner Mai (Joh. Strauss); Reminiscences of Capri (Bececi); Tango, Marion (Panizzi); Selection from The Arabian Nights (Joh. Strauss). 4.45, Review of Books. 5.15, Market Prices. 5.20, Ice Report. 5.30, Talk on Handicraft. 6.0, Song Recital by Hans Eggert. Three Songs (Erwin Lendvai): (a) Abbitte, (b) Einsamkeit, (c) Das Bleibende im Wandel; Three Songs: (a) Dinnelied (Paul Graener). (b) Die Düne (Gerd Ochs), (c) Taufe auf der Nehrung (Gerd Ochs); Two Lithuanian Songs (Armin Knab); (a) Die Quelle, (b) Der Abschied. 6.30, Shortband Dictation. 7.0, Weather and News. 7.10, A Little of All Sorts—A Variety Programme. 9.10, Weather, News and Sports Notes.

HILVERSUM

Announced HILVERSUM, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.55 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55 a.m., Concert by the K.R.O. Orchestra, conducted by Johan Gerrits. 1.40 p.m., Talk. 2.15, Programme for Women. 3.10, Dress-making Lesson. 4.10, Concert by the K.R.O. Sextet; Hungarian March (Naef); Nocturne (Chopin); Frühlingstaun und Schumanns Grab (Urbach); March of the Dwarfs (Grieg); Potpourri (Aston-Kettelbey); Selection from Werther (Massenet); Minuet (Beethoven). 5.10, Violin and Piano-forte Recital by L. van Wijngaarden and J. Ligtemijn: Sonata Op. 11, No. 1 (Schubert); Sonata Op. 25 (Sigtenshorst-Meyer); Sonata (Andriessen). 6.10, Esperanto Lesson. 6.30, Concert by the K.R.O. Sextet, conducted by P. Lustenhouwer; Potpourri, Hall America (Lubbe); Waltz, Etincelles (Waldfenfel); La bella Tangolita (Abraham). 6.50, Variety Music on Gramophone Records. 7.25, Talk. 7.40, Sacred Concert, conducted by Professor E. Féron; Miserere, Meditation on the Passion; Chant triste (Bonnet); Panis angelicus (Haller); Ave Regina Coelorum; Selection from Stabat Mater (Franzen); Tantum ergo (Zeyen); Chant séraphique (Guilmant). 9.10, News Bulletin. 9.15, Cello and Piano-forte Recital by C. van Leeuwen Boomkamp and E. van Binnum; Sonata in C (Beethoven); Arpeggione Sonata (Schubert); Sonata in E Minor, Op. 38 (Brahms). 10.10, Popular Music on Gramophone Records. 10.40, News Bulletin. 10.45, Light Music on Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm. HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.10 a.m., Organ and Song Recital by P. van Edmond and M. v.d. Kraan. 12.10 p.m., Concert by the Small Station Orchestra, conducted by Nico Treppe; Musical Comedy Overture (Lincke); Selection from La Traviata (Verdi); Simple ayeu (Thomé); Love Song (Paderewsky); March, El Capitan (Souza). 1.55 to 2.10, Interval. 2.10, Concert (contd.); Overture, Alessandro Stradella (Flotow); Puppenspiele (Lederer); Selection from The Gipsy Baron (Joh. Strauss); March (Lincke). 2.40, Talk. 3.40, Light Music on Gramophone Records. 4.10, Concert by a Children's Choir, conducted by Jacob Hamel. 4.40, Programme for Children. 5.10, Talk. 5.40, Concert by the Station Orchestra, conducted by Nico Treppe; Overture, Les Dragons de Villars (Maillart). In the Harbour of Port Said (Armandola); Waltz, Gold and Silver (Lehár); Russian Song (Smith); Melody (Myddleton). 6.10, Talk. 6.40, Concert (contd.); Rhapsody Rag (Lensenberg); A Medi-

terranean Cruise (Jalowicz); Macht Platz der Jugend (Leopold); Im Rosengarten Mendelssohns (Urbach); Waltz, Wiener Kinder (Jos. Strauss); March, Wien bleibt Wien (Schrammel). 7.10, English Lesson. 7.40, Time Signal. 7.41, Light Music on Gramophone Records. In the interval, News. 8.40, Scenes from A Doctor's Dilemma—Play (Bernard Shaw). 9.40, Concert of Light Music by Kovacs Lajos and his Orchestra; Soloist, Bob Scholte (Songs). 10.40, News. 10.50, Concert (contd.). 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna. KALUNDBORG.—See Copenhagen. KIEL.—See Hamburg. KLAGENFURT.—See Vienna. KOSICE.—See Prague.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert, conducted by Wolf: March, Deutschland Heil (Albus); Waltz, O Frühling wie bist du schön (Lincke); Overture, Der Opernball (Hübner); Symphonie Andante, Lovely Night (Clemus); Barbarina (Clemus); Selection from The Sunken Bell (Respighi); Waltz—Intermezzo, Poranek (Lindsay); Spanish Dance (Schmelgel); Procession of the Baccantes (de Tave); Selection from The Merry Peasant (Fall); Gallop, im B-Zug (Blon). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Economic Notes and Time. 2.50, Programme for Children. 3.20, Notes on the Broadcasts for Schools. 3.30, Talk: Frontier Problems from a Geographical Point of View. 4.0, Concert, conducted by Wolf: Festival Overture in F (Kalliwoda); Fantasia, Der ewige Verdi (Morena); Suite from Friedemann Bach (Geisler); Waltz, Morgenblätter (Strauss); Selection from Pole Poppenspäler (Stierlin); Selection from Eva (Lehár). 5.15, Italian Lesson. 5.45, Weather, Time, Economic Notes and Sports Results. 6.0, Agricultural Talk. 6.20, Topical Talk. 6.30, Talk on Retail Trade. 6.55, News. 7.0, Recital on Two Piano-fortes by Egbert Grape and Dr. Karl Leuzen; Sonata in F Minor, Op. 34b (Brahms); March, (Rachmaninov); Tarantella (Rachmaninov). 7.45, Die Flucht vor der Freiheit—Radio Play (Fred von Hoerschelmann). 9.5, News, Sports Notes and Close Down.

LAUSANNE.—See Radio-Suisse Romande. LEIPZIG

389.6 metres; 120 kW; and DRESDEN, 319 metres.—12.15 p.m., Gramophone Concert of Schubert and Schumann Music: Andante con moto from the Symphony in B Minor (Schubert); Improvvisin in B flat (Schubert); Scherzo from Symphony No. 2 in C (Schumann); Scherzo and Theme with Variations from the Trout Quintet (Schubert); Three Pieces from Kinderzonen (Schumann); Hungarian March (Schubert). After the Concert, Exchange Quotations. 1.0 p.m., Talk on the Unemployed. 2.0, Review of Books of Games for Young People. 2.35, Exchange and Market Prices. 3.0, Talk: Work for the Blind. 3.30, Concert of Waltzes by the Leipzig Symphony Orchestra, conducted by Hilmar Weber: Love Waltz from Op. 130 (Reger); Waltz in F (Schubert); Concert Waltz in D, Op. 47 (Glazunov); Hilmar Waltz (Delmet); Festwäzzer (Lampe); Künstlerball (Fritz Blumer); Spanisches Liebesleben, Op. 50 (Vollstedt). 4.30, Weather and Time. 4.50, Exchange Quotations. 5.5, Talk: The Films as a Career for Women. 5.30, French Lesson. 5.50, Talk: The Forest Theatre at the Foot of the Wartburg. 6.0, Talk: The Lives of the Great Religions Founders. 6.30, Concert of Light Music by the Station Orchestra, with Song Refrains by Gustav Jakob. Introductory Talk. Overture, La belle Héline (Offenbach); Humorous Pieces; Potpourri. Wir stellen uns vor (Golwyn); The World of Today in a Mirror. German Folk Song Potpourri. With Laughing Eyes through Germany. March, Mit Eichenlaub und Schwertern (Blon). 8.0, Economic Questions of the Day. 8.5, News Bulletin. 8.15, Reinhold Michael Leuz, one of Goethe's Circle—Radio Play (Fritz Peter Buch). 9.15, News Bulletin. 9.30 (approx.), Concert by the Dresden Philharmonic Orchestra, conducted by Theodor Blumer. Soloists: Elisa Stunzner (Soprano), and Günther Baum (Baritone); Prelude to Gaudemus (Humperdinck); Ballad, Spielmannslied (Moos); Songs (Johannes Schanze): (a) Kindheit, (b) Lied, (c) Der Musikant, (d) Ballad; Hunting Overture (Künneke); Three Sacred Songs, Op. 13 (Neubeck): (a) Wunnz, (b) Mäde, (c) Dass du mein gewesen; Serenade for Thirteen Wind Instruments (Richard Strauss); Glockenlieder, Op. 22 (Max von Schillings): (a) Die Frühlocke, (b) Die Nachzügler, (c) Ein Bildchen, (d) Mittagskönig und Glockenherzog. Overture, Am Rhein (Kaun). 11.0 (approx.), Close Down.

LINZ.—See Vienna. LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Briand Memorial Programme; Music by an Orchestra and Choir conducted by M.

Inghelbrecht; Soloists, Mme. Frozier, M. Roger Bourdin, and Mme. Balguer (Songs); Prelude to Messidor (Bruneau); Air from L'Attaque du Moulin (Bruneau); Invocation (Schmidt); La Mer (Debussy); Songs: (a) Le Cimetière (Fauré), (b) Le Voyageur (Fauré); Hymn to Justice (Magnard); Address; Symphonie Poem, Death and Transfiguration (Richard Strauss); Chant funèbre (Chausson); Songs: (a) In Questa Tomba (Oseura (Beethoven), (b) Traume (Wagner), (c) Nocturnes (César Franck); Hymn (Cherubini); L'Apothéose (Berlioz). After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAQ); 30.43 metres; 20 kW.—10.30, Popular Concert. 10.45, Radio Chronicle. 11.0, Popular Concert (contd.). 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO; Call EAQ7; 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, and Request Gramophone Concert. 7.15, Medical Talk. 7.30, Talk by Joaquin España Cantos, and Request Gramophone Concert (contd.). 8.15, News Bulletin and Political Review. 8.30 to 9.0, Interval. 9.0, Linguaphone English Lesson. 9.30, Chimes, Time Signal, Political Review, and Extracts from Il Trovatore—Opera (Verdi), on Gramophone Records. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm. MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—3.10 p.m., Concert of Popular Music and Dance Music by the Station Orchestra, conducted by J. Plichta. 4.10, See Prague. 4.50, Programme from Brno. 5.0, Talk: Famous Musicians of the Early Middle Ages. 5.15, See Prague. 5.25, See Brno. 5.55, See Prague. 9.15, Light Music on Gramophone Records. 10.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—4.30 p.m., Relay of a Sound Film. 5.30, Concert, relayed from the Conservatoire. 8.0, Talk in French: The Wage Conditions of the Soviet Worker.

MOTALA.—See Stockholm. MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—3.45 p.m., Concert, conducted by Erich Kloss: Overture, The Black Domino (Auber); Adagio from the Pathétique Sonata (Beethoven); Davidbündler-Marsch (Schumann); Prelude in E Minor and the Raindrops Prelude (Chopin); Suite, Nell Gwynne (German); Bei der Zigeunerkapelle (Meyer-Helmund). 4.45, Report on a Visit to a School of Printing. 5.15, Talk: The Roman State. 5.35, Talk: Frederick Barbarossa and the Emperor Henry VI. 5.55, Time, Weather, and Agricultural Notes. 6.5, Talk by Kurt Seeger. 6.25, Dramatic Programme: Die schön' cenzi vo' Mittenwald—Upper Bavarian Operetta (Kobell); Brantsehan—One-Act Farce (Ludwig Thoma). 8.5, The Last Watch—a Story of the Thirty Years' War (Walter Flex). 8.20, Recital of Duets by Lucie Hartmann (Soprano) and André Krenscholt (Tenor); Selig wir from Actis and Galatea (Händel); Duets (Schubert): (a) Nur wer die Sehnsucht kennt, (b) Licht und Liebe; Duets (Schumann): (a) Er und sie, (b) Die tausend Grasse. 8.45, Violin Recital by Willy Stultfuß; Sicillienne and Rigodon (Francoeur-Kreisler); Chassidische Stimmung (Bloch); Mondnacht auf dem Bosphorus (Versey); Schön Rosmarin (Kreisler); Waltz (Weber-Burmeister); Spanish Dance (de Sarasate); Old Irish Song (arr. Kreisler); Slav Dance (Dvorák-Kreisler); Tambourin chinois (Kreisler). 9.20, Time, Weather, News, and Sports Notes.

NAPLES.—See Rome. NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayd by Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrunn, 453.2 metres; and Rjukan, 447.1 metres.—5.45, Accordion Solos. 6.0, Announcements, Weather and News. 6.30, English Lesson. 7.0, Time Signal. 7.1, Talk. 7.30, Concert by the Station Orchestra, conducted by Hugo Kraam; Overture, Fra Diavolo (Auber); Grieg Potpourri (Urbach); Tambourin (Rameau); Romance (Wieniawski); Ich grille nicht (Schumann); Die beiden Grenadiers (Schumann); Hymn (Reidarsen); Potpourri, Around the World (Yoshitomo). 8.40, Weather and News. 9.15, Reading. 9.45 (approx.), Close Down.

OSTERSUND.—See Stockholm. PALERMO

537.6 metres; 3 kW.—7.0 p.m., Dopplavoro Notes, Tourist Report, Agricultural Notes, and Giordano Radio. 7.20, Variety Music. In an interval at 7.30, Time and Announcements. 7.45, Fallstaff—Opera (Verdi), on Gramophone Records. In the intervals, Talk and Art Notes. 9.55, News.

MARCH 7th

TUESDAY

continued

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals). 5.45 p.m., Le Journal Parle. 7.20, Weather Report. 7.30, Times and Variations—Pianoforte Recital by Marie Antoinette Pradier; Music by Haydn, Mozart, Beethoven, and Fauré, with Commentary by André Delacour. 8.0, Concert by the Firmin Touche Quartet: Quartet in C—the Emperor (Haydn); Quartet in A Minor (Cherubini). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parle. 7.0, Sponsored Concert with Gramophone Records. 8.0, Film Talk. 8.5, Legal Talk. 8.15, Interval. 8.30, Orchestral Concert, conducted by Théodore Mathieu: Symphony in D—the Clock Symphony (Mozart); Concertante Symphony (Mozart); Overture, Coriolanus (Beethoven); Overture, Nocturne, Scherzo, and March from A Midsummer Night's Dream (Mendelssohn). 10.30, News.

PARIS

RADIO PARIS; Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records: (a) Selection from O'Kay (Gershwin); (b) Variations Marmalade (Rozenthal); (c) Variations on a Russian Theme (Krotkov). 8.0, Press Review and Weather. 12.0 Noon, Concert by the Kretly Orchestra. Overture, The Black Domino (Auber); Selection from The Barber of Seville (Rossini); Overture, Mirella (Giounod); Dance of the Hours, from La Gioconda (Ponchielli); Selection from La Navarraise (Massenet); Entr'acte Music from Carmen (Bizet); Two Arias from Lakmé (Delibes), on Gramophone Records; Selection from Morning, Noon and Night (Suppé); Roses of Picardy (Wood); Madriña (Infante); Salut d'amour (Elgar); Russian Dance (Moszkovsky); Serenade (Albéniz); Cordoba (Albéniz); The Nutcracker Suite (Tchaikovsky); The Dryads (Raff). In the intervals at 1.0 p.m., Exchange News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 4.30, Advanced English Lesson. 4.50 to 6.10, Interval. 6.10, Agricultural Talk. 6.30, Weather, Agricultural Notes and Market Prices. 6.50, Theatre Review. 7.5, Talk on Art. 7.20, Concert by the Kretly Orchestra. Cantilène (Boisdeffre); Incanto (Roussseau); Romance (Busser); Mandolinata (Paladiluz); Fandolade (Michiels); Napoli (Mazzucato). 7.45, Review of the British Press. 8.0, Manon—Opera (Massenet), by the Cast of the Opera-Comique, on Gramophone Records. In the intervals at 8.30, News and Weather; at 8.40, Review by Pierre Seize, and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KOKA), 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.31, Market Reports. 9.45, Johnny Muskrat. 9.50, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Programme to be announced. 10.15, Adventures of Dr. Dolittle, from New York. 10.30, The Singing Lady, from New York. 10.45, Booth Tarkington's Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reader. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45 to 3.45 a.m. (Wednesday), New York Relay. 11.45, Today's News by Lowell Thomas. 12.0 Midnight, Popsodent Amos 'n' Andy. 12.15, National Advisory Council on Radio in Education: What is the matter with the State Legislatures? by Akberg W. Atwood, Political Writer, and Prof. John A. Lapp. 12.45, The Townshead Murder Mystery. 1.0, Eno Crime Club. 1.30, Time Signal and Adventures in Health. 1.45, Phillips Lord in The Country Doctor. 2.0, Household Musical Memories. 2.30, Willard Robinson's Deep River Orchestra. 3.0, The Time Detective. 3.15, Vic and Sade. 3.30, Homay Bailey and Orchestra. 3.45, Bradley Kincaid. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Smith Ballou and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, Cotton Club Orchestra, from New York. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Moravská-Ostrava. 4.10, Talk on Economics. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Variety Music on Gramophone Records. 5.5, Market Prices and Exchange. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Reading from the Works of Masaryk. 5.55, News Bulletin. 6.5, Talk. 6.20, Talk on the following Transmission. 6.35, The Jacobin—Opera in Three Acts (Dvorák), relayed from the National Theatre, in Honour of President Masaryk's Birthday. In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.1, News Bul-

letin. 9.15, Variety Music on Gramophone Records. 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.0 p.m., Medical Talk. 5.20 (from Geneva), English Lesson. 6.0 (from Lausanne), Weather Forecast, News and Announcements. 6.20 (from Geneva), Answers to Correspondence. 6.30 (from Geneva), Concert of New Gramophone Records. 7.0 (from Geneva), Cabaret Programme. 8.0 (from Lausanne), Les Hôtes de la Nuit Sketch (Paul Virès and Henry Mugnier). 8.30 (from Lausanne), Choral Music from Henriette—Musical Play (René Morax and Gustave Doret). 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva), Talk: The Work of the League of Nations. 9.20 (from Lausanne), Dance Music, relayed from the Bel-Air Métropole. 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0; 441 metres; 50 kW. Relayed by Naples (319 metres) and 2R0, 25.4 metres.—7.0 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12.0 Noon, Time and Announcements. 12.2 to 1.15 p.m., Concert from Turin. In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30 to 5.15, See Turin. 6.0 (Naples), Shipping and Sports Notes. 6.10, Atmospheric Signals, Agricultural and Dopolavoro Notes. 6.20, Giornale Radio. 7.0, Time and Announcements. 7.2, Talk on Jupiter. 7.15, Light Music on Gramophone Records. 7.30, Tourist Report and Sports Notes. 7.45, Concert. Soloists: Gianna Elena Labia (Soprano), Bruno Franchi (Violin), Orelia Parisini (Soprano), and Vincenzo Tambonno (Tenor); Suite for Plucked String Quartet (Searlati); Soprano Solos: (a) Canzonetta (Carissimi), (b) Heidenröslein (Schubert), (c) La pastorella (Rossini), (d) Hallelujah (Mozart); Violin Solos: (a) Tambourin (Lœvli-Kreiser), (b) Andante cantabile (Szabadi), (c) La campanella (Paganini). 8.30, Rossini Comedy in One Act (T. M. Barrie). 9.0 (approx.), Concert (contd.): Extracts from Mephistopheles (Boito); Trio from Crispino e la Comare (Ricci); Prelude to the Fourth Act of Carmen (Bizet). 9.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 10.56 metres.—12 Midnight, General Electric Programme. 12.15 a.m. (Wednesday), Stock Reports. 12.30 to 3.0, New York Relay. 12.30, Hotel St. Regis Orchestra. 12.45, The Goldbergs—Comedy Sketch. 1.0, Blackstone Plantation. 1.30, Wayne King's Orchestra. 2.0, Ben Bernie's Blue Ribbon Orchestra. 2.30, Ed Wynn and the Fire Chief Orchestra. 3.0, Lucky Strike Hour and Programme Resumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER; 459 metres; 61 kW.; BASLE, 244.1 metres; and BERNE, 245.9 metres.—9.20 a.m. (from Zürich), Broadcast for Schools: Dialogue on the World Tour of the Giant Seaplane Do X. 9.50 to 11.29, Interval. 11.29, Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Italian Music, by the Radio Orchestra. 12.35 to 12.45 p.m., Weather and Exchange. 2.30, Chamber Music on Gramophone Records. 3.0, Kindertotellieder—Five Songs (Mahler), on Gramophone Records. 3.30, Concert by the Little Radio Orchestra. 4.0, Variety Music, on Gramophone Records. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from Berne), Talk: Toys for the Nursery. 6.0, Time and Weather. 6.2 (from Berne), Notes on the Broadcasts for Schools. 6.15 (from Berne), Talk: German Christian Names. 6.45 (from Zürich), Concert of Music of Basle Composers, by the Radio Orchestra and Soloists. 8.30, Weather and News. 8.40, Dance Music of the Nineteenth Century, by the Radio Orchestra. 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA; 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motåla, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—12 Noon, Broadcast for Schools, relayed from Jönköping (201.3 metres). 4.5, Programme for Children, from Jönköping. 4.50, Folk Song Recital by Essie Montelius. 4.45, Variety Music on Gramophone Records. 5.45, Elementary French Lesson, from Malmö (231 metres). 6.30, Talk. 7.0, Orchestral Concert: Overture, The Daughter of the Regiment (Donizetti); Suite, Scènes pittoresques (Massenet); Selection from Polebitz (Nedbal); Italian Serenade (Pleyel); Waltz,

Dorfkinder from Zigeunerprimas (Kálmán); Potpourri of Popular Music (Gowyn). 8.15, Literary Review from Malmö (231 metres). 9.0, Concert by a String Orchestra: March, Old Comrades (Teike); Overture, Poet and Peasant (Suppé); Waltz, The Blue Danube (Joh. Strauss); Torna a surriento (de Curtis); Selection from La Bohème (Puccini); Tango, Jealousy (Gade); Selection from The Gipsy Princess (Kálmán). 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Wagner Concert on Gramophone Records: Selection from The Flying Dutchman; Introduction to Act III of Lohengrin; Selection from Tannhäuser; Entry of the Gods from The Ring; The Ride of the Valkyries, from The Valkyries; Selection from Parsifal. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Opera Music on Gramophone Records: Selection from La Bohème (Puccini); Aria, Vissi d'arte, vissi d'amore, from Tosca (Puccini); Aria from Madame Butterfly (Puccini). 2.0 to 4.45, Interval. 4.45, Talk in French: Village Industries in Tong-King. 5.0, Orchestral Concert, conducted by M. Roskam: Soloist, M. Roskam (Violin): March, Kansas City (Benoit); Waltz, Winterstürme (Fucik); Overture, Casanova (Lincke); Cello Solo; Selection from Die Fledermaus (Joh. Strauss); Suite, Album pour mes petits amis (Piercé); Valse poudrée (Popy); March (Rosey). 6.0, Talk: Beautiful Gardens of Former Days—English Gardens. 6.15, Topical Talk in French. 6.30, Concert of Jazz Music, conducted by M. Roskam. 7.30, Time and News. 7.45, Gramophone Concert of Light Music. 8.20, Lottery Results. 8.30, Gala Festival, relayed from Paris. 10.30 (approx.), Close Down.

STUTTART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—11.0 a.m., Gramophone Concert: Overture and Venusberg Scene from Tannhäuser (Wagner); Atlas from (a) The Huguenots (Meyerbeer), (b) A Masked Ball (Verdi); Songs (Brahms): (a) O wüsst ich doch den Weg zurück, (b) Sonntag, (c) Meine Liebe ist grün; Suite from Carmen (Bizet); Mattinata No. 2 (Leoncavallo); Les Filles de Cadix (Delibes); Pasodoble, Rio Rita (Santamini); Wenn wieder Frühling ist (Abraham-Gilbert-Robinson); Fox Trot, Kapell (Weiss-Mann-Boda); Slow Fox Trot, Find der Mond leucht dazu (Meissel); Die freien (Spatzen) (Löhrl); Der Akrobat (Rohrbach); Fox Trot Potpourri, Wir tanzen Welt-schlager (Borchert); König-Karl-Marsch (Lürath). 12.15 p.m., Time, News, Weather, Snow Report, and Programme Announcements. 12.30, Concert from Langenberg. 1.0, Concert arranged by the Post Office. 1.30, Advanced English Lesson. 3.0, Horticultural Talk. 3.30, Talk for Women: The Garden in March. 4.0, Programme from Frankfurt. 5.15, Time, Weather, and Agricultural Notes. 5.25, Talk: Literature and Philosophy of Life. 5.50, Talk: Marie Antoinette. 6.15, Time and News. 6.30, Concert by the Volga Balalaika Orchestra; Potpourri, Russian Echo (Kremsler); Valse Caprice (Andrejev); Russian March (Andrejev); Balalaika Solos: (a) Russian Airs (Kremsler), (b) Romanian Song and Czardas (Andrejev); Caucasian Folk Song, Kasbek; Dance Song, Messjatz (Andrejev). 7.0, A Berlin Salon of 1830—Radio Sequence (Oskar Ludwig Brandt), with Music by Prince Louis Ferdinand of Prussia, Reichardt, Zelter, and Others. 8.0, See Frankfurt. 9.0, Time, News, Weather, and Programme Announcements. 9.30, Dance Music by the Stuttgart Philharmonie Dance Band, conducted by Harry Risch, with Song Refrains by Walter Maurer (Tenor). 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Three Movements from the Spanish Rhapsody (Ravel). 6.30, Cello Solos: (a) Les Cloches (Debussy), (b) Orientale (Cui), (c) Harlequin (Popper), (d) Träumerei (Schumann). 6.45, Light Music. 7.0, Accordion Music. 7.15, Racing Results, Market Prices and News Bulletin. 7.25, Local News. 7.30, Opera Music: Overture, The Barber of Seville (Rossini); Selection from Tosca (Puccini). 7.45, Music of the Argentine. 8.0, Opera Music: Songs from (a) Werther (Massenet), (b) Les Dragons de Villars (Maillart), (c) The Daughter of the Regiment (Donizetti). 8.15, Concert by a Viennese Orchestra. 8.45, Extracts from The Merry Widow—Operetta (Lehár). 9.15, Orchestral Concert: Spring Song (Mendelssohn); Melody (Morena); Hungarian Fantasy; Minnet (Mozart); Melody (Eilenberg); Parade des Petits Luthiers. 9.45, Opera Music: Selection from (a) Aida (Verdi), (b) Lohengrin (Wagner), (c) The Damnation of Faust (Berlioz). 10.0, Soloist Concert. 10.15, North African News. 10.30, Concert for Listeners in Morocco: Blumengeldflöter (Blon); Two Arias from La Bohème (Puccini); Selection from William Tell (Rossini); Melody (Marafioti); Ständchen (Schubert). 11.0, Chansonnettes. 11.15, Hawaiian Guitar Music. 11.30 to 12 Midnight, Programme in

English by the I.B.C. H. K. Hitchcock announcing. 11.30, Dance Music: Marching along together; Mad about the Boy; She was only Somebody's Daughter; The Younger Generation; Marry me; Round the Bend of the Road; After to-night we say Goodbye; Love is the sweetest thing. 11.57, I.B.C. Goodnight Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Wednesday), Sound Film Music. 1.15, Dance Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.40 to 6.0 p.m., See Turin. 6.0, Variety Music on Gramophone Records. 6.20 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—4.30 to 5.15 p.m., Orchestral Concert, conducted by Tigo Tausini: Pataffaglia de zizani (Ranzani); Selection from Turandot (Puccini); Concerto (Ganglberger); A suon di campana (Sera). 5.35, Giornale Radio, Agricultural and Dopolavoro Notes. 6.0, Light Music on Gramophone Records. 6.20, Giornale Radio. 6.30, Time, Announcements, Report of the Royal Geographical Society and Gramophone Records (contd.). 7.0, Giornale Radio, Weather and Variety Music on Gramophone Records. 7.30, Eva—Operetta in Three Acts (Lehár). In the interval, Talk and News on Art. Giornale Radio after the Opera.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—16. to 10.15 a.m., Religious Information in Spanish. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 243.6 metres; Klagenfurt, 453.2 metres; Linz, 295.9 metres; and Salzburg, 218.5 metres.—4.0 p.m., Dance Music by the Charly Caprotti Jazz Band, relayed from Hühners Parkhotel, Seefeldrunn. 4.15, Talk on Forestry. 5.40, Talk: Between God and Bad. 6.5, French Lesson. 6.30, Time, Weather and Programme Announcements. 6.40, The Week's Feuilleton. 7.5, Concert by the D'Anner Viennese Schramm Quartet, conducted by Alois Jansch: Dances, Soloists: Alois Jansch (Songs) and Richard Neubauer and Franz Rotter (Duetts). March, Hullo, da san ma munder (Katzberg); Waltz Song, Sei mir gut, vergiss mein nicht (Kosenzweig); Die Perle der Frauenwelt (Kratz); Das Echo der Liebe (Kosenzweig); Tu alles, so lang du kannst (Wondra); Die Arten der Liebe (Söldy); Wenn die Schellen wieder kommen (Stern); Mein Wien (Blöbner); Die Fritzenscherfria (Schrammer); Die Welt wär doppelt schön (Jäger); Mein Herz gehört der Wienerin (Arnold); Das Familienglied (Fleischer); Steirisch-Weenerisch (Kronberger); Schwab Marsch (Perik). 8.0, Concert by the Vienna Symphony Orchestra, conducted by Max von Schillings. Overture and Prelude to Der Fledermaus (Wagner); Harvest Festival from Mobeck (Schillings); Symphony in E Flat, Op. 55—the Eroica (Beethoven). 8.30, News, Weather and Announcement. 8.45, Dance Music by the Karl Machek Jazz Band, relayed from the Café Splendide.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Aviation Report and Anti-air Drill. 3.30, Announcements. 2.35, Book Review. 3.50, Popular Music on Gramophone Records. 3.20, Talk on History. 3.40, Talk: The Development of Polish Towns since the War, relayed from Lwow (381 metres). 4.0, Concert by the Warsaw Philharmonic Orchestra, conducted by I. Neumark: Overture, Fingal's Cave (Mendelssohn); Symphony in C (Mozart); Ballet Music from Ali Baba (Cherubini); Symphonic Poem, Vltava (Smetana). In the interval, News. 4.55, Programme Announcements. 5.0, Talk on Polish Literature: Slowacki. 5.20, Topical News. 5.25, Light Music from the Ziemianka Café. 6.0, Miscellaneous Items. 6.20, Talk: Agricultural Correspondence Courses. 6.30, Talk on Beethoven. 6.45, Radio Journal. 7.0, Concert by the Radio Orchestra, conducted by Oziminski; Soloist: W. Niemczyk (Violin): Overture, Baika (Moniuszko); Love Song and Gipsy Dance from Mauru (Paderewsky); Violin Solos: (a) Lithuanian Song (Szulgowski), (b) Allegretto (Bocherini), (c) Prelude in E (Bach-Kreisler), (d) Romance (Fauré), (e) Waltz (Brahms), (f) Polish Dance (Paderewsky); Suite, The Romance of a Mummy (Tcherepini). 8.0, Sports Notes. 8.5, Radio Journal. 10.0, Concert (contd.): Overture in C, Die Weihe des Hauses (Beethoven); Minnet (Goscherini); Violin Concerto in A Minor (Vivaldi). 8.40, A Musical Competition. 9.15, Reading. 9.30, Dance Music on Gramophone Records. 9.55, Weather Report and Police Notes. 10.0, Dance Music from the Bolega Dance Hall.

ZÜRICH.—See Schweizerischer Landessender.

PROGRAMMES CONTINUED

Get Original Tone

Tone is radio's severest Test. When everything else about your set has lost its novelty, tone remains, day after day, year in, year out—doesn't it pay you over and over again to be right at the start? Get the fullest benefit of Columbia's latest radio development—ORIGINAL Tone—clear, brilliant, almost startling in its actuality.

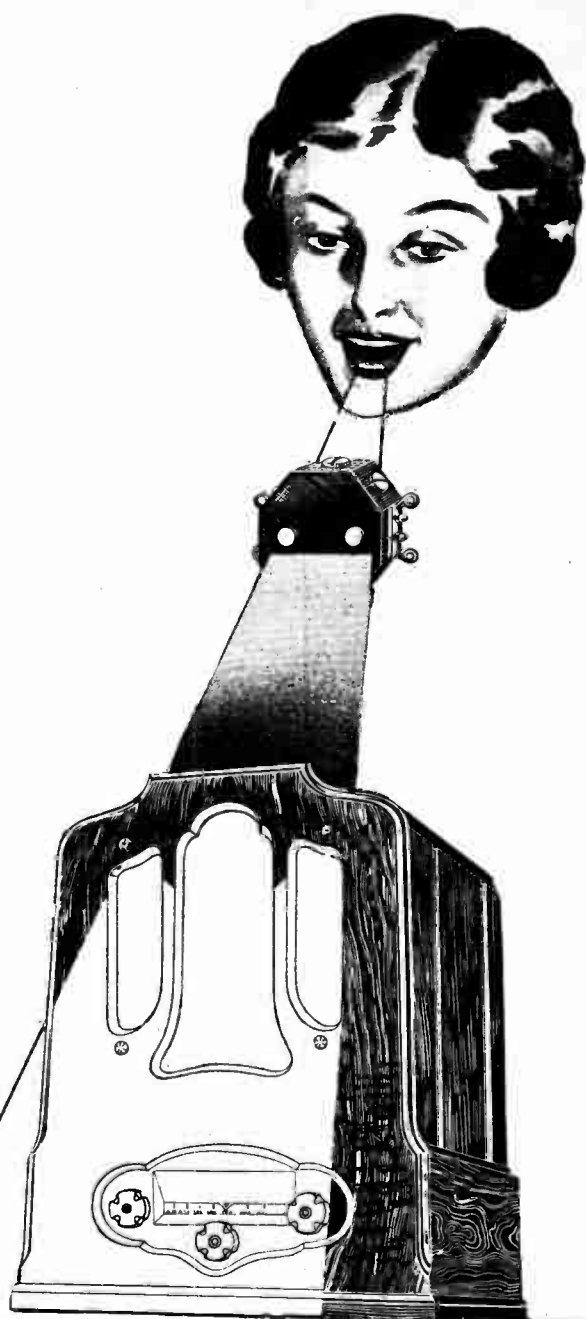
Attractively presented in polished walnut, the four-valve mains model shown here has met with an amazing popularity. Test its superiority in the actual reception conditions of your own home. It will tell its own story! The coupon will bring you fullest particulars.

USE THE COLUMBIA DEALER SERVICE
Expert advice on local radio conditions and service after sales.

ALL-ELECTRIC FOUR

16 gns. cash (A.C. or D.C.)

or delivered on first payment of **£1 13s.**



Columbia

ALL-ELECTRIC FOUR

CUT OUT AND POST TO-DAY!

Please send me fullest particulars of Columbia Model 355. (Write in block capitals.)

NAME

ADDRESS

W.Wld 3/5/33



Cut this out and post in an unsealed envelope bearing ½d. stamp to:—Columbia, 98, Clerkenwell Road, E.C.1

“A uniform distribution of the output energy over the frequency range” “WIRELESS WORLD”
without recourse to costly dual-balanced loud-speakers

Here is proof—

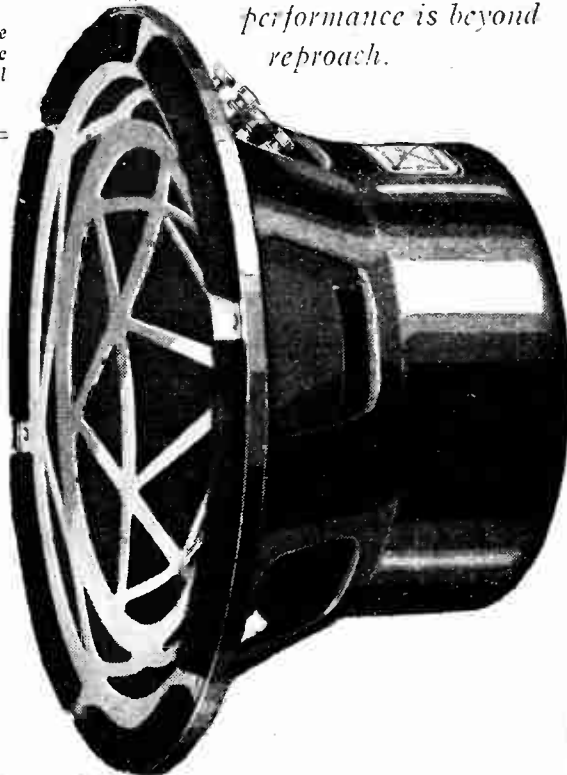
“WIRELESS WORLD”
 TEST Report Oct. 21st, 1932
 states—

“The outstanding feature . . . is the *uniform distribution of the output energy over the frequency range . . . especially noticeable in the bass, where the majority of P.M. units rely on a resonance in the vicinity of two cycles to give a false impression of sensitivity . . .* The important range . . . between 75 and 100 cycles is free from objectionable resonances . . . The 60 cycle resonance is helpful in correcting the loss of amplification below 100 cycles which occurs even in some of the best amplifiers. In the upper register there is still an appreciable output at 12,000 cycles.”

—even response throughout the whole orchestral range.

The R. & A. Victor was designed for faithful reproduction throughout the whole musical scale. It has no objectionable resonances, and does not, therefore, need a compensating device such as an auxiliary loudspeaker to nullify such defects. It will handle 5 watts undistorted A.C. without distress, and gives a uniform output regardless of frequency. Moreover, it is of compact dimensions, which permit its incorporation in the average cabinet or console. The 6 ratio Ferranti Transformer allows the closest possible matching with any type of output valve.

Compare the ‘Victor’ with dual compensated speakers and you will agree that its performance is beyond reproach.



70%
 INCLUDING
 6-RATIO
 FERRANTI
 TRANSFORMER

The **R & A “VICTOR”**

PERMANENT MAGNET MOVING COIL REPRODUCER DE-LUXE

REPRODUCERS & AMPLIFIERS LTD.

WOLVERHAMPTON.

WHY Buy a new set?
ETA VALVES
make your old set like new!

These are not times to disregard economies. Other valves may cost more than ETA valves, but they give you no more for your money.

FREE: Ask for the ETA “Comparative Table” No. 11a showing which ETA valves to use in place of your old ones. Technical advice gladly given. Write to

THE ELECTRICAL TRADING ASSOCIATION
 Aldwych House, Aldwych, W.C.2.
 SCOTTISH AGENTS: RADIOVISION LTD., 293, St. Vincent Street, GLASGOW, C.2.

AMERICAN SETS.

There are ETA valves for all types of American Sets.

PRICES FROM

5'6



As low in price as a really good valve can be

TRUE TONE CONTROL

PERFECT REPRODUCTION

is often marred by many factors, such as—
IMPERFECTIONS in the **RECEIVER** itself,
SPEAKER or **PICK-UP RESONANCES**,
IMPERFECTIONS in **RECORDING**,
HETERODYNE or other **INTERFERENCE**.

The **MULTITONE TONE CONTROL TRANSFORMERS**

give the best tonal balance in all conditions. Price 17/6 with graded potentiometer. Models available for Push-pull and Q.P.P. circuits.

*Write for free copy of new handbook (D).
 Obtainable from all good dealers.
 Write to us if in difficulty.*

MULTITONE ELECTRIC CO. LTD.,

95, 98, WHITE LION STREET, ISLINGTON, N.1.

Telephone: North 5063.

MULTITONE
 TONE CONTROL L.F. TRANSFORMER

"STAMBOUL? *Why, we get Stamboul on our portable when we like since we've had Exide and Drydex Batteries. Wonderfully clear, too."*



P.33

EXIDE AND DRYDEX FOR FAMOUS SETS

	For L.T.	For H.T.
Burgoyne Portable Five	Exide LCJ4 11/6	Drydex H1025 10/-
Columbia 380 Portable	" JZ3 14/-	" H1056 12/-
Super Het	" JWX5 11/6	" H1022 18/6
K.B. 156 Portable	" LBJ4 12/6	" H1048 16/6
McMichael Duplex	" LCA4 14/-	" H1039 17/6
Four (SC)		
Pye "Q"		

There is an Exide and Drydex Battery for every set
 These prices do not apply in the Irish Free State

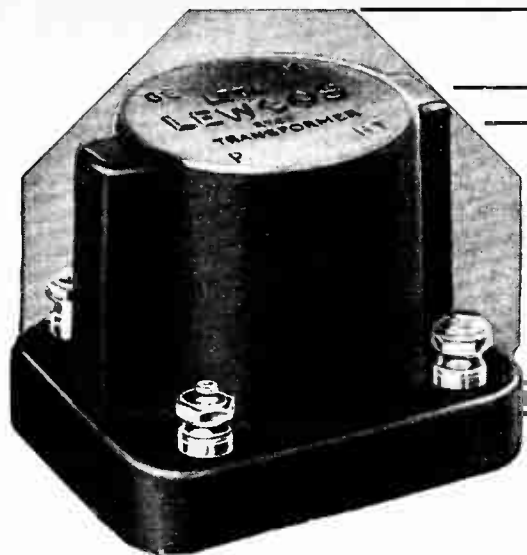
Exide AND Drydex

BATTERIES FOR WIRELESS

- Exide Batteries for wireless low tension and high tension.
- Drydex Dry Batteries for wireless high tension and grid bias.
- Also for torches, cycle lamps and bells.

Obtainable from Exide Service Stations and all reputable dealers

Exide Batteries, Exide Works, Clifton Junction, near Manchester. Branches: London, Manchester, Birmingham, Bristol, Glasgow, Dublin, Belfast



THE LEWCOS
L.F. TRANSFORMER
(Ref. L.F.T. 4) Price 6/9

Once again the technical superiority of the Lewcos L.F. Transformer has been recognised by experts and it is included in the circuit of an outstanding receiver—the "Ferrocart III."

No matter in what type of receiver Lewcos precision-made Components and Wires are used, they ensure brilliant results.

A leaflet giving vital information about the Lewcos L.F.T. 4 will be sent on request to Radio Publicity Dept. B.

MAKE SURE OF SUCCESS

USE THE SPECIFIED



L.F. TRANSFORMER and SCREENED SLEEVING

FOR THE "FERROCART III"

THE LONDON ELECTRIC WIRE COMPANY AND SMITHS, LIMITED, CHURCH ROAD, LEYTON, LONDON, E.10.

RECOMMENDED AGAIN!

CHALLIS

TRANSFORMERS

FOR
THE

"W.W. FERROCART THREE SET" CHALLIS TRANSFORMERS

DELIVERY FROM STOCK

One Screened Primary. 350+350, 60 mA.,
4 v., 2-5 amp., C.T. 4 volt, 3-5 amp., C.T.

ORDER NOW!

Trade Supplied.

O. M. CHALLIS, 'Phone: 240.
41, KING EDWARD ROAD, RUGBY

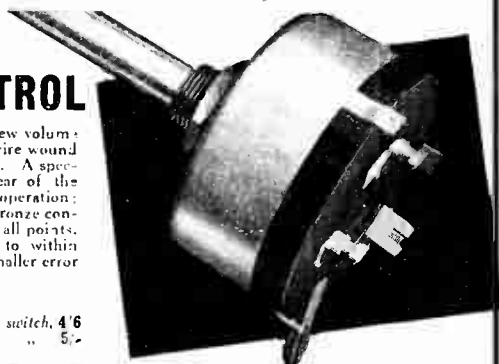
London Office:
12, Charles St., Hatton Garden, E.C.1.
'Phone & Telegrams: Holborn 1280.

A NEW VOLUME CONTROL

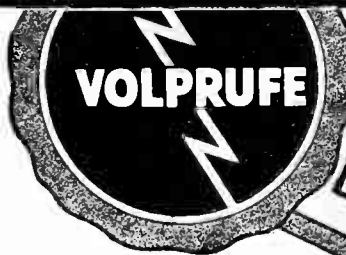
Rotor Ohm have introduced a new volume control—new in every detail. It is wire wound and particularly well wire wound. A specially designed contact avoids wear of the resistance and also ensures quiet operation; the carefully balanced phosphor bronze control arm ensures equal pressure at all points. The standard models are exact to within 10% of the indicated value. A smaller error can be guaranteed if required.

PRICES: Wire wound.
All values to 25,000 ohms, 3/6, with switch, 4/6
50,000 .. 4/.. .. 5/-

Synthetic.
2,000 ohms to 5 megohms 3/6, with switch, 4/6
Ganging: 9d. a unit extra to the above prices.
Specified for the direct coupled
L.F. TELEVISION AMPLIFIER
Manufactured in the British Commonwealth,
produced in England.



**ROTOR OHM
VOLUME CONTROL**
Rotor Electric Ltd.,
Spencer House, South Place, E.C.2.
Telephone: National 5734.



INSULATING SLEEVING

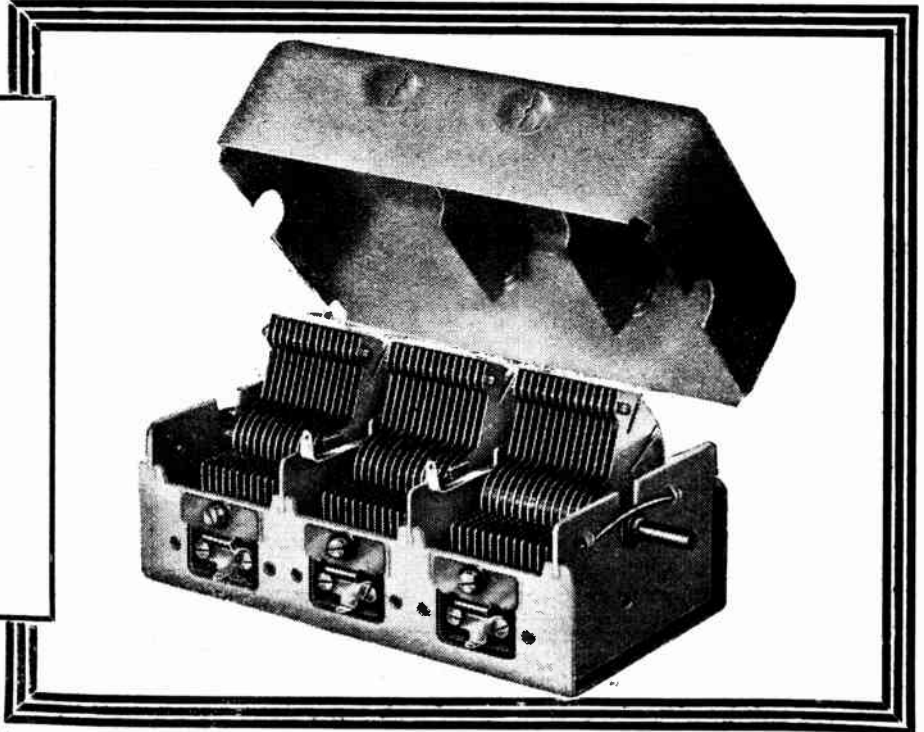
Supplied in Red, Yellow,
Blue, Green and Black. Sizes
from 1 m/m to 20 m/m.
WHOLESALE ONLY. Your
enquiries solicited.

BRITISH MANUFACTURE

FAIRE BROS. & CO. LTD. LEICESTER

SPECIFIED without alternative FOR THE FERROCART III

**RADIOPHONE
THREE GANG
CONDENSER
TYPE 344J**
*complete with
cover and disc
drive*



BBRITISH Radiophone ganged condensers have been chosen exclusively for use in the "Ferrocart III" because they are the only condensers that will satisfactorily tune with the new Ferrocart coils.

These coils, wound on a former of specially insulated magnetic material, represent an entirely new development in radio practice, and are so highly efficient that for full advantage of their qualities they must be used in conjunction with only the best components. Apart from their compatibility, it is natural therefore that the "Wireless World" should choose British Radiophone ganged condensers for the "Ferrocart III," which is the first receiver to be designed using these revolutionary coils.

British Radiophone Ganged Condensers are constructed with such precision that accuracy is guaranteed between any two sections to within 1 mmfd. or 1/2%, whichever is the greater.

The main frames are built up from sheet steel so as to resist all tendency to distort.

The best aluminium is used for the vanes, which are of substantial thickness and well spaced by a unique method eliminating any possibility of error.

Patented spring loaded bearings fitted with keep plates are employed, preventing end play and ensuring smooth spindle rotation.

Trimming is effected by means of screwdriver variation, but star wheel trimming screws can be supplied if specially ordered.

SPECIFIED FOR THE 'WIRELESS WORLD' FERROCART III

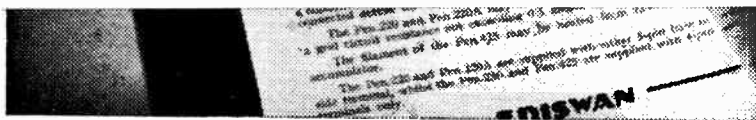
Standard 3 gang Condensers with R.H. trimmers complete with cover	TYPE 344J	28/-
Escutcheon and Disc Drive Assembly with pilot lamp attachment		5/-
Volume control 10,000 ohms, type 474		5/-
Q.M.B. Change-over switch, type 450-		1/9

Write for full descriptive literature.

RADIOPAK
TRADE MARK
THE ONLY COMPLETE BAND-PASS TUNER

BRITISH RADIOPHONE LTD., ALDWYCH HOUSE, ALDWYCH, LONDON, W.C.2

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.



**BRITISH
VALVES**



THE EDISON SWAN ELECTRIC CO. LTD., 155 CHARING CROSS ROAD, W.C.2

Made in Britain

RECOMMENDED BY ALL GOOD RADIO DEALERS

V.194

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.

Bring in the 'foreigners'



your
present
set

plus

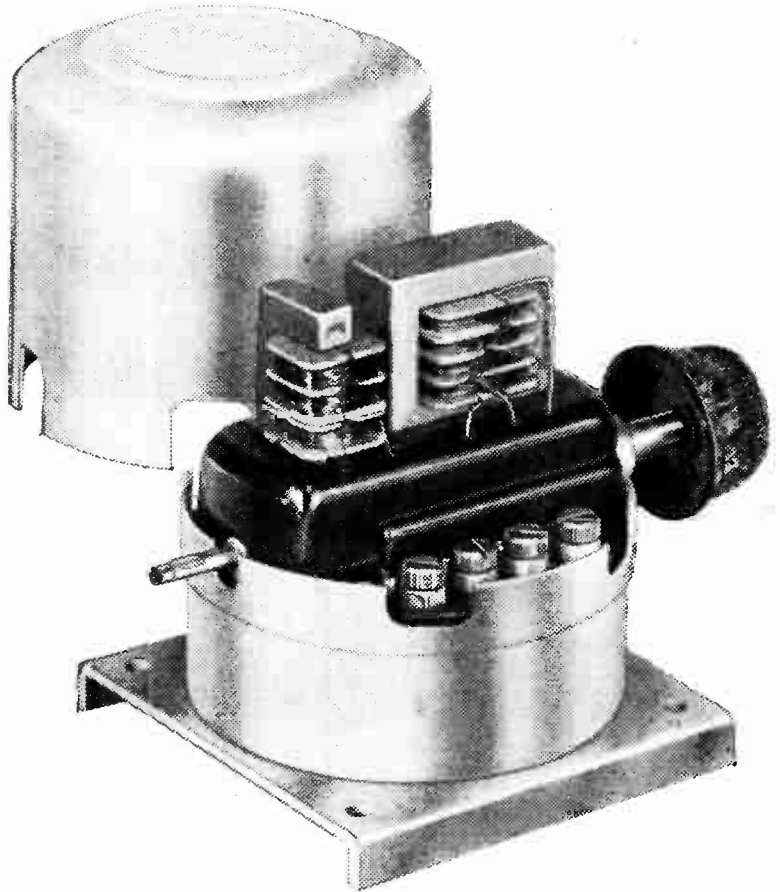
COLVERN FERROCART COILS

Since the announcement earlier in the season that Colvern had secured the exclusive rights for the use of the core material Ferrocart for radio frequency components, much work has been done in the Colvern laboratory and factory, and tuning coils are now available in a suitable form for inclusion in receivers and meeting the requirements of efficient receiver design.

The first types to be available are:—

TYPE F1—F2. Input band-pass filter. Constant selectivity, ganging unaffected by variations in aerial reactance, symmetrical resonance curve.

TYPE F3. Autotransformer intervalve coupling with reaction, ganging perfectly maintained on both wave ranges by transfer of tapping point in correct turns ratio, practically constant reaction.



SPECIFIED FOR THE "W.W. FERROCART THREE"

One set F1, F2, F3 Coils ganged on sub base plate with wave change switch .. Set **50/-**

One aluminium chassis, pierced with necessary holes, finished grey cellulose **10/6**

One 10,000 ohms Potentiometer, Type ST5C .. **5/3**

Regarding the performance of a three valve receiver, standard in other respects, but employing the above combination of Ferrocart coils in place of the corresponding types of air-cored coils, we do not think we can do better than quote a few passages from the "Wireless World" review of the receiver they have designed round these coils

"The introduction of ultra-efficient iron-cored tuning coils has at last made it possible to obtain from a simple straight set a degree of selectivity which bids fair to rival that of the superheterodyne. To those accustomed to ordinary sets the selectivity given by the new coils is a revelation, and the principle undoubtedly opens out a new era in radio reception and will give a new lease of life to the straight set"

"The improvement in performance which this receiver shows over a similar type fitted with ordinary coils is so great that it can be realised only by actually handling the set . . . it is in selectivity that the performance is so outstanding. It is no exaggeration to say that the selectivity is considerably greater than that given by the average two H.F. set with four tuned circuits."

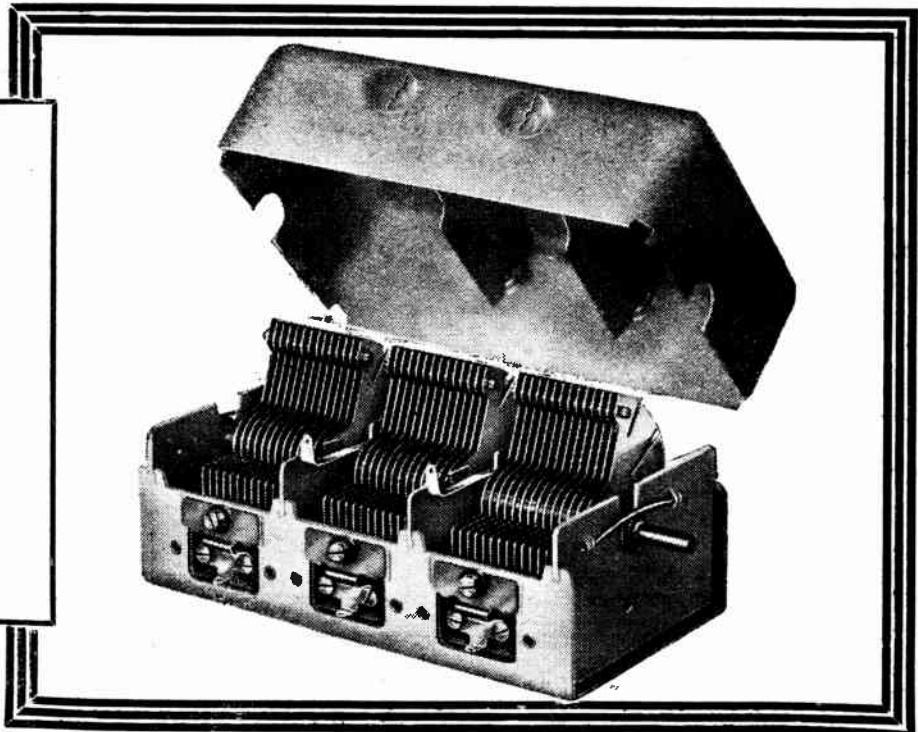
All Colvern Ferrocart coils are matched to the following inductance values—medium wave 157 μ H, long wave 2,200 μ H when screened. the departure from these values is guaranteed to be less than $\frac{1}{4}$ of 1%.

MADE UNDER LICENCE FROM
THE PATENTEE, HANS VOGT.

COLVERN LTD., MAWNEYS ROAD, ROMFORD

SPECIFIED without alternative FOR THE FERROCART III

**RADIOPHONE
THREE GANG
CONDENSER
TYPE 344J**
*complete with
cover and disc
drive*



BBRITISH Radiophone ganged condensers have been chosen exclusively for use in the "Ferrocart III" because they are the only condensers that will satisfactorily tune with the new Ferrocart coils.

These coils, wound on a former of specially insulated magnetic material, represent an entirely new development in radio practice, and are so highly efficient that for full advantage of their qualities they must be used in conjunction with only the best components. Apart from their compatibility, it is natural therefore that the "Wireless World" should choose British Radiophone ganged condensers for the "Ferrocart III," which is the first receiver to be designed using these revolutionary coils.

British Radiophone Ganged Condensers are constructed with such precision that accuracy is guaranteed between any two sections to within 1 mmfd. or $\frac{1}{2}\%$, whichever is the greater.

The main frames are built up from sheet steel so as to resist all tendency to distort.

The best aluminium is used for the vanes, which are of substantial thickness and well spaced by a unique method eliminating any possibility of error.

Patented spring loaded bearings fitted with keep plates are employed, preventing end play and ensuring smooth spindle rotation.

Trimming is effected by means of screwdriver variation, but star wheel trimming screws can be supplied if specially ordered.

SPECIFIED FOR THE 'WIRELESS WORLD' FERROCART III

Standard 3 gang Condensers with R.H. trimmers complete with cover	TYPE 344J	28/-
Escutcheon and Disc Drive Assembly with pilot lamp attachment		5/-
Volume control 10,000 ohms, type 474		5/-
Q.M.B. Change-over switch, type 450		1/9

Write for full descriptive literature.

RADIOPAK
TRADE MARK
THE ONLY COMPLETE BAND-PASS TUNER

BRITISH RADIOPHONE LTD., ALDWYCH HOUSE, ALDWYCH, LONDON, W.C.2

Bring in the 'foreigners'



WITH
'ANODEX'



Agents throughout the country.

Standard

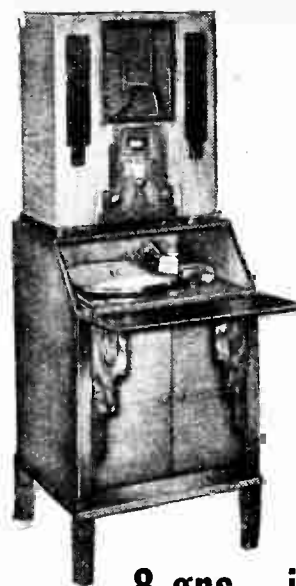
Extra or
Triple Power
H.T. BATTERIES

and Grid Bias

S. SMITH & SONS

(Motor Accessories) LTD.

CRICKLEWOOD, LONDON, N.W.2



your present set

plus
APOLLO
Playing Desk

equals a fine
Radio
-Gram

8 gns. in REAL WALNUT

ALSO TO MATCH VARIOUS SETS

As illustrated, with Collaro Induction motor, and pickup, automatic current stop, volume control, Record cupboard—8 gns. or 12 payments of 15/6. Cabinet only, without motor or pickup, £3.15.0. Table Models: Electric Motor, Walnut, £5.17.6, or 13/6 and 11 payments of 10/6; Leather Cloth, £4.17.6 or 12 payments of 9/-; Spring motor, Walnut, £4.4.0 or 10/- down and 11 payments of 7/6; Leather Cloth, £2.18.0 or 7/6 down and 11 payments of 5/5.

APOLLO PLAYING DESKS

Ask your Radio Shop, or write to—

APOLLO GRAMOPHONE CO., LTD.,
4-5, Bunhill Row, London, E.C.1.

FIRST

TRANSFORMER OF ITS DESIGN.
CHOICE OF THE DESIGNER.
SET OF ITS DESIGN.

THE "WW" FERROCART III

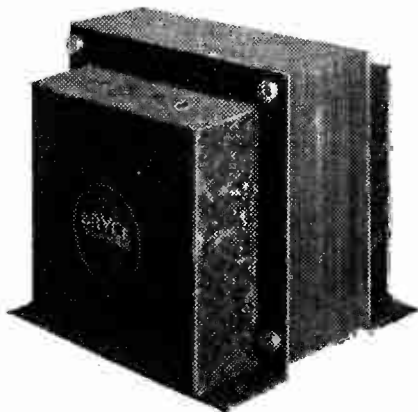
A

BRYCE

MAINS TRANSFORMER

MODEL AB 191

PRICE 28/6



- Totally Shrouded.
- All leads cut to correct lengths.
- Screened Primary.
- Insulation tested to 15,000 v.
- Lewcos Wire used exclusively.

Write or 'phone Bury 1251.

ACCEPT NO DELAY
DISPATCH GUARANTEED IN
24 HOURS.

W. ANDREW BRYCE & CO.

WOODFIELD WORKS,
BURY, LANC.

LONDON DISTRIBUTORS: WILBURN & CO., 23, BRIDE LANE, E.C.4.

On B.B.C. ELEC. CORPORATION, FOREIGN & COLONIAL LISTS.

SAFEGUARD
GOOD PERFORMANCE WITH



HYMEG
CONDENSERS

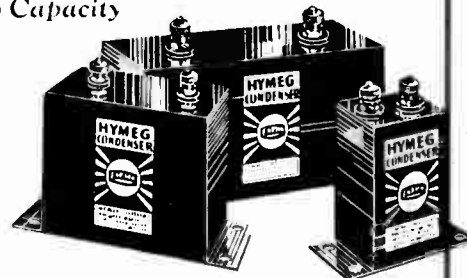
The accuracy of Formo "HYMEG" Condensers represents a big advance in fixed condenser construction. Meticulous care has been taken to obtain and to guarantee a really LOW POWER FACTOR plus all the following points:

- High Test Voltage, 1,000 volts A.C.
- High Working Voltage.
- Insulation resistance not less than 2,500 meg. mfd at working voltage.
- Low A.C. Resistance.
- TRUE to rated capacities.
- Long Life. Low Price.

Guaranteed true to Capacity

- 34B 1MFD 2/6
- 35B 2MFD 3/3
- 36B 4MFD 5/6
- 37B 6MFD 8/0
- 38B 8MFD 10/6

Obtainable from all radio dealers but in case of difficulty write direct. Ask for the Formo Catalogue.



FORMO, ●CROWN WORKS, REGENT'S PARK, SOUTHAMPTON

FORMO COMPONENTS
THE 'MAKING' OF A GOOD SET



Purveyors of Electric Lamps By Appointment

EDISWAN



Manufacturers and Purveyors of Electric Lamps By Appointment

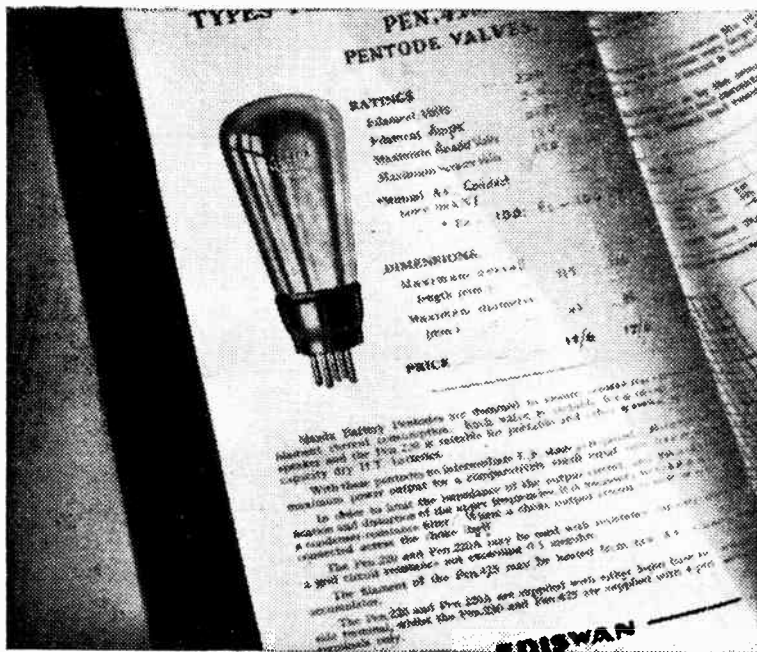
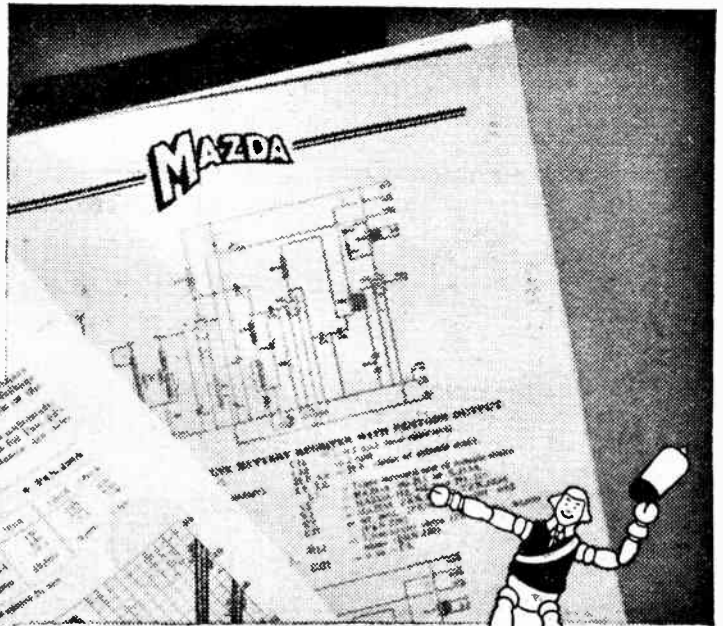
The name that means 'EXCELLENCE'

DO YOU KNOW how to get the best out of a Pentode?

THIS BOOK TELLS YOU HOW

"The Book of the Mazda Valve" is a mine of useful information about valves in general and Mazda Valves in particular. It contains facts and figures, circuit diagrams, component values, characteristic curves — in fact, all the valve user wants to know about valves. Send for your FREE copy to-day — or ask your dealer for one.

In most cases poor reception is caused by bad valves or wrongly used valves. Here's the way to make sure of good reception. Always rely on "The Book of the Mazda Valve." If you are using, or are going to use, a pentode for instance, get this book first. You will find that there are six pentodes in the Mazda range. You will also find complete information about using each one. No trouble, no unnecessary expense. You get the results you want—first time, and all the time.



MAZDA THE BRITISH VALVES



THE EDISON SWAN ELECTRIC CO. LTD., 155 CHARING CROSS ROAD, W.C.2

Mazda Radio Valves are manufactured in Great Britain for The British Thomson-Houston Co. Ltd., London and Leeds

RECOMMENDED BY ALL GOOD RADIO DEALERS

V.194

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.



WEARITE COMPONENTS

A Catalogue of Standard Wearite Components—range is ever expanding—but sufficiently comprehensive to indicate the reason for Wearite's supremacy in the field of Radio Components

NAME IN RADIO COMPONENTS

GET A COPY OF THIS BOOKLET—S.30—FIRST!

A good start is half the battle. With a copy of the S.30 by you you have available full details of a range of components with a reputation second to none. Chokes, Resistances, Transformers, Volume Controls, etc. etc. are fully described, get your copy now!

★ YOUR SHOPPING LIST INCLUDES

THE WEARITE SCREENED H.F. CHOKE

Type H.F.P.
An efficiently designed choke suitable for operation on 15 to 3,500 metres. Resistance 300 ohms. Inductance 255,000 M.H. Price 3/6

THREE WEARITE I.F. TRANSFORMERS

Designed to "peak" at 110 K.C. Primary and secondary can be separately tuned and coupling adjusted to vary selectivity. Type W.W.I.F. Price 12/6 each

SPECIAL WEARITE SWITCH ASSEMBLY

Specified exclusively for this Receiver and consists of two 1.32's and one 1.31 mounted on special bracket ... Price 10/6

Specified and Recommended for the
ALL-WAVE MONODIAL

YET again Wearite's reputation as the leading switch designers is productive of another "specialised job." The designer of this modern set specifies Wearite for a switch combination having a special function. A reliable H.F. choke was demanded—and Wearite was recommended. Again, for those important components—the I.F. transformers—the Wearite W.W.I.F. Type are found to conform to designer's specification, and recommended. Insist on components with a backing—insist on Wearite!

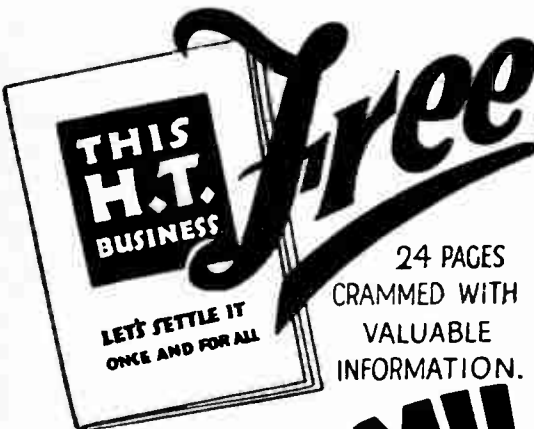
Registered Trade Mark

WEARITE

WRIGHT & WEAIRE LTD.
740, HIGH ROAD, TOTTENHAM, N.17.

Tel.: Tottenham 3847/8/9.

♡ 240



The book that solves H.T. problems

24 PAGES
CRAMMED WITH
VALUABLE
INFORMATION.

MILNES H.T. SUPPLY UNIT

"With the Milnes Unit the first cost is the last."

Read what an expert user says:—

Dear Sirs,
I think you deserve appreciation for having on the market the Milnes H.T. Supply Unit. I have used a 150 V. unit since last September, and up to the present time it has been absolutely trouble-free. Hard work does not seem to lower the general efficiency; this I have proved by the fact that the unit supplies approx. 20 milliamps for at least 50 hrs. per week. After 10 hours continuous discharge there is no noticeable volt drop. This in itself speaks highly for the Milnes Unit, as no dry battery could ever stand up to this discharge rate and hold its voltage for very long. The initial expense may seem prohibitive to many listeners, but they can take it from me the Milnes Unit is a chance not to be missed, for the saving in dry batteries and the 100% efficiency the unit gives, amply repays the first cost. With the Milnes Unit the first cost is the last. I have written you this letter because I know there must be thousands who rely on dry batteries (which to my mind are the bug-bear to perfect radio or gramophone reproduction) not knowing that all their troubles as far as H.T. goes can be cured by installing a Milnes Unit. If you would like any further particulars concerning the unit I have, I would be pleased to supply you with them.
Yours faithfully, J. E. WILKINS (Electrical Engineer).
P.S.—This letter is entirely unsolicited.

Are you tired of buying dry H.T. batteries? Are you weary of carrying heavy lead-acid H.T. accumulators to charge? Then post the coupon below TO-DAY for this bigger, better, more informative book about the Milnes Unit. It tells you how you can cut out the replacement costs and annoying voltage drop which are inseparable from dry batteries; how you can avoid the expense of recharging; how you can have H.T. current always as full, constant and reliable as the mains, but without a trace of background. It tells you all about the Milnes H.T. Unit—the unique accumulator of nickel-cadmium cells which are recharged automatically from the L.T. accumulator, and which cannot be harmed by over-charging, shorting or neglect.

You are wasting money and denying yourself 100% H.T. efficiency if you use any other source of supply. Send for the book NOW.

SAVES ITS COST WITHIN 12 MONTHS

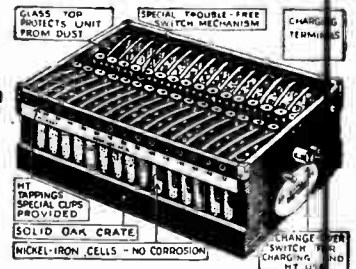
WHAT DOES IT COST?

Prices in Gt. Britain

90-volt ..	£2 18 0
120 " ..	3 16 0
150 " ..	4 14 0

Electrolyte extra.

Hire-purchase terms for all models



SEND THE COUPON TO-DAY FOR FULLY DESCRIPTIVE BOOKLET
MILNES RADIO CO., VICTORIA WORKS, CHURCH ST., BINGLY.

Please send full particulars of Name.....
the Milnes H.T. Supply Unit. Address.....

EVERYTHING **The G.E.C.** your guarantee ELECTRICAL

**GET PENTODE POWER
AND HALVE H.T.
RUNNING COSTS**



**TWO OSRAM
L.P.2 VALVES**
SUPPLIED IN PAIRS
SUITABLE FOR Q.P.P.
Price **17/6** Per Pair

**OPERATING Q.P.P.
CHARACTERISTICS**

Filament Volts	...	...	2.0 max.
H.T. Volts	...	...	150
Grid Bias	...	...	- 9 Volts
Standing H.T. Current per pair,	2 m.a.		
Average H.T. Current per pair,	4 m.a.		

BY USING
OSRAM L.P.2
THE 2-VOLT BATTERY
ECONOMY TRIODE
IN QUIESCENT PUSH-
PULL CIRCUITS

You can get THREE TO FOUR TIMES the power of the ordinary battery set — and without distortion!

Two OSRAM LP2 valves in Q.P.P. will give this with the ridiculously small consumption of ONE MILLIAMPERE standing H.T. current per valve.

—AND the cost of an OSRAM LP2-Q.P.P. pair is no more than a single Pentode.

Another important point —

ANY standard Q.P.P. Transformer is suitable for use with the OSRAM LP2.

Osram
2 VOLT BATTERY
Valves

MADE IN ENGLAND
SOLD BY ALL WIRELESS DEALERS

**EXTRA QUALITY
WITHOUT EXTRA COST**

Advt. of The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.



NOW ON SALE

Complete Constructional Details of

The **Wireless World**
THE PRACTICAL RADIO JOURNAL

MONODIAL A.C. SUPER

A SEVEN-VALVE SUPERHETERODYNE RECEIVER OF OUTSTANDING PERFORMANCE

By W. T. COCKING

This booklet contains in a compact form the original articles which appeared in "The Wireless World" some months ago.

It describes at length, with full explanations and illustrations, a superheterodyne receiver for A.C. Mains which is still unchallenged for faithful reproduction and exclusive selectivity.

Since the Monodial A.C. Super was first described, many thousands have been built, and no single instance of failure or disappointment

with the performance due to difficulties of construction, has come to light. The Receiver is an ambitious one, but the design is straightforward, and a simplified method of construction has been adopted.

For quality, range and selectivity, the performance is unsurpassed by any known receiver.

Crown 4to. 24 pp. In attractive coloured cover

PRICE 1/6 net. By post 1/8

From all booksellers, or direct from the Publishers

ILIFFE & SONS LIMITED, DORSET HOUSE, TUDOR STREET, LONDON, E.C.4



W. W. 38

Make sure of your Copy of **The Wireless World DIARY for 1933**

NOW ON SALE

The only Diary published which is compiled by the Staff of "The Wireless World"

Size 3 1/2 x 4 1/2 inches, 192 pages. Bound leather cloth, back-loop with pencil, round corners and gilt edges

PRICE 1/6

By Post 1/7

From all Booksellers, Stationers and Bookstalls or direct from the Publishers

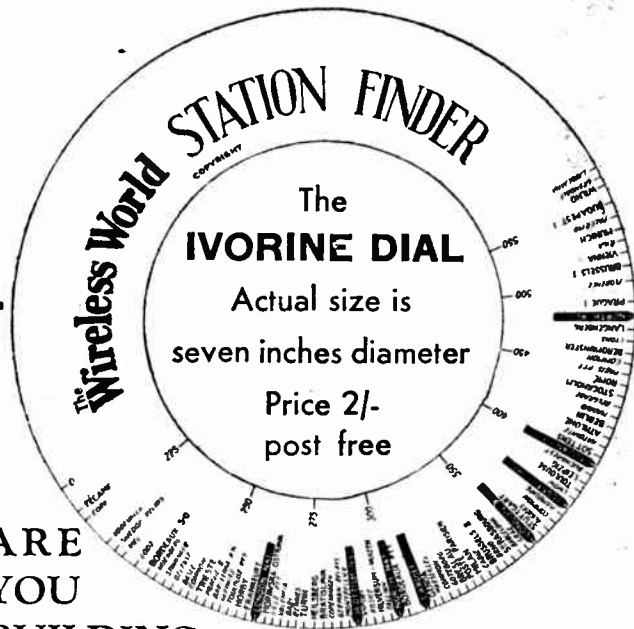
ILIFFE & SONS LTD.
DORSET HOUSE, TUDOR STREET, LONDON, E.C.4

W.W.66

This handy little pocket volume is now in its ninth year of publication. As a convenient source of information on many aspects of wireless theory and practice it is unique. In addition to the usual Diary pages—one week at an opening—there are 78 pages of facts, figures and explanations to which wireless amateurs make frequent reference. These include a series of 16 up-to-date circuit diagrams of complete receivers and accessories such as Band Pass Filters, Volume Controls, Eliminators and Rectifiers, and Methods of applying Reaction.

LIST OF CONTENTS

Regulations controlling Receiving Licences—Broadcasting Stations of Europe—Principal Short-Wave Broadcasting Stations of the World—Useful formulae—A Series of Abacs—Copper Wire Tables; Sizes, Weights and Resistance—Conversion Tables—Symbols in Common Use—Symbols Used in Wireless Diagrams—Circuit Diagrams and Notes—Tracing Hum in Mains Receivers—Coil Construction Data—Practical Hints and Tips—Matching Output Valve and Loud Speaker—Morse Code—Valve Data.



ARE YOU BUILDING

The **Wireless World** STATION FINDER?

The handy accessory which positively identifies Foreign Stations. Described for constructors in "The Wireless World" of January 13th.

Make sure of the efficiency as well as the good appearance of The FINDER by using the Ivorine Dial obtainable from The Publishers "The Wireless World" Dorset House, Tudor Street, London, E.C.4.

W. W. 75

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

On and after March 1st, 1933

BRITISH RADIOPHONE paper CONDENSERS

B RITISH RADIOPHONE LTD. have been appointed Sole Distributors in the British Isles for Paper Condensers manufactured under license from the WEGO Condenser Co., Ltd., and for other WEGO products.

These Condensers already enjoy a wide reputation for consistently reliable performance, and Amateur Constructors, in using them, are following the lead of professional experts whose endorsement of their efficiency and quality is in itself a sufficient guarantee of excellence.

Full particulars and price lists are available on request, together with a complete technical service which is second to none in the country.

BRITISH RADIOPHONE LIMITED

Aldwych House, Aldwych, London, W.C.2.

Telephone: Holborn 6744.

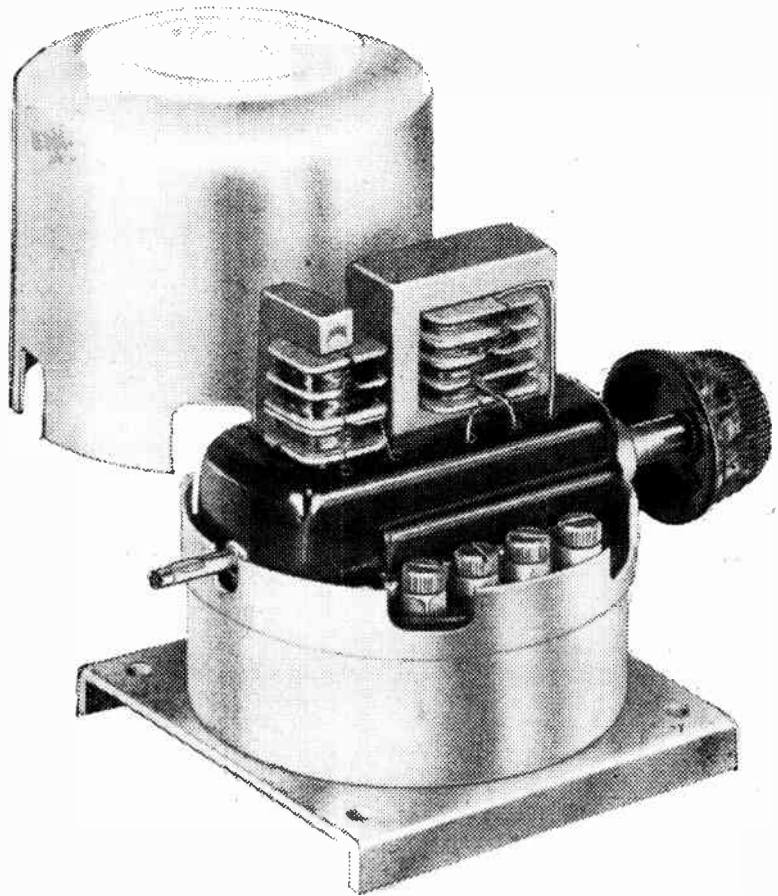
COLVERN FERROCART COILS

Since the announcement earlier in the season that Colvern had secured the exclusive rights for the use of the core material Ferrocart for radio frequency components, much work has been done in the Colvern laboratory and factory, and tuning coils are now available in a suitable form for inclusion in receivers and meeting the requirements of efficient receiver design.

The first types to be available are:—

TYPE F1—F2. Input band-pass filter. Constant selectivity, ganging unaffected by variations in aerial reactance, symmetrical resonance curve.

TYPE F3. Autotransformer inter-valve coupling with reaction, ganging perfectly maintained on both wave ranges by transfer of tapping point in correct turns ratio, practically constant reaction.



SPECIFIED FOR THE "W.W. FERROCART THREE"

One set F1, F2, F3 Coils ganged on sub base plate with wave change switch .. Set **50/-**

One aluminium chassis, pierced with necessary holes, finished grey cellulose **10/6**

One 10,000 ohms Potentiometer, Type ST5C .. **5/3**

Regarding the performance of a three valve receiver, standard in other respects, but employing the above combination of Ferrocart coils in place of the corresponding types of air-cored coils, we do not think we can do better than quote a few passages from the "Wireless World" review of the receiver they have designed round these coils

"The introduction of ultra-efficient iron-cored tuning coils has at last made it possible to obtain from a simple straight set a degree of selectivity which bids fair to rival that of the superheterodyne. To those accustomed to ordinary sets the selectivity given by the new coils is a revelation, and the principle undoubtedly opens out a new era in radio reception and will give a new lease of life to the straight set."

"The improvement in performance which this receiver shows over a similar type fitted with ordinary coils is so great that it can be realised only by actually handling the set . . . it is in selectivity that the performance is so outstanding. It is no exaggeration to say that the selectivity is considerably greater than that given by the average two H.F. set with four tuned circuits."

All Colvern Ferrocart coils are matched to the following inductance values—medium wave 157 μ H, long wave 2,200 μ H when screened, the departure from these values is guaranteed to be less than $\frac{1}{4}$ of 1%.

MADE UNDER LICENCE FROM
THE PATENTEE, HANS VOGT.

COLVERN LTD., MAWNEYS ROAD, ROMFORD

The Wireless World

THE
PRACTICAL RADIO
JOURNAL
22nd Year of Publication

No. 705.

FRIDAY, MARCH 3RD, 1933.

VOL. XXXII. No. 9.

Proprietors: ILIFFE & SONS LTD.

Editor:
HUGH S. POCOCK.

Editorial Offices:
116-117, FLEET STREET, LONDON, E.C.4.
Editorial Telephone: City 9472 (5 lines).

Advertising and Publishing Offices:
DORSET HOUSE, TUDOR STREET,
LONDON, E.C.4.

Telephone: City 2816 (17 lines).
Telegrams: "Ethaworld, Fleet, London."

COVENTRY: Hertford Street.
Telegrams: "Cyclist, Coventry." Telephone: 5210 Coventry.

BIRMINGHAM:
Guildhall Buildings, Navigation Street, 2.
Telegrams: "Autopress, Birmingham." Telephone: 2970 Midland (3 lines).

MANCHESTER: 260, Deansgate, 3.
Telegrams: "Iliffe, Manchester." Blackfriars 4112 (4 lines).

GLASGOW: 26B, Renfield Street, C.2.
Telegrams: "Iliffe, Glasgow." Telephone: Central 4857.

PUBLISHED WEEKLY. ENTERED AS SECOND
CLASS MATTER AT NEW YORK, N.Y.

Subscription Rates:
Home, £1 1s. 8d.; Canada, £1 1s. 8d.; other
countries abroad, £1 3s. 10d. per annum.

*As many of the circuits and apparatus described in these
pages are covered by patents, readers are advised, before
making use of them, to satisfy themselves that they would
not be infringing patents.*

CONTENTS

	Page
PROGRAMMES FROM ABROAD, pp. 1-XXIV	
<i>Editorial Comment</i>	163
<i>Economy Smoothing</i>	161
<i>Practical Hints and Tips</i>	166
<i>Broadcast Brevities</i>	167
<i>News of the Week</i>	168
<i>The Ferrocart III</i>	169
<i>The Westector</i>	173
<i>Letters to the Editor</i>	174
<i>Laboratory Tests</i>	176
<i>B.S.R. Ampligram</i>	177
<i>Pye G/B Receiver</i>	178
<i>Readers' Problems</i>	180

EDITORIAL COMMENT

A Vote of Confidence

*Leave Well—and the B.B.C.—
Alone*

THE debate in the House of Commons last week on the present conduct and constitution of the B.B.C., which was heralded in some quarters as likely to develop into an earthquake which would shake the foundations of the Corporation, fizzled out instead like the proverbial damp squib, and has effectively postponed any possibility of tampering with B.B.C. affairs for some time to come.

Whilst we have ourselves often been ready to criticise little points connected with the activities of the B.B.C., yet we cannot raise any enthusiasm to support the views of those who disapprove of the way in which the B.B.C. strives to hold the balance and deal fairly with all parties and all sections of opinion at the microphone. We have nothing but admiration for the way in which this particular task has been handled by the Corporation.

If there is a criticism to make it should surely be that the B.B.C. is over sympathetic and considerate towards the multitude of spokesmen of minority opinions. It might perhaps be considered advisable that there should be more control exercised by the B.B.C. to make it less easy for the microphone to become available to minorities often so small that their members qualify to be described as "cranks." This consideration is, no doubt, constantly present in the minds of those who control the B.B.C., and possibly one result of last week's debate will be to encourage more autocratic weeding out of programme matter of doubtful value. The vote which followed the debate was nothing short of a tribute to the ability of those

who at present guide the selection of broadcast matter in this country.

Every discussion arising out of the question of the autocratic powers which the B.B.C. enjoys, serves to emphasise the enormous responsibility resting upon the shoulders of those upon whom devolves the task of finding successors, as occasion arises, to replace those exercising authority at Broadcasting House. So long as we can have confidence that, as time goes on, control will pass in succession to persons of equal discretion and competence we have little cause for anxiety, but we hesitate to think what might be the effect of allowing these autocratic powers to pass into the hands of persons less fitted to entrust with so great a responsibility.

The Ferrocart III

Outstanding Selectivity

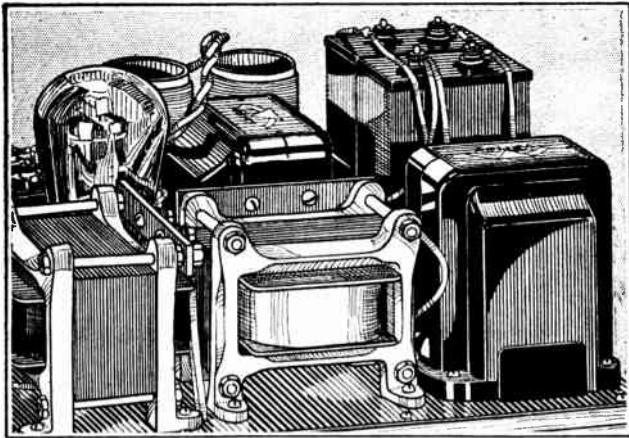
AS we announced last week, we are including in this issue a design for the construction of a three-valve receiver embodying the new Ferrocart coils which have created so much interest, first on account of the complete departure in design from coils of orthodox type, and secondly because of their very high efficiency.

In the receiver described in this issue the selectivity obtainable with a single H.F. stage is phenomenal. We chose for our first practical receiver a single stage H.F. design because this demonstrates more effectively than a multiple H.F. set the outstanding advantages to be derived from coils of this type. Whilst a feature which first strikes the eye is the minute size of the coils, this is probably the least important of the properties, for it is the switching and wiring considerations which control the eventual size of the coil unit.

Economy Smoothing

Hum-free Reception with Minimum Equipment

By M. G. SCROGGIE, B.Sc., A.M.I.E.E.



Showing the smoothing equipment required in an ambitious mains receiver

IN designing the smoothing equipment for a mains-driven receiver, some people use brute-force and other people use brains. In the first method one obtains the most capacious condensers and the most massive chokes, regardless of expense, and connects them between the raw output from the rectifier and the receiver proper, and thus attempts to smooth out the ripple to such an extent that it is incapable of causing hum. The object is to make the whole supply of current to the valves practically as unvarying as that obtained from batteries.

The second method aims at putting in the smoothing components just where they are required and omitting them elsewhere.

Apart from the waste of money, the mere adding of choke to choke and condenser to condenser is by no means certain to guarantee freedom from hum. This is particularly true of D.C. working. Not only is the cost of amateur receivers sometimes unnecessarily high, but those produced by manufacturers are not always as economically arranged as they might be. For example, it is sheer wastefulness to pass the current to all the valves through the same smoothing circuit, except, perhaps, in the very simplest type of set.

A Reservoir Analogy

The commonest class of receiver at the present time is the three-valve combination—screen-grid high-frequency stage, detector, and pentode. To illustrate the various ways in which smoothing can be carried out, such a receiver will be assumed, and Fig. 1 shows a skeleton circuit of one.

The irrelevant details are omitted in order to emphasise the parts that are being considered. Thus the intervalve couplings are merely suggested by a non-committal oblong which may contain a tuning coil, transformer, resistor, loud speaker, etc., according to fancy. Grid bias is left out of account, and may be supposed to be looked after by the usual automatic bias resistors, one for each valve requiring it. A valve rectifier is indicated, but the arguments apply equally to metal rectifiers, or

IT is comparatively easy to obtain ripple-free current from the mains supply if chokes and condensers are used regardless of cost. But to effect the same result with the very minimum of equipment requires a knowledge of those factors which contribute towards background noise and hum amplification. The author points out where economy of smoothing components can be safely made and concludes by explaining the virtues of push-pull.

to no rectifier at all in the case of D.C. supplies; but while the principles applicable to A.C. operation include D.C. to some extent, the latter is rather special in some ways and will be considered later.

What we have to do, then, is to take a raw output from a rectifier, consisting of separate pulses of current, and smooth it so that when fed to the three anodes, one screen grid, and one pentode grid, the residual ripple is not enough to give rise to hum from the loud speaker. The simplest system is that shown (Fig. 1) in which C1 is a condenser which acts as a reservoir for the irregular gushes from the rectifier, just as a municipal reservoir enables a uniform

amount of ripple voltage across C1. To prevent this from causing a corresponding ripple in the current supply to the valves, the iron-core choke L is interposed, because it acts as a high impedance to such ripple current. And what does get through L finds an easy by-pass via the second condenser C2, so the proportion reaching the valves is very minute.

Actually C2 is the more effective condenser in minimising hum; C1 is valuable mainly in improving the efficiency of the rectifier and permitting it to deliver its full output.

Amplified Hum

However effective these smoothing components may be, there is always some remaining ripple. According to the arrangement of Fig. 1 the current supplied to all the valves carries an equal proportion of ripple, let us say 1 per cent. of the steady feed current. Such a small amount in the supply to the output valve is incapable of creating a bad hum in the speaker, because the musical or vocal ripple corresponding to the broadcast received is very much greater: perhaps 50 per cent. But the supply to the detector valve also has 1 per cent. hum ripple, which reaches the grid of the power valve via the intervalve coupling, and is thus amplified along with the more desirable sound currents, so that it may be 20 per cent. by the time it reaches the power valve; a much less satisfactory result. There is, further, the feed to the H.F. valve, and if the coupling to the detector is by way of a condenser, a fair propor-

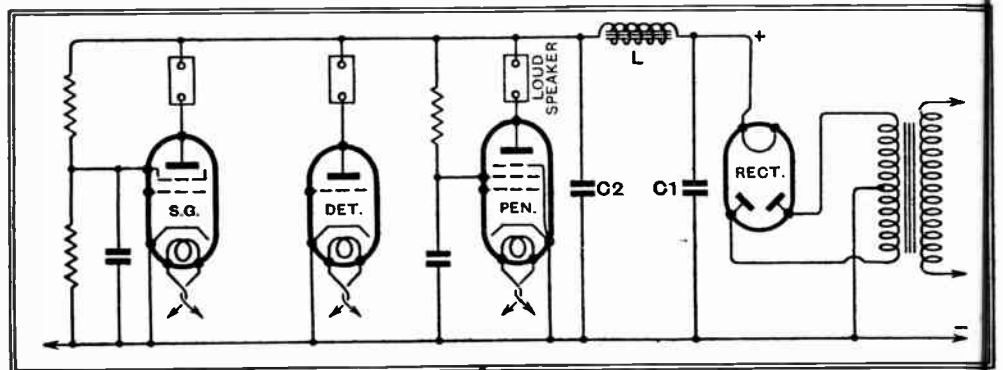


Fig. 1.—Skeleton circuit of a typical three-valve receiver fed by a valve rectifier from A.C. mains.

supply of water to be delivered to the inhabitants, regardless of vagaries of rain-fall.

A condenser alone would not be enough unless it had an impracticably enormous capacity, so there is inevitably a certain

tion reaches the detector grid and is amplified by that valve also. The hum may thus be actually louder than the proper programme. If the coupling is by H.F. transformer very little is passed on to the detector directly, as such a device is very

Economy Smoothing—

ineffective at the low frequency of the hum; but when the carrier wave of a station is tuned in, the hum ripple varies the H.F. amplification and thus modulates the carrier wave. In this way we get the effect of a hum which is only present when a transmission is being received. This variety is usually called modulation hum.

It is clear, then, that the filter C₁, L, and C₂ must be effective in reducing the ripple to such an extent that it is inoffensive even when amplified.

In former days the cost of such a simple filter for a large set would have been out of all reason, so it was customary to use two chokes and three condensers (Fig. 2) in order to obtain smoothing in easy stages. Two moderately large chokes are cheaper than a single fantastically large one. But now the loud speaker field winding, which is equivalent to a very effective choke, is usually available free of charge; while electrolytic condensers

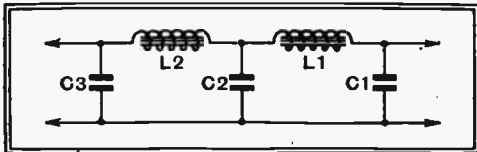


Fig. 2.—To avoid using a very large single choke, two chokes are often used to obtain smoothing in easy stages.

provide a large capacity cheaply. Even so, it is difficult to get enough smoothing from the Fig. 1 filter.

But a receiver of the sort indicated usually—one may say invariably—has decoupling devices in the earlier stages, and these act to some extent as hum filters. In fact, the valves which most need decoupling are just those that most need hum filtering. The reason is the same in both cases—the large subsequent amplification.

Proportional Smoothing

This suggests that we are making a huge mistake in trying to smooth all the current to suit the earlier stages, because the bulk of it goes to the output stage, for which much coarser fodder is good enough. So let us use a filter which is just enough for the last valve, and then pass the relatively small amount of current required for the other valves through a second filter specially designed for it. This may appear strange economy, to add some extras; but let us see. With 4 mfd. condensers, the Fig. 1 filter may easily require a 200 henry choke to kill hum sufficiently. A typical 3-valve receiver takes a total of 40 milliamps. Enquiry as to the price of a choke which is 200 H. at 40 mA. is likely to make one very thoughtful. But a 20 H. choke is probably enough for the last valve only, and the remaining current, say 5 mA., is taken through a 200 H. choke for the benefit of the other valves (Fig. 3). A 200 H. choke to carry 5 mA. is about the same size as the 20 H. for 40 mA.

If L₁ is a loud speaker field winding, which is likely to have an inductance of more than 20 H, a still smaller choke will do for L₂. But the relatively large ripple

voltage developed across the field winding may induce some hum directly into the loud speaker moving coil, so manufacturers usually provide a hum-bucking coil.

Pentode versus Triode

The smoothing components now boil down to condensers of reasonable size (C₃ at least is low voltage also) and one very diminutive choke. Even if the speaker field is not available, very complete smoothing is possible with two small chokes.

So far, no specific mention has been made of the auxiliary grid of the pentode. The foregoing argument may be applied equally well to a triode. But an interesting point emerges in considering the case of the pentode. If the characteristic curves are consulted it will be seen that quite large variations of anode voltage have scarcely any effect on the amount of anode current. Therefore a ripple voltage superimposed on the supply to the anode has to be quite large to produce an audible effect. Therefore, also, the sketchiest sort of smoothing suffices for this avenue of current, which is by far the largest. The auxiliary grid is not so; its current must be very pure and good, and if the choke L₁ is pared to the bone the voltage-dropping resistance R and condenser C (Fig. 3) may not be enough to augment the smoothing, and it will be preferable to draw its supply from the same source as the other valves.

The ordinary triode power valve is much more sensitive to ripple than the pentode, and must be provided for accordingly, but the smoothing situation is considerably altered if push-pull amplification is adopted. Push-pull is commonly supposed to be a method of obtaining a larger output, or less distortion. No doubt it does this to some extent, but there is surprisingly little difference if one valve is removed altogether. The real virtue of push-pull, though it seems to be hidden under a bushel, is that the ripple current

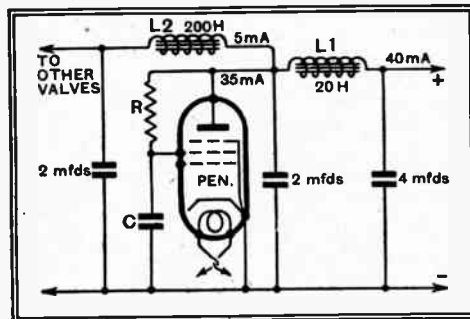


Fig. 3.—Proportional smoothing in which two chokes are used, suitably chosen for the current passing in the output and earlier stages respectively.

in the feed to the two anodes passes through the two halves of the output transformer primary in opposite directions, and cancels out. It is not possible to use totally raw current, for the amplifying properties of the valves would be somewhat upset and, moreover, the valves are not likely to be perfectly balanced. But it is possible to use feed current that is several times rougher than that which

would be needed for an equally powerful single valve or parallel valve output. Sometimes it is even practicable to abolish the choke and trust to the standard 8 mfd. electrolytic condenser.

The output transformer also may be enormously cheapened because there is no

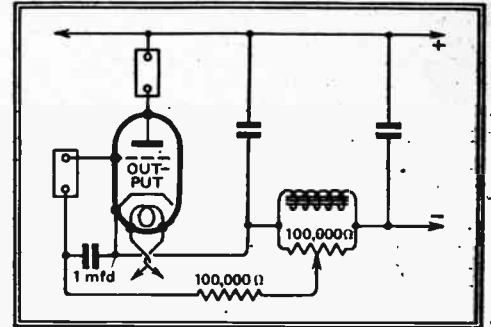


Fig. 4.—Using the volts developed across the speaker field for automatic bias.

resultant polarising effect to saturate its core. But that is outside our subject. The advantage of using a push-pull output for a really powerful amplifier taking a heavy current is immense, for the cost of adequate chokes and transformers otherwise becomes positively alarming. Of course, push-pull does not help the earlier stages; but we have seen that their relatively small consumption renders effective smoothing an easy matter.

D.C. Mains Smoothing

It seems to have become an established custom to connect a choke in the positive side. There appears to be no inherent advantage in this. In fact it may be a definite advantage to place it in the negative lead. For it inevitably drops some volts, particularly if it is a loud speaker field winding. The bias resistor for the power valve also drops volts. By the time all these volts have been lopped off, the power valve is not likely to be doing as well as it ought, so if the choke is in the negative side it may be used simultaneously as a bias resistor. It would be rather a stroke of luck if it were just right for the purpose. Generally it has to be augmented by some resistance added in series, or reduced by tapping. In either case a very imperfectly smoothed bias voltage results, which requires a little subsidiary filter to put it in order (Fig. 4).

Even though smoothing is everywhere adequate it does not necessarily mean freedom from hum. There are other causes of hum which must be eliminated.

In the case of D.C. the actual smoothing required is quite small. For instead of 100 per cent. ripple as in the case of a rectifier output, it is already fairly smooth when supplied by the authorities. But the ripple that is present is most obstinate. It is high pitched in tone and the ear can detect a far smaller amount in the loud speaker output. For the same reason it finds its way into forbidden territory by capacity paths.

The larger the smoothing choke, the larger the stray capacity is likely to be, so that an endeavour to increase the filtering may be rewarded by more hum.

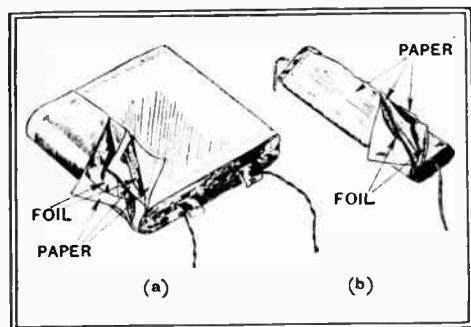
Practical HINTS AND TIPS

AIDS TO BETTER RECEPTION

A SMALL point with regard to paper condensers of high capacity may be responsible for uncertainty when a stock of existing components is to be used in building a new receiver. The non-inductive condenser has only been manufactured in large quantities during the last few years; condensers of earlier vintage will probably be inductive, and, unless they can be guaranteed as free from this property, there may be a natural hesitation to use them, even though they may be rated to withstand the voltages existing in the receiver.

**Condensers :
Inductive and
Non-inductive**

Inductive and non-inductive condensers of earlier vintage will probably be inductive, and, unless they can be guaranteed as free from this property, there may be a natural hesitation to use them, even though they may be rated to withstand the voltages existing in the receiver.



Inductive and non-inductive condensers compared. In the latter (sketch (b)) contact is established along the whole length of each metal foil, and not merely at one end.

These doubts may be set at rest by saying that there is very little risk of trouble through using inductive condensers in any position except where H.F. currents are to be dealt with. Accordingly, old condensers may be employed in L.F. circuits for by-pass and decoupling purposes, and also for smoothing, but they should not be inserted in the anode, grid, or screening grid circuits of the H.F. amplifier.

With regard to the detector anode circuit, where both H.F. and L.F. currents are handled, the position is not quite so clearly defined, but as a general rule the use of inductive condensers is not likely to do serious harm. Any paper condenser of high capacity will almost invariably be on the "dead" side of any H.F. filter that may be included in the circuit.

The accompanying sketch will help to make clear the essential difference between inductive and non-inductive condensers. The first are usually wound with two continuous strips of paper-interleaved foil, electrical connections being made only to one end of each strip. Charging currents flow through the convolutions of the winding, and it is not hard to see why the condenser has some of the properties of a tuning coil. A non-inductive condenser might be built up with a series of flat plates interleaved by paper insulation, but the more common course is to wind the

two foils in such a way that their edges project so that contact may be made with them at a number of points, either by soldered or clamped joints. There are other, and rather more subtle, methods of ensuring an absence of inductive properties, but the simple and obvious method described is widely used.

It is risky to hazard an opinion on the capabilities of a short-wave set after, say, a mere half an hour's experience with it. Short waves are notoriously uncertain, and conditions for their reception may vary from day to day or from hour to hour. Directional transmission has partly, but not entirely, overcome this element of uncertainty—as witness the Empire Service.

**Improves
with
Acquaintance**

When conditions are good a most unpromising receiver may afford wonderful results over enormous ranges, while the best of sets in unfavourable circumstances may fail entirely to receive intelligible signals from any distant station.

Accordingly, a short-wave receiver should, strictly speaking, be neither condemned nor praised except as the result of a direct comparison with other sets. The second-best alternative to this is a prolonged series of tests spread over a period of time.

The human element also comes into the picture. Those whose experience has been confined to normal broadcast reception are apt to feel very much at sea when first handling a short-wave set; until this feeling wears off it is unlikely that the user will get the best possible results from his set.

The clearances allowed in moving-coil loud speaker construction are usually very small, and so it is not surprising that the worst sometimes happens, and the moving coil makes intermittent contact with the sides of the gap in which it works. This highly undesirable rubbing contact may take place at all positions, or it may only occur towards one end of the travel of the coil. In all cases the result is serious distortion, and, as a rule, a reduction in volume.

**Centring
the
Moving Coil**

A rubbing contact between the moving coil and the magnet is not so easy to diagnose as one might expect, and probably the simplest and most certain way of making sure that this trouble is present is to listen to the loud speaker when it is reproducing a sustained pure note of constant intensity, and preferably low periodicity. If the trouble in question is

present a secondary frequency, superimposed on the applied tone, will be audible.

A supply of about 20 or 30 volts of A.C., periodicity 50 to 100 cycles, is suitable for the purpose of testing; it may not be obvious to users of A.C. sets that voltages of this order are usually available in their own receivers.

Most mains transformers have a primary winding tapped for various intermediate voltages between 200 and 250 volts, and in these tapings we have just what is needed. To make a test, the loud speaker output transformer may be disconnected from its usual position in the circuit and joined across the power-transformer tapings in the manner shown in Fig. 1. The position of the output-transformer connections depends on the power required to vibrate the loud speaker diaphragm at reasonable amplitudes for testing. Care must be taken not to apply too much voltage, and, most important of all, not to impose a short circuit on the mains supply.

While tests are being carried out the leads originally connected to the output-transformer primary may be joined together in order to maintain a sensibly constant load on the H.T. power supply system of the receiver, and thus to prevent damage to condensers, etc.

It is hardly to be generally recommended that the amateur should himself undertake the somewhat ticklish operation

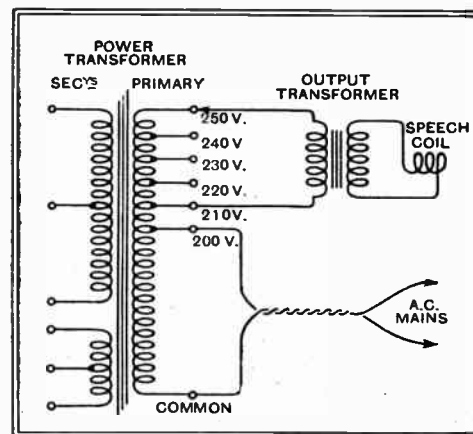


Fig. 1.—A.C. voltages of from 10 to 40 or 50 volts may be obtained, for test purposes, from the tapped primary of a mains transformer.

of re-centring the moving coil if the service department of the makers is available for doing it for him. Patience and a light touch is generally needed, and the work can best be done while the loud speaker diaphragm is being actuated by the stepped-down mains voltage. The fact that the rubbing contact has been removed is shown by the disappearance of the secondary audible frequency.

Broadcast Brevities

By Our Special Correspondent

B.B.C. and the "Ultra Shorts"

FROM being the topic of the hour, the ultra short wave tests at Broadcasting House have become a prosaic affair of daily routine. Certain of the engineers have rigged up ultra short wave adaptors at their houses, listening in daily to ultra short relays of the National or Regional programmes. One man uses his "ultra short" set as far away as Purley, fifteen miles distant.

Day Unto Day

From time to time the quality of reception is compared with that from the medium-wave transmitters, and an entry is made in a log book. So the tests go on. In a few years' time, if all goes well, a senior engineer may inspect the logs, discover that ultra short-wave broadcasting is a practical proposition, and write a paper for the I.E.E.

No harm will be done because, by that time, the Regional scheme will be decently obsolete.

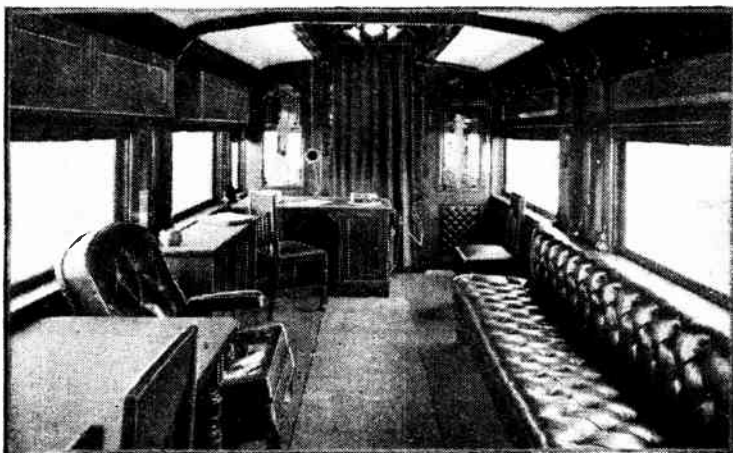
A Subject for "Free Grid"

"FREE GRID," whose absence abroad, by the way, has aroused a surprising amount of interest in unexpected quarters, would be pained to hear that the Blattner-phone is being used this week by the B.B.C. for the Leicestershire County celebrations without the fact being indicated to listeners. And I have private information to the effect that this form of recording, unheralded and unsung, has been used on similar occasions in the past.

The explosions in a Leicestershire quarry which will be broadcast to-morrow (Saturday) were recorded several days ago.

Not What it Seems

And those factory noises. The more intelligent of listeners must have guessed, of course, that no factory staff would set to work at full pelt at 9 p.m. simply to provide "noises" for a B.B.C. programme. These sounds of work, always so soothing to people who are not working, are Blattner-phoned during the day and broadcast at night.



A STUDIO ON RAILS. A portion of the Victorian Railways coach is utilised as a studio, seen above, the remainder housing the transmitter and power generators.

Mugwumpery

THE Commons debate on broadcasting had the result which everyone in Broadcasting House predicted, viz., a vindication of the *status quo*, no additional Parliamentary control being considered necessary in the public interest. The only highlight in the debate was the display of verbal pyrotechnics by Mr. Winston Churchill, whose allusion to "pontifical anonymous mugwumpery" seemed, to at least one listener, to be more disrespectful than untruthful.

Ambiguous

A mugwump, according to the Pocket Oxford Dictionary, is a "person affecting superiority to party politics." The term is of North-American-Indian origin and stands for "great chief."

On second thoughts I feel that Mr. Churchill intended a compliment.

Remarkable Coincidence

HARMAN GRISEWOOD is to make his last appearance in radio drama next month in the revival of "Chopin," by Wilfred Rooke-Ley, which is to be broadcast Nationally on March 31st, and from the Regionals on April 1st. He will then join the Broadcasting House announcing staff which, by a remarkable coincidence, already includes Frederick Grisewood—no relation!

I am told that the chances of another Grisewood (unrelated to either) joining the announcing staff within a twelvemonth are 1,743,101 to 1. Try working it out with a pack of cards and the joker.

Announcing to the Empire

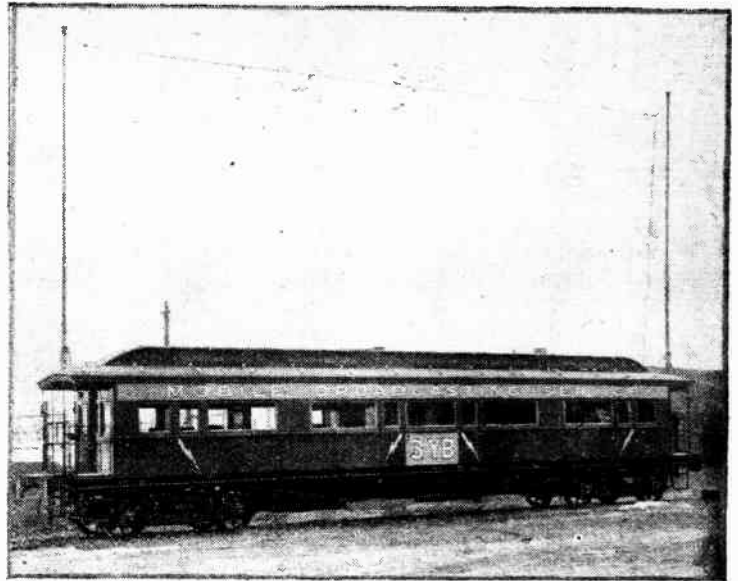
De Groot, the young London announcer, is now devoting his time to Empire announcements only, and, in the words of the Cockney, "the job ain't no synagogue," for the Empire station transmits for twelve-and-a-half hours daily.

Time-Table

Changes

The Empire transmission times are being changed slightly as from April 2nd next in such a way that the Third and Fourth Zones will be virtually merged.

At present the African Zone (III) receives its own programmes from 6 to 8 p.m. G.M.T., and the



HERE TO-DAY AND GONE TO-MORROW. This travelling broadcasting station roams Victoria, Australia, distributing sponsored programmes over a fairly wide service area.

West African Zone (IV) from 8.30 to 10.30 p.m. G.M.T. Under the new arrangement the programme for both Zones will be a continuous affair from 6 to 10.30 p.m.

The Indian Zone (II) period will also be extended, transmission being continuous from 1.30 to 5.30 p.m.

Sticking to G.M.T.

Although British Summer Time begins on April 9th, the B.B.C. intends to use Greenwich time as the basis for all Empire broadcasting time-tables.

Film Talks by Cecil Lewis

CECIL LEWIS—"Uncle Caractacus" of former days and Director of Programmes—will shortly return to the microphone to give a series of talks on "How a Film is Made."

Since he left the B.B.C. five years ago, Cecil Lewis has done much scenario writing and production for British International Pictures at Elstree, and I imagine that he could "talk shop" at the microphone in a highly interesting manner.

The Boat Race Relay

J. D. M. SNAGGE, who made such a success of the Boat Race Relay last year, will perform the same task on the afternoon of April 1st, when he will follow the crews in the launch "Magician." As in past years, the short-wave transmission from the launch will be picked up on the roof of Harrod's Depository, near Hammersmith Bridge. The race is expected to start at 3.50 p.m., in which case the commentary will begin a quarter of an hour earlier.

The Grand National

THE Grand National Relay is always a favourite. This year the race takes place on March 24th. The commentators will be Mr. R. C. Lyle, who will give his description from Topham's private stand, and Mr. W. Hobbis, who will be occupying a strategical position at the Canal Turn. Mr. Snagge, of Boat Race fame, will describe the scene at the start.

What more could one want, except to back a winner?

NEWS of the WEEK

Current Events in Brief Review

Wireless in Church

A WIRELESS set in every church within the next three years is the forecast of the vicar of St. James's, Carlisle, the Rev. F. W. Hopkins, whose church is used for the reception of broadcast services.

Finlandia

FINLAND stations are to be increased in power. We understand that the Viipuri station is to be raised from 10 to 40 kilowatts, while Onk is to increase its power to 10 kilowatts.

Listening Boom in Irish Free State?

A BIG jump in the number of wireless licences in the Irish Free State is expected following the opening of the Athlone high-power station.

The increase will not come too soon. At the end of last year only 31,094 licences had been issued, which is equivalent to a licence for one person in a hundred.

Toulouse Gets Impatient

DESPITE appeals to the Post Office authorities, Radio Toulouse, the new 60-kilowatt station at Saint Agnan, is not yet licensed for transmission. The touring organisations of the Pyrenees and the Basque Coast have now demanded that the station should be allowed to function in the same manner as other private transmitters such as Radio Paris and Poste Parisien, "which have already been authorised to increase their power."

Did You Hear the Noubas?

WHILE we wait impatiently for news of the postponed electrical music concert from the German stations, it is consoling to know that Radio Algiers broadcast an entire "Nouba" on February 23rd. A correspondent states that the broadcast included "the overture, its Messeders, its betahis, its derdjs, its nessrafs, its final or meklass and its partial preludes or kersis." He adds that a Nouba, "though it suggests some sort of a sweet thing, is a common or garden symphonic suite in A minor."

Prize for Radio Cabinet Design

A TEN-GUINEA Wireless Set is offered by the Six-Sixty Radio Company for a design for a radio cabinet in connection with the Royal Society of Arts Competition of Industrial Designs, 1933.

Messrs. Ferranti, Ltd., offer a first prize of £20 and a second prize of £10 for designs for window showcards advertising synchronous Electric Clocks.

The descriptive booklet concerning the competitions can be obtained from the Royal Society of Arts, John Street, Adelphi, W.C.2, price 4d., post free.

A Radio Church

AUCKLAND, New Zealand, has a "Radio Parson," the Rev. C. G. Scrimgeour, who has relinquished control of a city mission in favour of a "radio church" operated by station 1ZR.

Fewer Sponsored Programmes from Paris?

FROM a reliable source we learn that Radio Paris will be definitely taken over by the French postal authorities on April 1st, a step which it is expected will mean a diminution in the number of sponsored programmes from the station. Originally the P.T.T. intended building an official station to replace the Eiffel Tower for broadcasting purposes, but the purchase of Radio Paris has been decided upon for economic reasons.

Presidential Broadcasts To-morrow

PRACTICALLY every broadcast wavelength in America will be occupied to-morrow

Opera from Greece

IF "burning Sappho lived and sung" in our times she would be eligible for the job of lady announcer in Greece, for the first Hellenic transmissions are now being carried out in a businesslike manner by Radio Salonika on a wavelength of 265 metres and a power of 2 kilowatts. The station is run by the Salonika Association of Wireless Listeners, who recently arranged a vocal recital by Vitsou and Epitropaki, soprano and tenor, respectively, of the Hellenic Opera.

New R.M.A. Chairman

MR. W. WITT BURNHAM has been elected chairman of the Radio Manufacturers' Association in succession to Mr. Leslie McMichael. Mr. Burnham, who is now head of the radio activities of the Edison Swan Electric Co.,

Special Revolution Service

A REGULAR service of alarming and disturbing news" was broadcast from a mystery station in Barcelona during the recent Communist troubles, writes a correspondent. Orders have been given to the Postal Administration to track the transmitter and bring its owners to justice.

Comfort for Cooks

THE French "Bulletin National du Commerce et de l'Industrie" contains a special notice assuring chefs and all engaged in the restaurant trade that their livelihood is not likely to suffer in the near future by the introduction of cooking by wireless.

The writer, under the signature "Le Maitre d'Hôtel," refutes all rumours to the contrary.

H.F. in Food Preservation

ALTHOUGH experiments in the preservation of food by means of short electro-magnetic waves are not a novelty, it is interesting to learn that the Soviet Government has voted 60 millions of roubles to a competent organisation undertaking food sterilisation of cooking by wireless.

Professors Kasterine and Lacharov are stated to be in charge of the experiments at station MGSPS.

Canadian Listeners to Pay More?

CANADIAN Government estimates for radio services during the 1933-34 fiscal year further set at rest apprehensions among Canadian broadcasters that the recently established Canadian Radio Commission will take over the ownership and operation of broadcasting stations under the nationalisation scheme voted by Parliament last year.

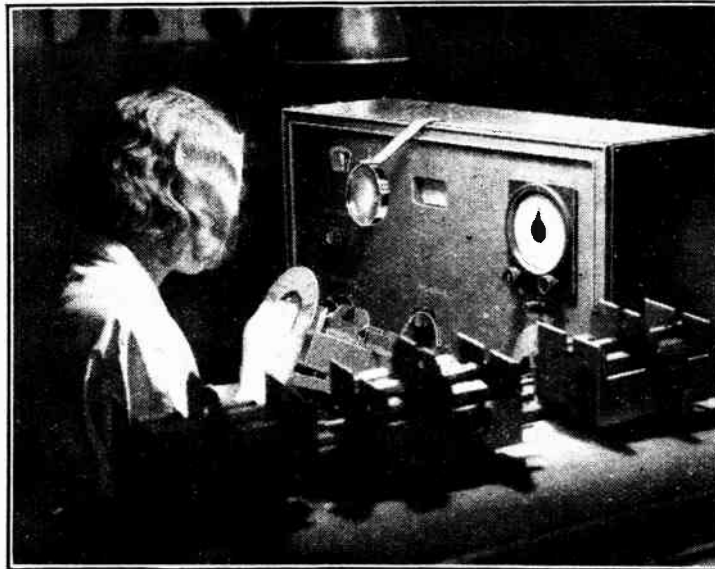
Though the estimates represent an increase of \$562,975 over the appropriations for the current fiscal year, they include only \$1,000,000 for broadcasting services, which is only a fraction of the amount that would be needed to take over Canadian stations from their present owners.

Proposals have been made to increase the listener licence fee of \$2 to \$3, \$4 or \$5.

Eavesdropping on the Police

POLICE "broadcasts," which provided a craze among American listeners on the short waves some months ago, may have a similar effect in this country judging from the experience of Brighton listeners during recent tests by the local police with their pocket wireless system. The transmissions are made from a station on the roof of the Town Hall, and, although a wavelength of 147 metres is used, listeners in the neighbourhood appear to have heard the tests at various points on their receiver dials.

"I heard the messages on 200 to 400 metres and 1,000 to 1,750 metres," declared one listener. Apparently no secrets are being given away by the Brighton police for the messages picked up by listeners merely ask patrolling officers to ring up headquarters on the next telephone!



TESTING VARIABLE CONDENSERS. Before being passed for mounting in a receiver, condensers in the Lorenz factory, at Berlin, are tested in a small transmitter. The tester is here seen watching the dial readings through a magnifying glass.

(Saturday) with verbal and musical details of President Roosevelt's inauguration at Washington. The broadcast is to be the most elaborate in history.

The Presidential programme will run from 2.30 p.m. to 9.30 p.m. G.M.T., and the parade of welcome in Washington will be described from speakers' booths, from "roving stations" strapped on the backs of peripatetic reporters or carried in cars, from aeroplanes and airships, and from (for the inaugural address) the stand at the east entrance to the Capitol. Radio cars will follow the new President in the procession to the White House, and listeners will hear the noise of the gathered multitudes.

Among the American short-wave stations which are expected to broadcast the event are W3XAL (49.18 metres), W8SK (48.86 metres), W2XAF (31.48 metres), and W8XK (25.27 metres).

was connected with the industry long before the advent of broadcasting. He was chairman of the National Association of Radio Manufacturers and Traders for three years before the present organisation came into existence.

German Political Broadcasting

THE German Government is taking rigorous measures to ensure that propaganda broadcasts in connection with the coming elections shall not be interfered with. Recently when Herr Hitler was giving a speech a line linking the hall with the Stuttgart broadcasting station was cut fifteen minutes before the end of the speech. Next morning, writes a correspondent, the Ministry of Posts in Berlin ordered that the officials responsible for the technical side of Stuttgart broadcasting should be immediately suspended from their duties until the matter had been investigated.

WE ARE NOT NEWCOMERS TO RADIO

**ADVERTISERS IN THIS JOURNAL SINCE 1920
FOUNDERS OF PILOT AUTHOR KITS IN 1919**

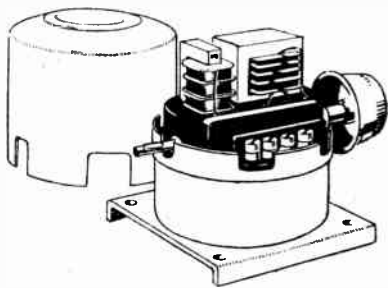


**PETO-SCOTT
FERROCART
III A.C. RECEIVER**

NEW... REVOLUTIONARY...

DELIVERY PER RETURN COLVERN FERROCART COILS—AS SPECIFIED PILOT AUTHOR KIT EXACT TO FIRST SPECIFICATION

FOR IMMEDIATE DELIVERY



By special arrangement with Messrs. Colvern Ltd., we hold stocks of their FERROCART COILS for immediate delivery. Order now—the demand will be enormous. FIRST COME—FIRST SERVED. All orders in strict rotation.

Set of 3 Coils, ganged and mounted on metal chassis, as specified: CASH or C.O.D.

£2-10-0

or 12 monthly payments of 4/7.

TRADE SUPPLIED CASH OR C.O.D., BEST DISCOUNTS

KIT-BITS Selected C.O.D. items for the Ferrocart III. You pay the postman. We pay post charges on orders over 10/-.

1 PETO-SCOTT Plymax Chassis 14" x 12" x 3" assembled and ready drilled	9 6
1 PETO-SCOTT Oak-faced Ply panel ready drilled	2 6
1 British Radiophone 3-gang Condenser, .0005mf., with right-hand trimmers and 1 British Radiophone Dial and Dial light assembly	1 13 0
1 Set of Colvern Ferrocart Coils, ganged and mounted on metal chassis	2 10 0
1 Telson Pentode Output Choke, Power Type W172	10 6
1 Sound Sales 2,500 ohms Speaker Field replacement choke type CH4	16 0
1 Bryce Mains Transformer, screened primary 350-0-350v. 60 m.a.; 4v. 2.5 m.a. C.T.; 4 v. 3.5 amp. C.T.	1 8 6
13 Graham Farish "Ohmite" Resistances, As specified by the Author	19 6
Set of 4 Concor Valves as specified	3 7 6
1 Colvern Metal Chassis	10 6

KIT "A" Author's Kit of FIRST specified Parts complete down to the last screw, including READY DRILLED Peto-Scott Panel and assembled and drilled Peto-Scott PLYMAX CHASSIS but less valves and cabinet.

Set of 4 Specified Concor Valves **£3.7.6** or 12 monthly payments of 6/2.

CASH or C.O.D. Carriage Paid.

12 GNS.
or 12 monthly payments of 23/-

Finished Instrument: Ready built and Aerial tested. Including Valves but less Cabinet. Cash or C.O.D. Carriage Paid, **£17-10-0** or **£3-10-0** Deposit and 11 monthly payments of 28/-.

LIST OF PARTS—IMPORTANT NOTICE

"The Wireless World" Official List of Parts printed in this issue, shows item for item the contents of the PILOT AUTHOR KIT which comprises only those parts actually used by the Author himself. Builders of the Ferrocart III with a PILOT AUTHOR KIT are assured of a square deal. Readers desiring to purchase any items separately can order with confidence from the EDITORIAL LIST OF PARTS for delivery against CASH or C.O.D.—Orders over 10/- Carriage Paid, or C.O.D. Post Charges Paid. Components or Part Kits value over 50/- by EASIWAY if preferred.

CASH, C.O.D. or EASIWAY

PETO-SCOTT CO. LTD. 77, CITY ROAD, LONDON, E.C.1. Telephone: Clerkenwell 010617.
West End Showrooms: 62, High Holborn, London, W.C.1.

Dear Sirs,
Please send me C.O.D./CASH/H.P. FERROCART III "KIT A"
for which I enclose £.....s.....d. CASH/H.P./DEPOSIT

NAME.....
ADDRESS..... W.W. 3/3/33

FIRST IN 1919—FOREMOST ALWAYS



Graham Farish says:—

Don't be wise after— fit my **NEW OHMITES** and be sure —

THEY were specially designed to satisfy every need of the critical technician. Carrying well over their stated load, my **NEW OHMITES** easily withstand mains 'surge' and are not liable to breakdown. Not wire wound, non-corrosive and non-inductive, they cannot create hum, and do not readily overheat. These are only a few reasons why my **NEW OHMITES** can be adopted with such confidence.

"THE WIRELESS WORLD" have specified my **NEW OHMITES** for the

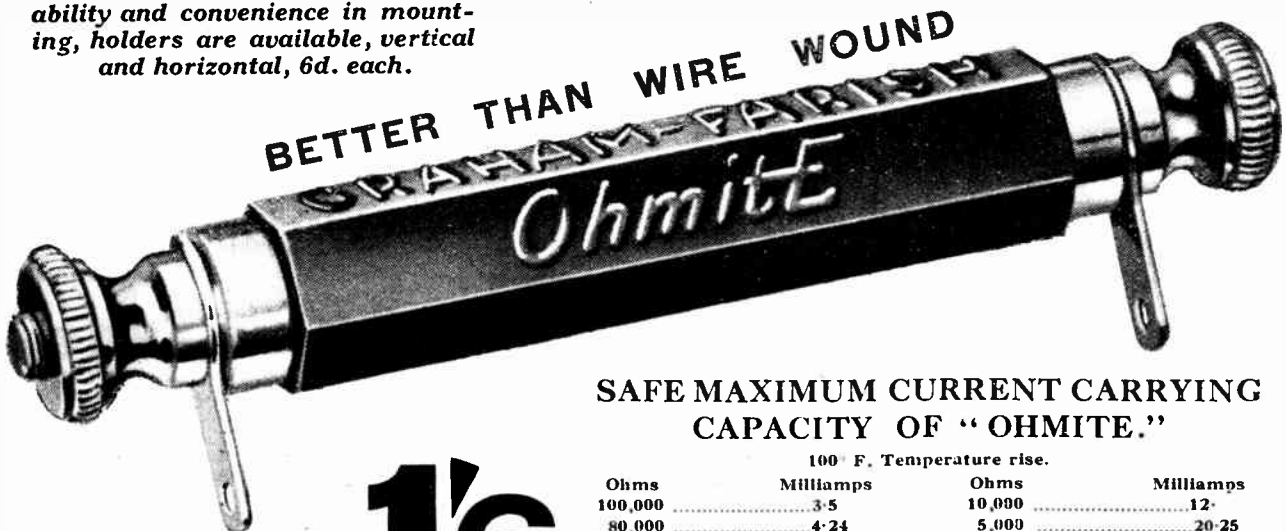
FERROCART A.C.3

because their reliability and freedom from breakdown commend them to the Technical Editor.



The popular and efficient resistances for all general purposes. All values 50 ohms to 5 megohms. 1s. 6d. each.

For those who prefer interchangeability and convenience in mounting, holders are available, vertical and horizontal, 6d. each.



BETTER THAN WIRE WOUND

SAFE MAXIMUM CURRENT CARRYING CAPACITY OF "OHMITE."

100° F. Temperature rise.

Ohms	Milliamps	Ohms	Milliamps
100,000	3.5	10,000	12
80,000	4.24	5,000	20.25
60,000	5	4,000	24
50,000	5.5	3,000	29
40,000	6	2,000	35
30,000	6.75	1,000	40
20,000	8		Other values pro rata.

1'6

EACH

Heavy Duty type approximately double the above ratings. Price 2/3.

GRAHAM FARISH

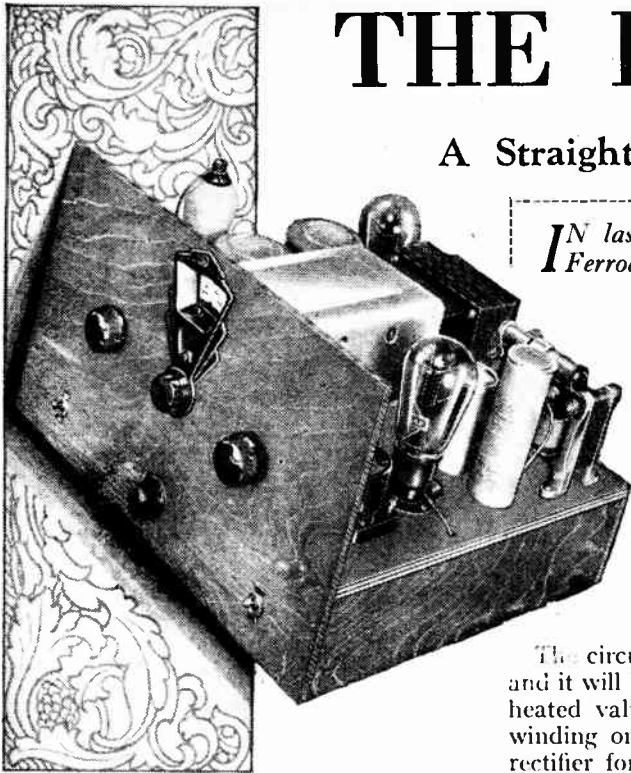
COMPONENTS

MASONS HILL, BROMLEY, KENT. EXPORT OFFICE: 11/12, FENCHURCH STREET, E.C.3.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

THE FERROCART III

A Straight A.C. Set of Outstanding Selectivity



IN last week's issue appeared the first description of the British version of Ferrocart coils. Practical tests showed that so high was the efficiency of these coils that it was possible to obtain from a simple straight set a degree of selectivity which bids fair to rival that of the superheterodyne. The Ferrocart III receiver, constructional details of which are presented in this article, gives an outstanding performance and is undoubtedly a great advance over other receivers with a similar number of valves and tuned circuits.

By W. T. COCKING

and it makes it readily possible to energise the field winding of a moving-coil speaker, should this be used. With such a speaker it is merely necessary to omit the choke Ch.4, and to connect the 2,500 ohms field winding in its place. If hum is to be avoided with this arrangement, of course, the speaker must be fitted with hum-bucking.

THE benefits to be derived from the use of the new high-efficiency iron-cored tuning coils were fully discussed in last week's issue of *The Wireless World*, and it is, therefore, unnecessary to enter into the theoretical side of the matter here. It will suffice to point out that the employment of Ferrocart coils leads to a normal performance so far as sensitivity and quality of reproduction are concerned, but permits the attainment of vastly improved selectivity. The small and inexpensive three-valve set, therefore, is once again rendered capable of meeting the exacting conditions imposed by the present congestion of the broadcast ether.

The circuit diagram is shown in Fig. 1, and it will be seen that the three indirectly heated valves are all run from the same winding on the mains transformer. The rectifier for the H.T. supply is a 442BU valve, and it is supplied with 350 volts A.C.; the 4 mfd. reservoir condenser C17 is of the electrolytic type. The D.C. potential across this condenser is reduced to the value required by the receiver valves, some 250 volts, by the passage of the total anode current through the smoothing choke Ch.4. This component has a resistance of 2,500 ohms and a working inductance of 70 H., so that in conjunction with the 8 mfd. condenser C18 a very high degree of smoothing is obtained. Actually, of course, the requisite smoothing could have been provided by a lower resistance choke, and a smaller A.C. input to the rectifier would then have been permissible. The extra voltage, however, increases the cost to a very small extent,

Circuit Values

The screen of the output pentode, an MP-Pen, is fed directly from the 250 volts line, and the anode is also fed from the same point through a tapped pentode output choke Ch.3, across which is connected the usual pentode compensator, comprising the 10,000 ohms resistance R14 and the 0.01 mfd. condenser C15. The speaker itself is fed through the 2 mfd. condenser C16, and in view of the step-down ratio normally employed, this allows of full bass reproduction to be obtained by virtue of resonance with the speaker.

The grid bias for the pentode is obtained by the voltage drop along the 300 ohms

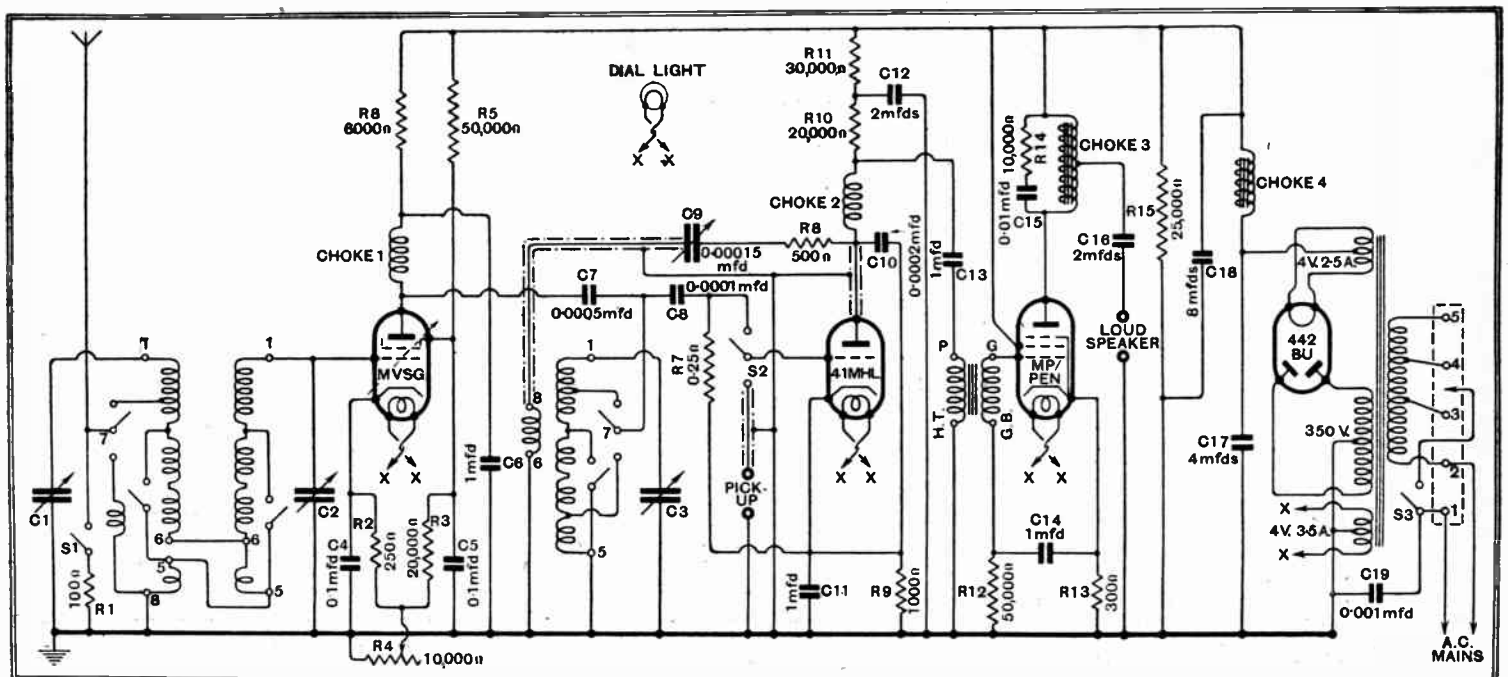
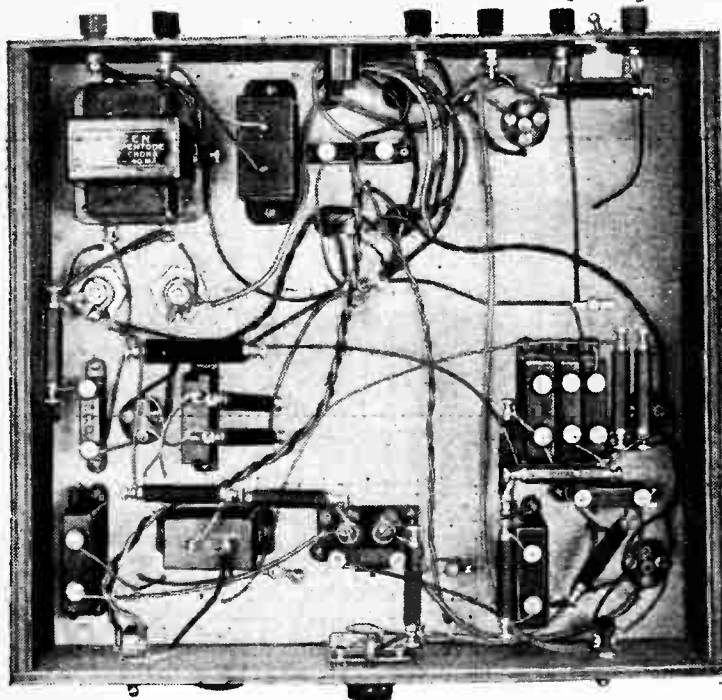


Fig. 1.—Complete circuit diagram of the Ferrocart III receiver. The overall response of the three tuned circuits is such as to give good quality of reproduction over the wavebands.

Ferrocart III—



View of the under baseboard where most of the decoupling components are mounted.

resistance R13 in the cathode circuit, and the grid circuit is decoupled by the 50,000 ohms resistance R12 and the 1 mfd. condenser C14. The L.F. intervalve coupling is by means of a resistance-capacity fed transformer, the resistance R10 in the detector anode circuit being given a value of 20,000 ohms and the coupling condenser C13 a capacity of 1 mfd. The detector anode circuit is decoupled by a 30,000 ohms resistance R11 and a 2 mfd. condenser C12. The H.F. choke Ch2 and the by-pass condenser C10, of 0.0002 mfd. capacity, serve to prevent the passage of H.F. currents into the purely L.F. circuits and also ensure the correct operation of reaction. A bias resistance R9 of 1,000 ohms, shunted by a 1 mfd. condenser C11, is provided in the detector cathode circuit to provide the necessary negative bias for gramophone reproduction, and the switch S2 in the grid circuit permits a change from radio to gramophone to be readily made.

Two Volume Control Ranges

The variable-mu H.F. valve is fed from a network of resistances designed to keep the anode and screen potentials substantially constant, irrespective of the actual bias voltage. The anode is fed through the 6,000 ohms resistance R6, with a 1 mfd. non-inductive by-pass condenser C6, while the screen is fed from the combination comprising R5, R3, and R4, with values of 50,000 ohms, 20,000 ohms, and 10,000 ohms respectively, the last being the volume control. The screen and cathode are both by-passed to earth by the 0.1 mfd. non-inductive condensers C5 and C4, and the fixed minimum value of bias for the H.F. valve is provided by the 250 ohms resistance R2.

The range of control afforded by the

variable resistance is ample for all normal strength stations, but it fails when it is desired to reduce a nearby local station to a reasonable volume. To cover this important case, therefore, a local-distance switch S1 is fitted, whereby a fixed resistance R1 of 100 ohms can be thrown at will across the aerial and earth terminals, thus giving a fresh range of control.

It is unnecessary here to enter into the design of the H.F. circuits, for this was dealt with in last week's article. It will be obvious that the input filter and the intervalve coupling are tuned by the three sections C1,

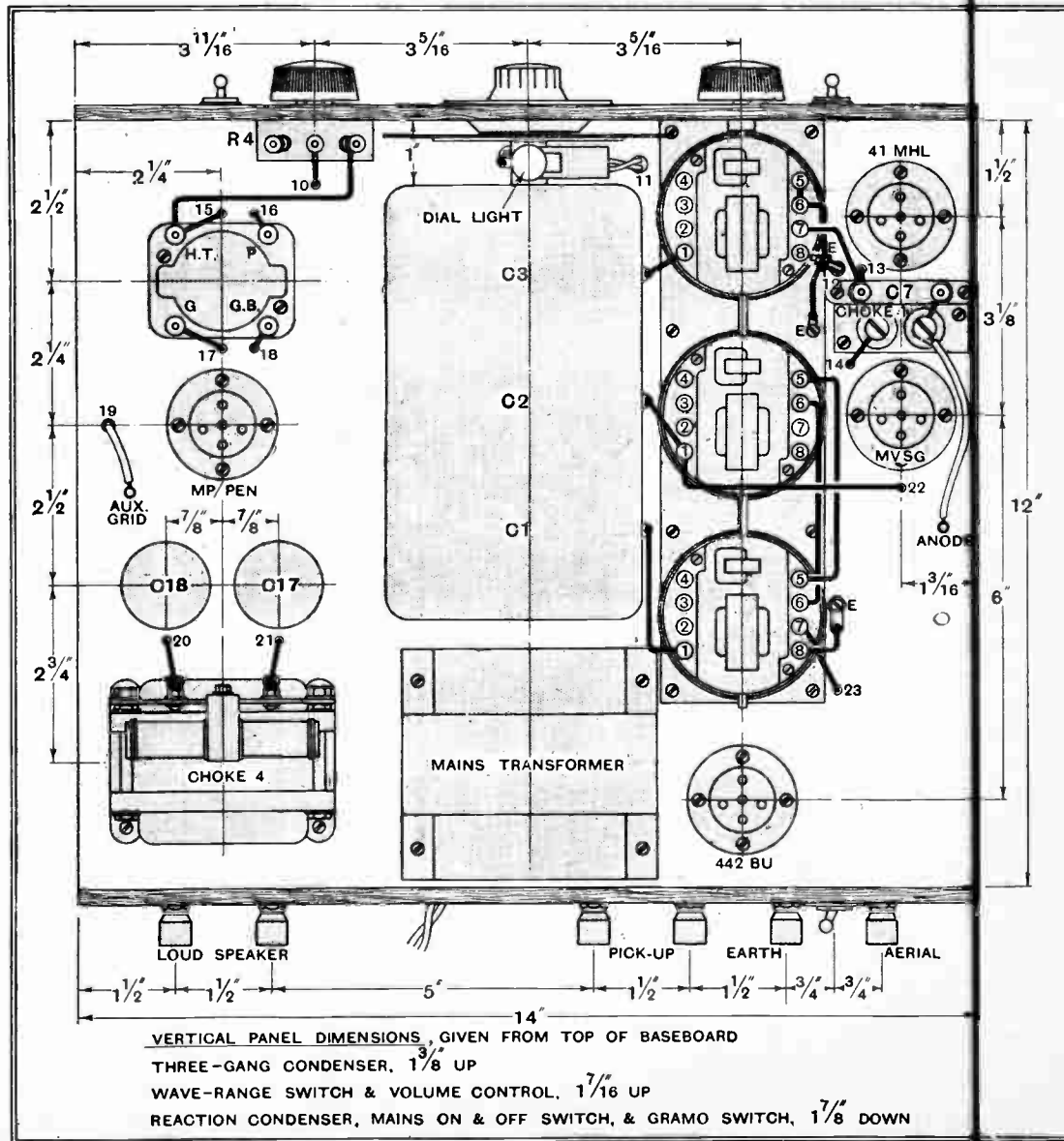
C2, and C3, of the three-gang condenser, and this, of course, is of the straight type, with identical sections. Accurate matching is of the first importance, and the necessity for using a high-quality component cannot be too highly stressed. The H.F. chokes Ch1 and Ch2 have also an effect upon the ganging, and it is recommended that no deviation be made from the specification in respect of these by no means unimportant items.

Initial Adjustments

The layout adopted for the receiver is very straightforward, and no constructional difficulties should be met with. The aluminium covered baseboard is obtainable in chassis form with the large holes already drilled, and the metal covering is easily pierced with a pricker for the remaining wood screws. For those who prefer it, a stamped metal chassis is available as an alternative.

Although the actual component is of the differential type, the reaction condenser C9 is wired up as a straight condenser. One set of fixed plates, therefore, is left blank. The mains transformer is of the

THE LAYOUT OF PARTS ABOVE AND BELOW



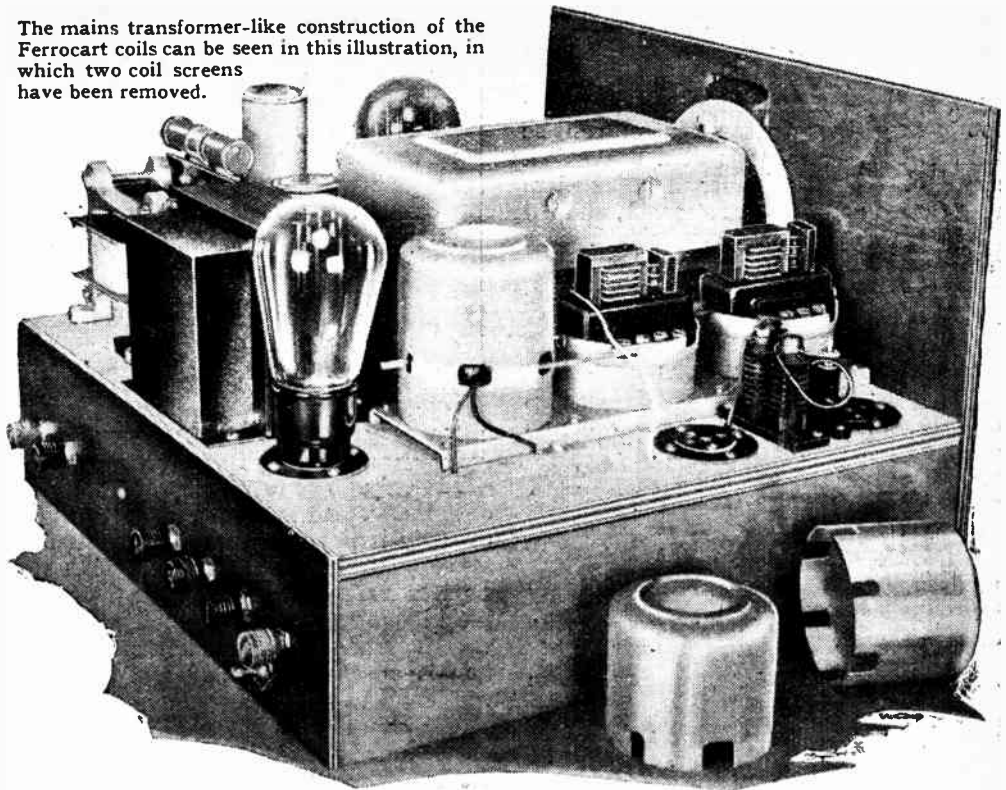
Ferrocart III—

chassis mounting type, without terminals, and the leading-out wires are brought through the baseboard beneath the component. For the sake of safety, and to facilitate the connection to the mains, a 5-way terminal block is fitted as an anchorage to the primary windings.

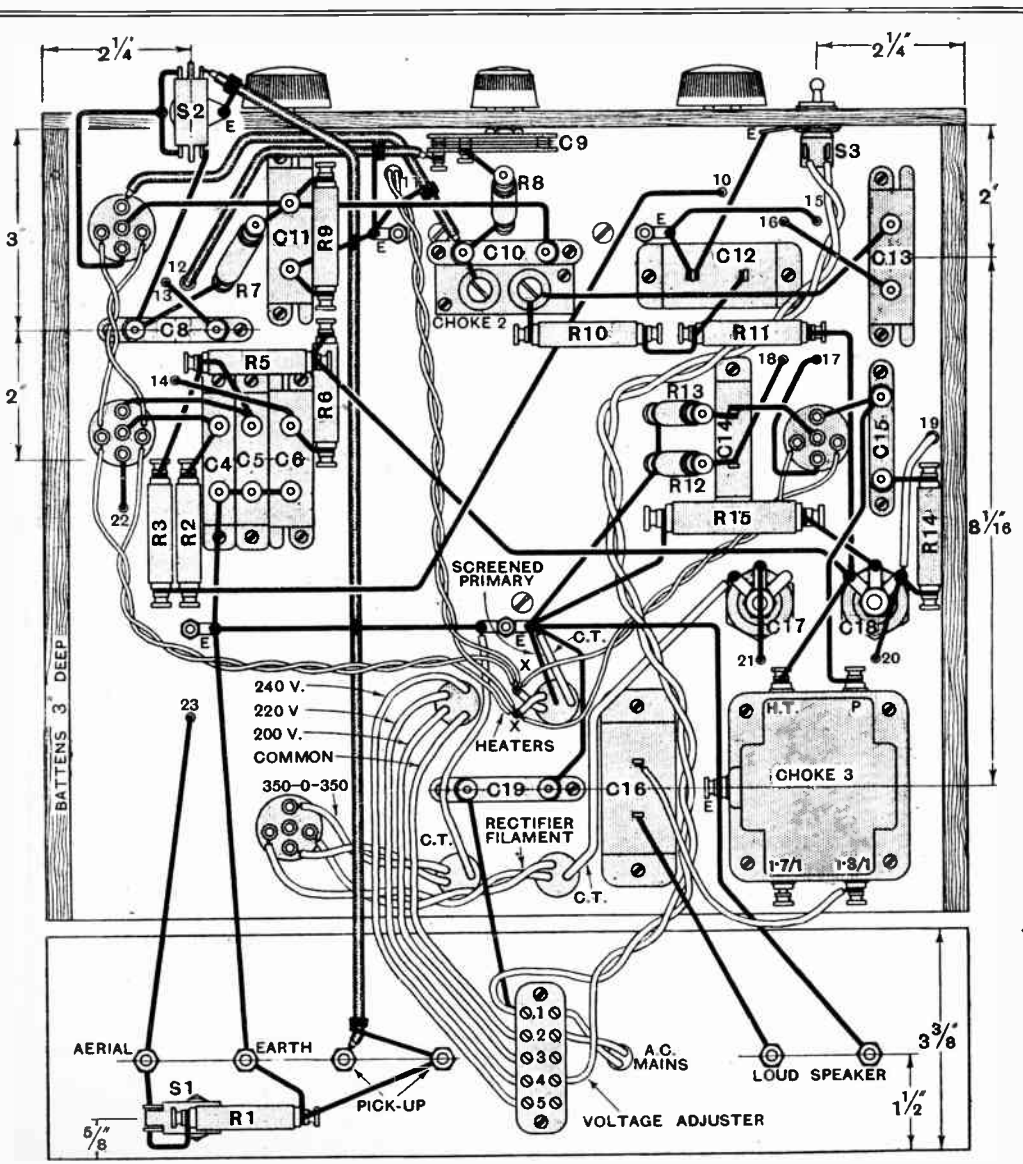
The frame of the gang condenser is earthed by its contact with the metal-covered chassis, and so it is of the first importance to see that a really sound connection is made. The fixing bolts must all be well tightened up, and as they may slacken after a time, due to the compression of the wood, it is a wise plan to go over the set a week or so after it has been built, and re-tighten all bolts. The coils are supplied mounted on a metal strip, and here, again, care must be taken to see that the strip makes good contact with the base. The switch rod for the coils should be earthed by a metal contact bolted to the coil strip and pressing against the rod between the filter and intervalve coils. Without such an earthing contact, instability will be found on the long waveband, and ganging will be affected.

In order to prevent hum on operating

The mains transformer-like construction of the Ferrocart coils can be seen in this illustration, in which two coil screens have been removed.



THE BASEBOARD, ALSO COMPLETE WIRING PLAN



the radio-gram switch, the metal body of this component is earthed by a large tag inserted under its fixing nut, and the same course is adopted for the mains on-off switch. Since the wires to the latter are in the mains circuit, they must be kept away from other components, and in order to avoid modulation hum due to H.F. currents being transferred from them to the receiver circuits, a 0.001 mfd. 1,000 volts test condenser C19 is connected between the mains and earth.

No. 22 gauge tinned copper wire is used throughout for wiring, and the use of screened sleeving is confined to the gramophone circuits and the anode side of the detector valve. No use is made of this sleeving in the H.F. circuits, since it has been found unnecessary in this case, and it tends to introduce losses.

The Trimmers

Apart from the choice of the correct tapping on the output choke to suit the particular speaker employed, the initial adjustments are confined to the ganging. These are few in number, and readily carried out, but it is important that they be made accurately. The grid circuit of the H.F. valve will be found to have the highest stray capacity, so that the trimmer on this circuit must be nearly fully screwed out, whereas the trimmers on C1 and C3 should be nearly fully screwed home.

It is essential for the trimming to be adjusted on a very low wavelength, but if it be found impossible at first to tune in a suitable station a preliminary adjustment should be made on a higher wavelength. After this there should be no difficulty in receiving a station on a wavelength below that of the London National, and the ganging can then be accurately adjusted. When ganging the local-distance switch *must* be at distance.

Ferrocart III—

While ganging it is important to use as much reaction as possible without the set actually oscillating, and if the signal be too strong the volume control can be turned down until it is at a convenient strength. Each trimmer is adjusted in turn for maximum signal strength, and the settings will be found quite critical. The aim should be to arrive at a setting for each trimmer such that any further alteration causes decreased signal strength.

LIST OF PARTS

After the particular make of component used in the original model, suitable alternative products are given in some instances.

- 1 3-gang condenser, 0.0005 mfd., with right-hand trimmers British Radiophone
 1 Dial and dial light assembly British Radiophone
 1 Reaction condenser, differential or straight, 0.00015 mfd., C9 Formo 23c (Polar, Ormond)
 1 Set of Ferrocart coils Colvern
 2 H.F. chokes, Ch1, Ch2 McMichael "Binocular Junior"
 4 5-pin Valveholders CHX chassis-mounting type (Eddystone)
 1 Volume control, 10,000 ohms, R4 Colvern ST5C (British Radiophone, Igranite, Watneil)
 1 Electrolytic condenser, 4 mfd., C17 T.C.C. type 802
 1 Electrolytic condenser, 8 mfd., C18 T.C.C. type 802
 2 Fixed condensers, 2 mfd., 250 v. D.C. working, C.12, C16 T.C.C. type 65
 1 Fixed condenser, 1 mfd., 250 v. D.C. working, C14 T.C.C. type 65
 2 Fixed condensers, 0.1 mfd., non-inductive, 400 v. D.C. test, C4, C5 T.C.C. type 50
 3 Fixed condensers, 1 mfd., non-inductive, 400 v. D.C. test, C6, C11, C13 T.C.C. type 50
 1 Fixed condenser, 0.0005 mfd., C7 T.C.C. type 34
 1 Fixed condenser, 0.0001 mfd., C8 T.C.C. type 34
 1 Fixed condenser, 0.0002 mfd., C10 T.C.C. type 34
 1 Fixed condenser, 0.01 mfd., C15 T.C.C. type 34
 1 Fixed condenser, 0.001 mfd., mica, 1,000 v. D.C. test, C19 T.C.C.
 (Dubilier)
 2 Q.M.B. make-and-break switches, S1, S3 Bulgim S80
 1 Q.M.B. change-over switch, S2 Bulgim S81 (British Radiophone, Claude Lyons)
 1 Pentode output choke, Ch3 Telsen power type W172 (R.I.)
 1 2,500 ohms speaker field replacement choke, Ch4 (R.I., Scott Sessions) Sound Sales
 1 Mains transformer, screened primary, 350-0-350 v. 60 mA, 4 v. 2.5 amp. C.T., 4 v. 3.5 amp. C.T. Bryce (Challis, Parmeko, R.I.)
 1 L.F. transformer Lewcos type L.F.T.4 (Varley)
 1 Resistance, 100 ohms, R1 Graham Farish "Ohmite"
 1 Resistance, 250 ohms, R2 Graham Farish "Ohmite"
 1 Resistance, 300 ohms, R13 Graham Farish "Ohmite"
 1 Resistance, 500 ohms, R8 Graham Farish "Ohmite"
 1 Resistance, 1,000 ohms, R9 Graham Farish "Ohmite"
 1 Resistance, 6,000 ohms, R6 Graham Farish "Ohmite"
 1 Resistance, 10,000 ohms, R14 Graham Farish "Ohmite"
 2 Resistances, 20,000 ohms, R3, R10 Graham Farish "Ohmite"
 1 Resistance, 30,000 ohms, R11 Graham Farish "Ohmite"
 2 Resistances, 50,000 ohms, R5, R12 Graham Farish "Ohmite"
 1 Resistance, 250,000 ohms, R7 Graham Farish "Ohmite"
 1 Resistance, 25,000 ohms, 3 watts, R.15 Graham Farish "Ohmite" Power type "HD" (Dubilier, Erie, Claude Lyons)
 1 5-way Connector Wilburn
 6 Terminals, aerial earth, L.S.+ , L.S.-, 2 pick-up (Belling-Lee, Eeles, Igranite) Clit type "B"
 1 Plymax baseboard, 14in. x 12in. x 3/16in. Peto-Scott (Prepared Metal Base Plate, bent and drilled Colvern)
 Panel, oak-faced ply, 9in. x 14in. Peto-Scott
 2 Lengths screened sleeving Harbros (Joltone, Lewcos)
 2 ozs. 20 tinned copper wire, wood, 6 lengths sisstoffex, etc.
 Screws: 14 3/16in. No. 4 R/hd.; 4 1/2in. No. 6 R/hd.; 20 3/16in. No. 4 R/hd.; 4 1/2in. No. 4 R/hd.; 12 3/16in. No. 4 R/hd.
 Valves: 1 MVSG, 1 41MHL, 1MP/PEN, 1 442BU Gossor

Readers selecting alternative components from the suggestions given above, should remember that slight modifications may be necessary in the drilling positions for fixing these components on the panel and baseboard. The prepared metal base plate listed as an alternative will, we understand, be drilled to accommodate the components used in our design and listed in black type.

PROGRESS NUMBER

NEXT week's issue will be devoted principally to a survey of recent wireless progress. Successive advances of outstanding interest have been crowded into the last few years and it is felt that the time is ripe to take stock of the situation and see where we stand to-day.

There will be articles devoted to the advances made in H.F. amplification, detection, L.F. amplification and loud speaker technique, as well as the evolution of the superheterodyne.

The only point to watch while carrying out this operation is that too much capacity is not used, for then the tuning range would be restricted. If stray capacities are kept down to the figures of the original receiver, and there is no reason why they should not be if the specification is adhered to, the correct condition will be found with the trimmer on C2 very nearly fully unscrewed. When the adjustment is completed at a low wavelength the ganging will hold over the whole of both wave ranges.

The next step is to select the optimum tapping on the output choke, so that the speaker is correctly matched to the pentode. If a moving-coil speaker with a pentode transformer be used the I-I ratio will be needed, and in this particular case it would be possible to dispense entirely with the output choke and C16, and to connect the primary directly in the pentode anode circuit. In general, however, other types of speaker will be used, and the ratio should be selected experimentally for the best quality. The values of the compensating circuit R14 and C15 have been chosen to suit the majority of moving-coil speakers, but with moving-iron types it may pay to experiment with other values.

With a good aerial, and after dark, the sensitivity is sufficient to permit good reception of most of the stronger Continental stations with reaction at zero. It will usually pay, however, to use a little reaction, even although it may be unnecessary from the point of view of signal strength, and to keep the volume at the desired level by reducing the setting of the volume control. In this way it is possible greatly to increase the selectivity above its normal level, although this latter is unusually high.

Reaction is particularly valuable when receiving a station situated in wavelength close to the local, and, in fact, when searching it is often advisable to work with reaction close to the oscillation point and the volume control turned well down. When the desired station is found it can then be tuned in accurately, and the

reaction reduced while simultaneously increasing the volume-control setting, until the best compromise between selectivity and quality is found for that particular station.

It is unnecessary to say much here about the performance obtainable, for details of this have already appeared in *The Wireless World*, and the completed receiver will speak for itself. It may be said, however, that the sensitivity is entirely adequate for most normal purposes, hum is absent, and the quality of reproduction reaches a very satisfying standard, for both high and low notes are present in the output and the volume obtainable is quite considerable. It is in the matter of selectivity that the receiver is so outstanding, and it is not too much to say that, among ordinary receivers, it is surpassed only by the superheterodyne.

The completed receiver was tested within nine miles of Brookmans Park, and, while both locals were working, it proved possible to receive some seventy stations on the medium waveband alone. The spread of the London Regional was confined to about three channels on either side, and that of the London National to about six channels. In its power of separating adjacent distance stations the receiver proved entirely adequate, and only in rare cases was intelligible modulation interference experienced.

A receiver built to this design is available for inspection at 116-117, Fleet Street, London, E.C.4.

CLUB NEWS**For Short-wave Enthusiasts**

THE London Chapter of the International Short Wave Club holds meetings which are open to members and non-members alike. The meetings are held at the R.A.C.S. Hall, Wardsworth Road, London, S.W.8.

Full particulars are obtainable from the European representative, Mr. A. E. Bear, 10, St. Mary's Place, Rotherhithe, London, S.E.16.

The Twelfth Year

THE Ilford and District Radio Society is enjoying its twelfth year of active work. On a recent evening Mr. H. L. Ranson lectured on "Measuring the Performance of a Receiver," giving a demonstration on laboratory lines and testing a commercial A.C. receiver with a standard signal generator.

Hon. Secretary: Mr. C. E. Largen, 16, Clements Road, Ilford.

A Local Loud Speaker

PARTICULAR interest attached to the last meeting of the Bristol and District Radio and Television Society, as a local enterprise—The Ray Engineering Co., Ltd., of Bristol—gave a demonstration of their Ray Senior P.M. Speaker. When demonstrated on a 5-watt amplifier and pick-up reproduction was very good, and the output at high and low frequencies was considered by members to be above the average.

Hon. Secretary: Mr. G. E. Benskin, 12, Maurice Road, St. Andrew's Park, Bristol, 5.

Loud Speaker Night

THE types of loud speaker used during the last ten years were interestingly described by Mr. F. Neale at the last meeting of the Tottenham Wireless Society. Almost forgotten types, such as the Sterling Fan, Western Electric Kone, and the Yankee three feet cones were recalled to memory. Mr. Burns followed with a talk on "Loud Speaker Construction," and the evening concluded with a practical demonstration of modern types.

Hon. Secretary: Mr. W. B. Bodemeid, 10, Bruce Grove, Tottenham, London, N.17.

BLUE PRINTS

For the convenience of readers constructing this receiver, full-sized blue prints of the complete layout and wiring diagram are available from the publishers at 1s. 6d. post free.

Direct Radio

THE EXPERTS ON MAINS SETS AND AMPLIFIERS announce that they have completed special arrangements for the distribution of **FERROCART III TESTED & GUARANTEED KITS**

All component parts included in Direct Radio's specification are specially selected by their Technical Department to give lasting service and finest possible results. All Kits are fully guaranteed and complete down to the last screw and wire ready for immediate construction, and by purchasing a Direct Radio Tested and Guaranteed Kit for "Wireless World" Circuits you are automatically registered and entitled to use the Direct Radio Technical Service in case of any difficulty on radio matters.

Williams & Moffat Union 5-gang condenser, 0.005 mfd., with right-hand trimmer, Type U3311, complete with dial and light assembly	1 6 6
4-Volt bulb	2 10 0
1 Bet Colvern Ferrocart coils	10 0
2 Ready Radio New Type Bimolar H.F. chokes	3 9
2 Clix chassis Mounting Type output valve holders	2 6
1 Ready Radio 0.0015 mfd. differential reaction condenser	5 6
1 Watnet wire wound volume control, 10,000 ohms	1 0
2 Williams & Moffat Bakelite knobs to match above with condenser assembly	5 0
1 T.C.C. 4-mfd. electrolytic condenser, Type 802	6 0
1 T.C.C. 8-mfd. electrolytic condenser, Type 802	5 4
2 T.C.C. 2-mfd. fixed condenser, 250 v. D.C. working, Type 65	2 0
1 T.C.C. 1-mfd. fixed condenser, 250 v. D.C. working, Type 65	3 8
2 T.C.C. 1-mfd. fixed condenser, non-inductive, 400 v. D.C. test, Type 59	7 0
3 T.C.C. 1-mfd. fixed condenser, non-inductive, 400 v. D.C. test, Type 59	1 3
1 T.C.C. 0.002 mfd. fixed condenser, Type 34	1 3
1 T.C.C. 0.001 mfd. fixed condenser, Type 34	1 3
1 T.C.C. 0.002 mfd. fixed condenser, Type 34	3 0
2 Bulzin 8.50 Q.M.B. switch, with 894	1 9
1 Varley Pentode Nidloke, D.P.24	12 6
1 Sound Sales 2,500 ohms speaker field replacement choke, Ch.4	16 0
1 Wilbur 5-way connector	2 6
1 Ready Radio 3-1 r Cio L.F. transformer	8 6
1 Erie 100 ohms resistance	1 0
1 Erie 200 ohms resistance	1 0
1 Erie 300 ohms resistance	1 0
1 Erie 500 ohms resistance	1 0
1 Erie 1,000 ohms resistance	1 0
1 Erie 2,000 ohms resistance	1 0
1 Erie 5,000 ohms resistance	2 0
1 Erie 10,000 ohms resistance	1 0
1 Erie 20,000 ohms resistance	1 0
1 Erie 50,000 ohms resistance	2 0
1 Erie 250,000 ohms resistance	1 0
1 Erie 25,000 ohms resistance, 3 watts	3 0
6 Belling Lee terminals, aerial earth, L.S. 1, L.S. 2 pickup	1 3
1 Prepared metal base plate, bent and drilled	10 6
1 Insulux x panel, 9 in. x 14 in., drilled	2 6
2 Lengths Giltone screened sleeving	1 6
2 size 20 tinned copper wire, wood 6 lengths	2 6
1 Biotolux	2 6
1 Constructor's full-size blueprint (no charge)	
4 Millard valves: MM4V, 354V, Pen4V, D.W.3	3 7 6
1 Direct Radio "159" Type table cabinet, in walnut	1 5 0
	£18 6 6

KIT Model No. 1

(less valves and cabinet) **£13.14.0**
Or 12 monthly payments of £1.5.0

KIT Model No. 2

(with valves less cabinet) **£17.1.6**
Or 12 monthly payments of £1.1.6

KIT Model No. 3

(with valves and cabinet) **£18.6.6**
Or 12 monthly payments of £1.3.5

NOTE: The prepared chassis 10/6 can be omitted if preferred.

Laboratory assembled and aerial tested Ferrocart III Receiver complete to detailed specification with Valves, Rola F.6 Speaker fitted to 151 TYPE Walnut Console Cabinet. **£20.0.0.**
Or 12 monthly payments of 37 s.

FERROCART III RECOMMENDED ACCESSORIES

COLLARO A.C. Induction Gramo Motor	£ s. d. 2 10 0
COLLARO A.C. Gramo Motor Plain Unit, including Motor Pick-up and volume control. (Or 12 monthly payments of 7/6)	4 0 0
BOWYER LOWE A.E.D. Pick-up with self-contained volume control	1 15 0
B.T.H. Minor with self-contained volume control	1 5 0
W.B. P.M.2 Permanent magnet moving coil speaker. (Or 12 monthly payments of 8/-)	4 5 0
W.B. P.M.4 permanent magnet moving coil speaker	2 2 0
EPOCH A.2 permanent magnet moving coil speaker. (Or 10 monthly payments of 7/-)	3 3 0
IGRANIC D.9 permanent magnet moving coil speaker	1 12 6
ROLA F.6 MAINS EXCITED 2,500 ohms field Moving Coil Speaker	1 15 0

Note: If the Rola F.6 Speaker is used the 2,500 ohms smoothing choke will not be required.

Official Demonstration:
An assembled model of the Ferrocart III Receiver will be demonstrated daily at—
159, Borough High Street
(2 mins. from London Bridge Station).

"Wireless World" readers are cordially invited to come and test this remarkable receiver under actual working conditions.

QUIESCENT PUSH-PULL COMPONENTS

Radio's newest need . . . Varley's latest achievement. A range of Quiescent Push-Pull Components to suit your every requirement . . . an Input Transformer, ratio 9/1 and three different Output Transchokes to give you accurate matching. **Each Varley Output Transchoke is suitable for either high or low impedance speakers, thus avoiding the losses of an additional matching transformer and its expense—a double economy.** Get all the advantages of this revolutionary Push-Pull system; use VARLEY—the quality products at a reasonable price.

DP36. QUIESCENT PUSH-PULL INPUT TRANSFORMER

Ratios 9/1
 Primary D.C. Resistance 825 ohms.
 Total Sec. D.C. Resistance 9300 ohms.
 Prim. Inductance 30 henries with no D.C.
 27 " " 4 M.A.
 22 " " 17/6

PRICE, including Royalty 17/6

DP37. QUIESCENT PUSH-PULL OUTPUT TRANSCHOKES

Ratios 3/1 and 42/1
 Primary D.C. Resistance 460 ohms.
 Sec. D.C. Resistance (3/1) 130 ohms.
 Sec. D.C. Resistance (42/1) 8 ohms.
 Primary Inductance 13 henries with D.C. current of 26 M.A.
 PRICE, including Royalty 18/6

DP38. QUIESCENT PUSH-PULL OUTPUT TRANSCHOKES

Ratios 3/1 and 50/1
 Primary D.C. Resistance 400 ohms.
 Sec. D.C. Resistance (3/1) 130 ohms.
 Sec. D.C. Resistance (50/1) 9 ohms.
 Primary Inductance 8 henries with D.C. current of 26 M.A.
 PRICE, including Royalty 16/6

DP39. QUIESCENT PUSH-PULL OUTPUT TRANSCHOKES

Ratios 3/1 and 75/1
 Primary D.C. Resistance 400 ohms.
 Sec. D.C. Resistance (3/1) 130 ohms.
 Sec. D.C. Resistance (75/1) 64 ohms.
 Primary Inductance 8 henries with D.C. current of 26 M.A.
 PRICE, including Royalty 16/6

Write for New Brochure "The Battery Set comes into its own"—post free.



Advt. of Oliver Pell Control, Ltd., 103, Kingsway, W.C.2. Tel.: Holborn 5303

ALL KITS ARE AVAILABLE—CASH—C.O.D.—EASY PAYMENTS

IMMEDIATE DELIVERY FROM STOCK. IT'S BETTER TO ORDER DIRECT.

To DIRECT RADIO LTD., 159, Boro' High Street, London Bridge, S.E.1
Phone: 110p. 3900.

Please despatch to me at once the following goods

(a) I enclose (Cross out line)
 for which (b) I will pay on delivery (not applicable)
 (c) I enclose first payment of

NAME
 ADDRESS W.W. 3-3-33

HAYNES SERVICED DESIGNS

QUALITY RECEIVER

A.C. Model. 6 Watts output.

Kit of highest grade components of uniform finish, loud speaker and five valves. £19 19s., carr. paid.
Extra for dual loud speakers, 30/-

HAYNES D.C. SUPERHETERODYNE

An easily assembled and hum-free receiver.

Kit with five valves and loud speaker, £18 18s., carr. paid.

HAYNES A.C. SUPERHETERODYNE

2 watts output, with valves and loud speaker, £18 18s.
6 watts output with seven valves (diode detection) and loud speaker. £23. Extra for dual loud speakers, 30/-

Blue Prints for A.V.C. and other modifications supplied.

HAYNES FERROCART RECEIVER

A.C. Model. 2 Watts output.

Generous specification for the discriminating constructor

3 receiving valves and valve rectification, band-pass and H.F. Colvern Ferrocart couplings, cellulosed metal base plate, Rich & Bundy mains transformer and chokes, wire wound resistances. Parts finished in uniform blue-grey—a Haynes innovation. Set serviced.

Kit with 4 valves and loud speaker, £16 16s.

HAYNES FERROCART QUALITY RECEIVER

Alternative version of the Haynes Quality Receiver.

Kit with five valves and loud speaker, £20 14s.

Existing sets readily converted. Set of coils, circuit and large blueprint, 50/- post free.

Constructional Booklets

free and post free.

Full scale blue prints accompany all Haynes Sets.

Complete Sets and Radiogramophones.



Complete Chassis at small extra cost.

London Office: (Sales)
57, HATTON GARDEN, E.C.1. Chancery 8023.

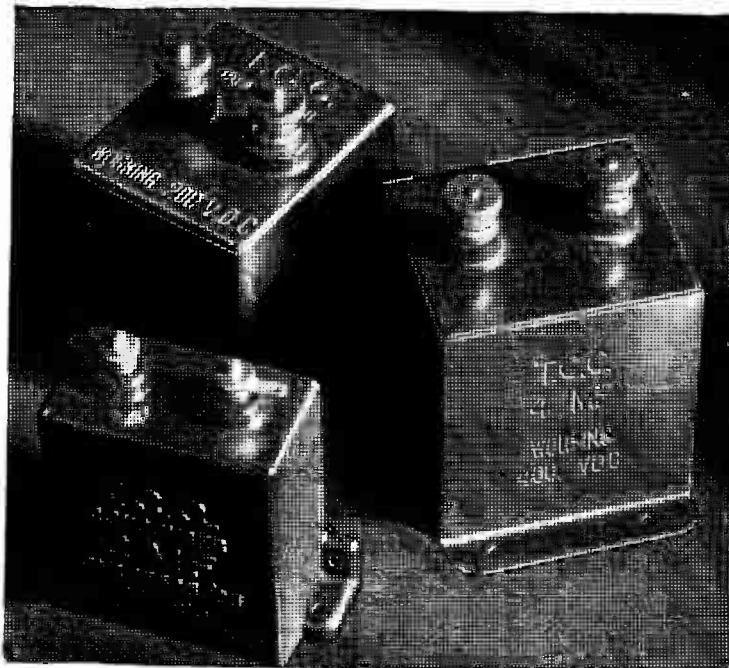
SAFEGUARDS THE CONSTRUCTOR.

Factory: Enfield 2726.
QUEENSWAY, ENFIELD, MIDDLESEX

These are the T.C.C. Condensers EXCLUSIVELY specified for the "W.W. FERROCART III"

THE T.C.C. CONDENSERS SPECIFIED - - - -

- 1 Electrolytic 4 mfd. Type 802 Price 5,- each
- 1 Electrolytic 8 mfd. Type 802 Price 6,- each
- 2 - 2 mfd. Type 65 Price 2/8 each
- 1 - 1 mfd. Type 65 Price 2/- each
- 2 - 0.1 mfd. non-inductive Type 50 Price 1/10 each
- 3 - 1 mfd. non-inductive Type 50 Price 2/6 each
- 1 - 0.0005 mfd. Type 34 Price 1/3 each
- 1 - 0.0001 mfd. Type 34 Price 1/3 each
- 1 - 0.0002 mfd. Type 34 Price 1/3 each
- 1 - 0.01 mfd. Type 34 Price 3/- each
- 1 - 0.001 mfd. (mica 1,000 v. D.C. test) Price 3/- each



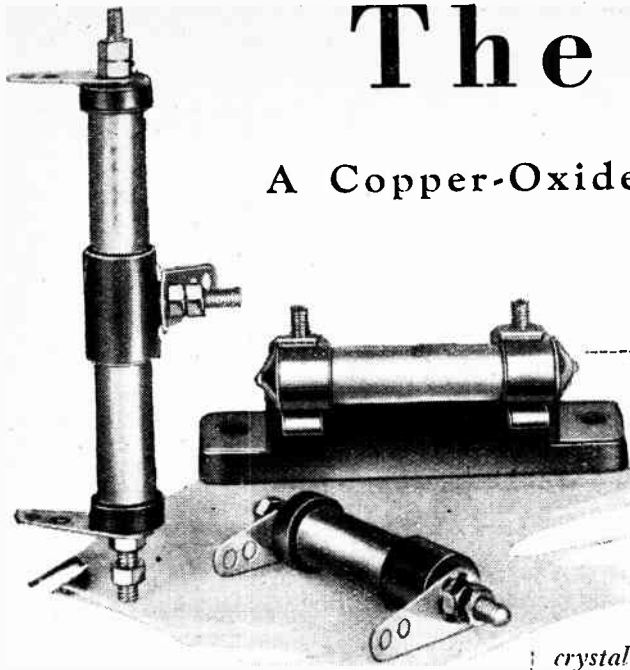
Once again the unquestioned reliability of T.C.C. Condensers has prompted the designer of a star receiver to specify them exclusively. The "W.W. Ferrocart III" employs the most up-to-date practice in receiver design and to ensure its perfect functioning the use of T.C.C. Condensers is insisted upon. Follow the designer—and remember T.C.C. Condensers now cost less.

T.C.C. ALL-BRITISH CONDENSERS

The Telegraph Condenser Co. Ltd. Wales Farm Rd., N. Acton, W.3.

The Westector

A Copper-Oxide Rectifier for H.F. Currents



The new Westinghouse Westectors shown alongside a grid leak. The larger of the two is type W.M. 26 and the smaller W. 4.

THE use of metal rectifiers in H.T. supply units is quite familiar; it is a development of these which now threatens the supremacy of the valve. Metal rectifiers are now available for the rectification of radio-frequency currents; in their physical dimensions they are strictly comparable with a grid-leak type resistance, as can be seen from the illustration; they require no current or voltage supply, they need no adjustment, and, so far as short tests can determine, they are reliable.

The rectifier, of course, does not amplify, and if its efficiency be compared with either an anode bend or a grid detector, it will be found greatly inferior. This is not a fair comparison, however, for these methods of valve detection are really dual stages, in which a single valve gives both rectification and amplification. To be fair, a Westector must be compared with a diode detector; in theory, it should give a practically identical performance, and practical tests show that the difference with correctly designed circuits is negligible.

Comparable with a Diode

There are two main types of Westectors, the W. 4 and the W. 6; these are both half-wave rectifiers, strictly comparable with an ordinary diode detector. Each is rated to pass a maximum current of 0.25 mA. and the W. 4 is designed for a maximum input of 24 volts peak, whereas the W. 6 can handle up to 36 volts. Full-wave types are also available, and these are comparable with the duo-diode; they consist of a pair of W. 4 or W. 6 rectifiers and are designated as types W.M. 24 and W.M. 26. Their characteristics are the same, but as the signal input is normally applied in push-pull, the permissible values are doubled, and a total of 72 volts peak can be applied to the W.M. 26. As far as the output circuit is concerned, of

THE valve has for so long been supreme as a detector in receivers that it comes as something of a shock to find any serious rival. Non-thermionic rectifiers have, of course, long been known, as witness the crystal detector, but either their efficiency or their reliability has been so low that they have been completely displaced by the valve. The properties of the new Westinghouse detector are such that it can replace a diode detector in the superhet and still permit A.V.C. to be obtained.

course, the rectifiers are in parallel, so that the maximum current output becomes 0.5 mA.

In the design of these rectifiers, every precaution has been taken to reduce the inevitable capacity to a minimum. In spite of this, however, the capacity is rather higher than that of a valve, and the rectifiers are, generally speaking, not so suitable for use directly on the medium-wave broadcast band as in I.F. circuits. At 1,000 kc. (300 metres), the makers quote the equivalent load of the detector as 10,000 ohms. This is rather a low figure, and would damp any tuned circuit to which it might be connected. Furthermore, it might necessitate the use of a power H.F. stage immediately preceding the detector.

These difficulties will probably be overcome, but at present the chief practical use for the Westector undoubtedly lies in the superheterodyne. At the low intermediate frequency (110 kc. or so) generally employed

the damping is much less, for the capacity of the unit is comparatively unimportant. As a result, the preceding tuned circuit can be of more normal effective efficiency, and the necessity for a power H.F. stage is avoided. Indeed, an ordinary variable-mu valve can be used satisfactorily to drive the detector.

In all respects, the Westector behaves as a diode detector in a superheterodyne, and in the same way it may be used to provide automatic volume control. As a test on the operation, the type W. 26 was substituted for a duo-diode valve in an A.V.C. superheterodyne with an intermediate frequency of 110 kc., and, judged audibly, there was no difference whatever in the performance. A type W. 6 was then substituted for an ordinary diode detector in an A.V.C. superheterodyne of similar type, and here again no audible change was detectable. The response is understood to be substantially linear, and this is borne out by the fact that during the tests distortion remained at as low a level as with a valve detector.

Owing to the fact that neither electrode need be at earth potential, modified circuits become permissible, and the makers advise the use of the arrangements shown in Fig. 1 (a) and (b) for half- and full-wave rectification respectively. If A.V.C. be used, the polarity of the rectifier is important. It should be understood that the use of these circuits is not essential, for the ordinary diode valve circuits can

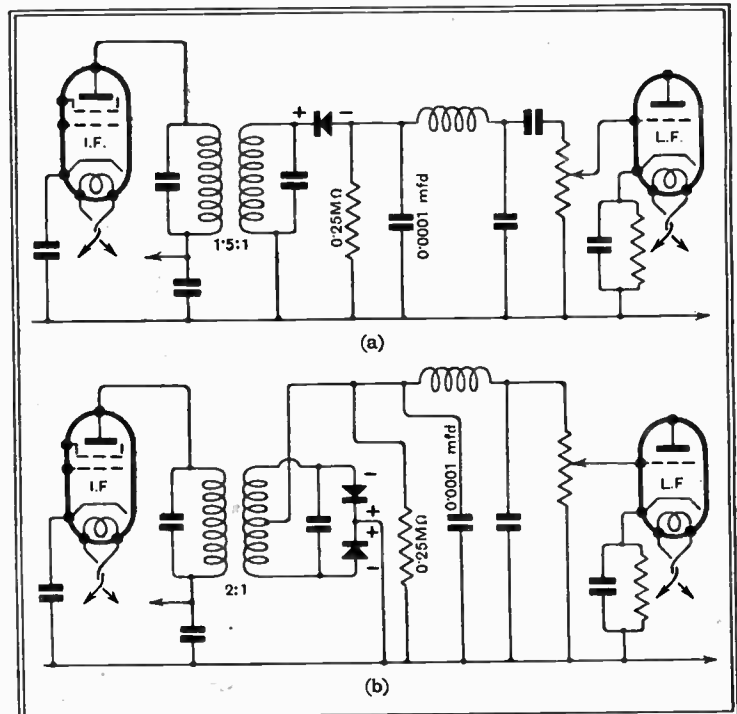


Fig. 1.—The recommended connections of the Westector as the second detector of a superheterodyne are shown at (a) for half-wave rectification and at (b) for full-wave.

also be used, treating the positive and negative terminals of the Westector as the cathode and anode. The makers claim.

The Westector—

however, that, with the recommended arrangement, the I.F. currents in the output are about one-tenth of those with more normal circuits, so that less I.F. filtering is needed. In order to reduce damping of the tuned circuits to as low a figure as possible, step-down ratios in the transformers are advised, and the ratios are marked on the circuits.

It would appear, therefore, that these rectifiers open up a useful alternative to the valve diode detector in superheterodynes, and it seems probable that one of their chief applications will lie in the development of simple automatic volume-control systems. The makers are the Westinghouse Brake & Saxby Signal Co., Ltd.

DISTANT RECEPTION NOTES.

W.W. Station Finder

THOUGH I had no doubt after reading the published description of it that *The Wireless World* Station Finder was a good thing, I must confess that I had hardly expected to find such extraordinary accuracy as it has proved to possess during the week that I have had it in use.

I tried it first of all with a particularly selective seven-valve super-heterodyne which is calibrated to the proverbial hair's breadth. In this way I was able to check to a nicety the readings of the Station Finder. After the small adjustment to the trimmer which took about five minutes to make, the Station Finder showed itself to be dead accurate over the whole of the waveband that it covers, that is, between Fécamp on 223 metres and Ljubljana on 574.7 metres. Every station came in at exactly the setting indicated by the Finder.

The next test was to apply it to an uncalibrated set which was completely strange to me. A preliminary survey of the key stations indicated that no further adjustment of the trimmer was required and within an hour I was able to prepare with the help of the Station Finder a large-sized calibration chart for the set based upon the readings required for no less than thirty-eight stations.

The Station Finder is unquestionably a real boon to the long-distance enthusiast, for it makes the business of identifying stations not mere guesswork but a certainty. I have only one criticism to make: it takes in only the medium waveband. Could the designer evolve a model which covers both the medium and the long waves? Possibly, too, something might be done with a short-wave Station Finder, which would be invaluable. Short-wave reception lends itself admirably to the absorption method of measuring frequencies or wavelengths.

I have received an interesting letter from a Marlow correspondent, who asks whether I was listening to American stations during the early hours of February 14. He reports wonderful reception of many U.S.A. transmissions, whose strength he describes as "honestly comparable to that of European transmissions." As luck would have it, I did not sit up late on that night, though I

* A long-wave model was considered, but it was thought that the cost could not be justified in view of the limited number of long-wave stations and the fact that they are really easy to identify compared with those of the medium band.—ED.

have heard from several quarters that transatlantic reception was then particularly good. There have been also some very favourable nights since then.

It was stated some time ago that Germany was making certain changes in her relay network in view of the large service areas obtained by the high-powered transmitting stations. Though I have no official information on the subject, it would appear that on several nights during the week at any rate the Berlin relay, which works on the wavelength of 283 metres, is using considerably more than the half-kilowatt with which

it is credited in the lists. Further, it seems as if this station were then working without wavelength partners. It can be picked up at full loud-speaker strength and without a trace of the distortion one associates with common-wave transmissions.

Readers should note that this relay now often furnishes the best means of receiving the Berlin programmes, for the volume obtainable from the 283-metre transmission is considerably greater than that from the parent station, Berlin Witzleben, on 419.5 metres.

D. EXER.

Correspondence

The Editor does not hold himself responsible for the opinions of his correspondents

Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Tudor Street, E.C.4, and must be accompanied by the writer's name and address

Empire Broadcasting

PLEASE accept my very best wishes for 1933. My very best thanks and esteemed appreciation in "The Great Push" you have given to Empire broadcasting.

Using the battery version of the "Single Dial Super" in conjunction with the S/W adaptor published in your issue of December 23rd, 1931, I have nightly received the tests from the Empire Station at full loud speaker strength. The 31-metre transmission is the only satisfactory wave received here, the 49-metre being swamped by Moscow and Morse. It is rather strange to relate that the transmissions to the Canadian and Indian zones are received at practically the same strength as those transmissions intended for South Africa, and, of course, the times are much more convenient for Mauritius. As regards times, I think that these could very well be modified. You will appreciate that remaining out of bed from 10 p.m. till midnight is not very appealing to one in this climate. Of course, it is quite OK for the South African folk; they get the transmission at 8 p.m., a most convenient time, but we are two hours ahead of them, so it means 10 to 12 p.m. for us. I do think the authorities at home might alter the time of the transmission to South Africa from 17.00 to 19.00 G.M.T. I don't think the South African folk would mind; this would coincide with 9 to 11 p.m. here, and, of course, 7 to 9 p.m. South African time. Well, it is no use grumbling, and I must thank you for what we have got. In any case, it is 100 per cent. superior to G5SW, which was never more than a whisper, and not that on most evenings. Without doubt, the most consistently received station is Poutoise France; he just roars through any old time, but his modulation is just appalling.

RICHARD C. WADE,
O/C Radio.

H.M. Radio Station,
Rose Belle, Mauritius.

Daventry 5XX

IN the issues of *The Wireless World* dated February 10, under the heading of Broadcast Brevities, your special correspondent makes some remarks concerning the Daventry 5XX National programme transmitter, which we consider misleading and likely to give a grossly inaccurate impression of the reliability of that equipment.

We think you will be interested in the actual breakdown figures of Daventry 5XX taken over two periods of six months in 1932 and up to the end of the first week in February of this year. For the six months ended June 30, 1932, the percentage breakdown was 0.034 per cent., for the subsequent six months 0.056 per cent., and for the period January 1 to February 4, 1933, the figure was 0.032 per cent. You will observe that the percentage breakdown of the station is actually less this year than it was either in the first or the last half of 1932. Further, more than half the breakdown periods were due to valve failures which, of course, have no relation to the age of the transmitting equipment.

F. W. BISHOP,
for Chief Engineer,
The British Broadcasting Corporation

What Does the Public Want?

A LISTENER may be content with local station reception for six days a week, but occasionally requires to receive a distant transmission (e.g., Radio Paris on Sundays). To do this, the receiver must have a fair performance, according to the listener's ideas of selectivity and quality. Because of this performance on the one desired distant transmission, the remainder of distant transmissions must perform come into step with it.

So we get the listener with good performance by his receiver on two local and one distant stations, with all others thrown in whether he particularly wants them or not. Warwickshire. R. F. COOKE.

UNTIL a few months ago I resided in London, and I think that it is due to "Diagnostic" living within a service area of a British station that he writes as his view that few people listen to foreign transmissions. Almost any set, under these conditions, will give interference-free reception of the local stations, but the reception of foreign programmes on nearby wavelengths is impossible. So that except, perhaps, on Sunday, when the English programmes from Radio Paris are on the air, the set is usually used for local reception. Take this set outside a service area, and it will be found that only the National is worth listening to, of all the English stations. In this district French and German stations have a greater signal strength than the home medium-wave

ones, and what is more, they are a much steadier signal. The result is that if there is a vaudeville programme on the Regional, sets are tuned in to it, and the whole is blotted out every few minutes by a more powerful foreign station. When the vaudeville is over, the set is tuned to whichever powerful station happens to be sending over music. It is to help solve such problems that better sets are needed. But the number of valves required seem excessive when a purchaser says, "But I only want to receive the English stations."

J. S. THOMAS.

Chippenham, Wiltshire.

IN the vehement correspondence engendered by "Diagnostic," one is left with the impression that either receivers for local stations are all that one needs, or else that the possessor of a long-range and sensitive super-het. is wasting the money he has invested in the expensive set.

But what is a local station?

The Londoner, with his usual parochial mind, imagines that his own experience covers the whole of this island kingdom. With a two- or three-valve set he can receive the two London transmitters without interference, and thinks that the rest of his countrymen can do likewise. In Sussex, the local station is Fécamp, as reference to any map will prove, the nearest B.B.C. transmitter being somewhere in the region of eighty miles distant. In order to receive the English transmissions one must possess a set that will equally receive a large number of foreign programmes. I installed the Monodial A.C. Super, not for its power to pick up some 140 stations (which it does), but because it enables me to receive any programme I choose without any interfer-

encing time I am satisfied with one or other of the B.B.C. programmes. For the balance, some attractive foreign programmes selected from *The Wireless World* fill the bill. I am quite sure that, like myself, a preponderating number of listeners have installed the Monodial and other selective sets in order to receive B.B.C. programmes perfectly, no matter where they may be.

E. HOWARD BURNETT.

Hove.

I AGREE with your correspondent "Diagnostic" in his contention that there is a public demand for a simple type of receiver that is capable of receiving the local station with good quality and nothing much else. The majority of listeners do not make a practice of tuning in foreigners, except perhaps on Sundays.

The snag lies in the expression "local station." Here, in the South of England, to receive satisfactorily London Regional and Midland Regional clear of interference a very selective set is necessary. Although one may be quite content to listen to these stations, a simple type of receiver will not deliver the goods. All I want is a set that will give me three stations with good quality after dark, but such a set must necessarily throw in foreign stations whether I want them or not.

"Diagnostic's" criticisms of receiver design seem to be based on the supposition that one lives near a Regional station.

Fareham. "SOUTHERNER."

I WAS very interested in your leader and the letter signed "Diagnostic" regarding the range required by present-day listeners in their receivers.

From my geographic situation, the only

follow the fading, I can obtain results which satisfy my not too critical ear from most of the important European stations. Of course, on really bad nights this "following of the fading" will prove impossible or not worth while owing to distortion.

I have been following the details of A.V.C. as set out in your various articles over the past twelve months with the greatest interest, and am most definitely convinced that a smaller set than a super-het. so fitted would find a very large market.

I am well satisfied with the B.B.C. programme in 80 per cent. of my listening, but when the alternatives available are too high-brow or too religious I switch over to the Continent.

J. W. BROWN.

Northern Ireland.

"DIAGNOSTIC" is apparently like a large number of British manufacturers in thinking that the public should be supplied with what is good for them and not what they ask for.

But, seriously, what would be the use of a super-quality local station receiver to a large number of listeners, as, for instance, the residents of the City of Portsmouth? A measurement of field strength would indicate that many foreign stations are received as, or more, powerfully than the B.B.C. stations. In these conditions it is quite obvious that a set must first have selectivity of a high order and a degree of sensitivity sufficient for reasonable quality. Even bearable quality cannot be obtained if the set has to be worked full out.

Without wishing to be dogmatic, I can say that definitely all the listeners I know in this locality use the foreign transmission to a greater or less degree, and find considerable entertainment value therein. Furthermore, I am of the opinion that sets can be made to give quality satisfying to most music-lovers, and yet give a degree of selectivity sufficient to separate stations which are not actually heterodyning each other.

No! "Diagnostic," I think some of the public are demanding the type of receivers they require.

L. S. COLLINS.

Portsmouth.

THE public want, as they always have from time immemorial, something different, something new, something for a change from that which they have hitherto been accustomed; hence the desire for sets to reach out farther and farther.

Just take a note of those chronic radio grumblers we know, and we can bet a modern super-het against their "local" set that they are very limited in their programme selections.

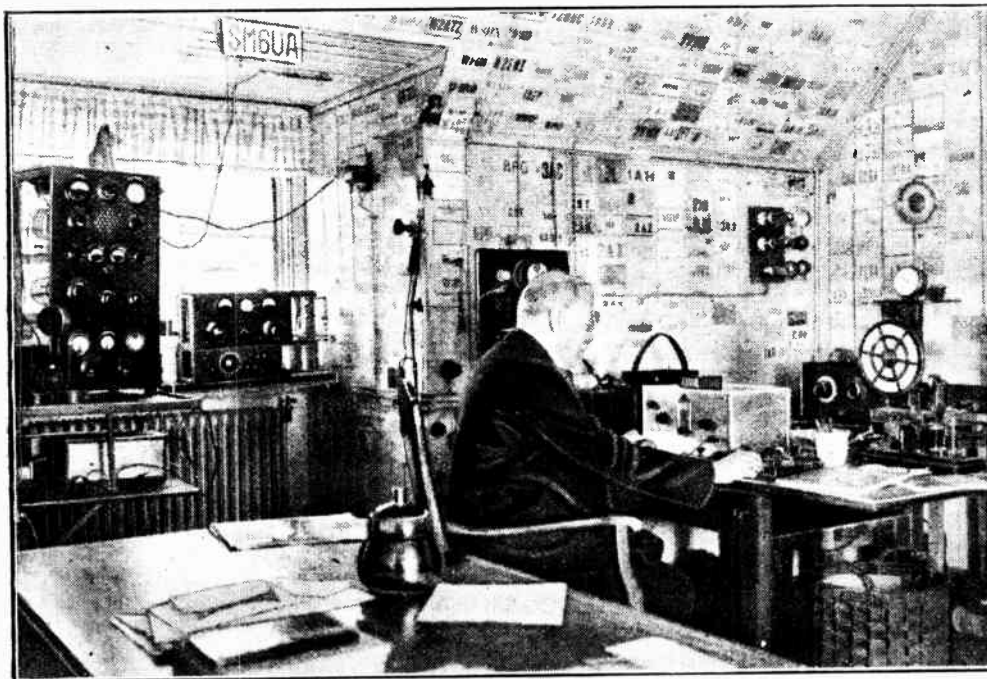
That our programmes are greatly appreciated abroad will not be denied; and for the same reason that theirs are equally appreciated over here—they constitute a welcome change from the type of entertainment which, sooner or later, will become tiring owing to its familiarity.

That the reception quality of foreign stations is not so good as the local will also not be denied, but this is the age of progress and we must urge our manufacturers to keep abreast of the times.

There is ample scope for improvement yet, and it is futile to deny that the general public will ever consider that anything is so good that it cannot be better.

Our manufacturers must go on and on and on, or else they will go out.

Highbury, N.5. W. GARTLAND.



SM6UA. Owned by Mr. J. F. Karlson, of Redbergsplatsen, Göteborg, Sweden, one of the oldest and certainly the best known Swedish amateur, whose original call-sign was SMUA. During the summer months the station is often transferred to Mr. Karlson's country residence at Orust. He is always glad to work or assist in tests with anyone, and the "mural decorations" indicate that he has been in communication with all parts of the world.

ence by other stations, and yet, by its tone corrector, give a quality denied to me by any other super-het.

Because I possess an acknowledged super-sensitive and selective receiver, I do not consider that ether-searching is its main function. For fully 90 per cent. of my lis-

tening time I am satisfied with one or other of the B.B.C. programmes. For the balance, some attractive foreign programmes selected from *The Wireless World* fill the bill. I am quite sure that, like myself, a preponderating number of listeners have installed the Monodial and other selective sets in order to receive B.B.C. programmes perfectly, no matter where they may be.

LABORATORY TESTS

New Radio Products Reviewed



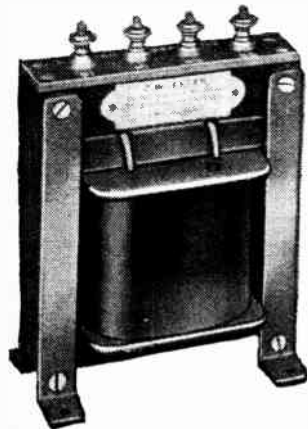
Eeles L.F. TRANSFORMER

ALTHOUGH the size of this transformer is appreciably greater than the majority in general use to-day, it possesses the distinct advantage that comparatively large amounts of D.C. can be passed through the primary winding without serious effect on its inductance. The resistance of the primary is 800 ohms. With no D.C. flowing the primary shows an inductance of 34 henrys; with 4 mA. this falls to 27.5 henrys, and with 10 mA. the inductance is 20.5 henrys. Since valves taking anode currents of this magnitude will be of fairly low impedance, an inductance of 20 henrys or so under working conditions is quite adequate to ensure a good bass response.

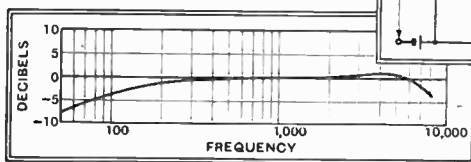
The transformer was tested in an amplifying stage fitted with a valve of 10,000 ohms A.C. resistance and with 4 mA. of D.C. flowing in the anode circuit. The quality of reproduction was exceptionally good, comparing very well indeed with that usually associated with parallel-fed coupling systems, in which the primary inductance is maintained at a high level by deflecting the steady D.C. through a high anode resistance.

At 50 cycles the amplification is less than 8 decibels lower than that at 1,000 cycles, but from this point up to 7,000 cycles it is sensibly constant. At 8,000 cycles the drop is a shade less than 4 decibels only.

As a whole the performance is decidedly good. The transformer affords a voltage step-up of 1 to 4, and the price is 25s.



Eeles L.F. transformer giving step-up ratio of 1 to 4.



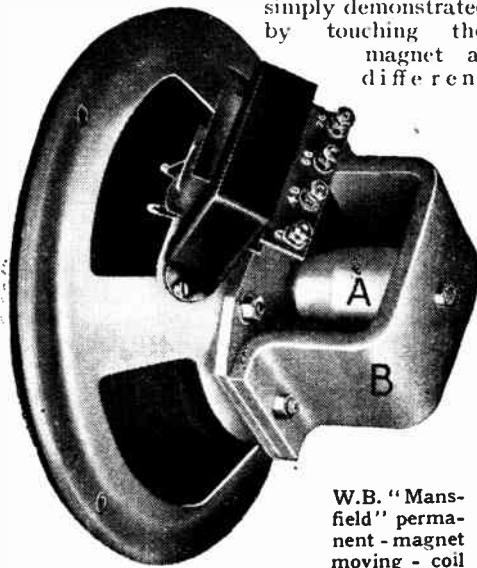
Overall characteristic curve of Eeles L.F. interval transformer.

The makers are C. W. Eeles, 17, Bramerton Street, Chelsea, London, S.W.3.

W.B. "MANSFIELD" LOUD SPEAKER

THIS inexpensive permanent-magnet moving-coil loud speaker is notable for the design of its field magnet. The magneto-motive force is supplied by the short centre pole piece which is a steel alloy of very high cobalt content. A special steel alloy having low reluctance (magnetic resistance) is used for the U-shaped return piece, and as a result a gratifying high flux density is concentrated in the gap for a minimum volume of the comparatively expensive cobalt alloy.

Another feature of this system is the reduction of magnetic leakage, as may be simply demonstrated by touching the magnet at different



W.B. "Mansfield" permanent-magnet moving-coil

loud speaker. A, cobalt alloy centre pole piece. B, low-reluctance alloy steel return piece.

points with a screwdriver. Advantage has been taken of this to fit a steel diaphragm chassis, bolted directly to the top plate of the magnet. This has resulted not only in a slight reduction of production costs but also in greater mechanical strength and permanence of alignment.

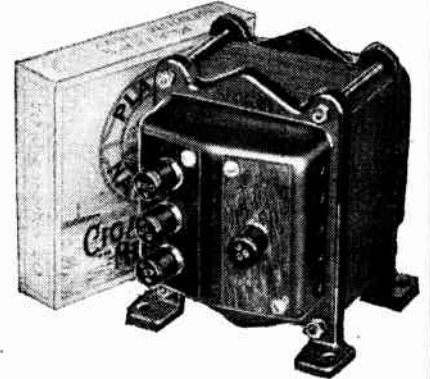
On test the sensitivity was satisfactory having regard to the small dimensions of the magnet. The useful frequency range is from 100 to 4,500 cycles with a group of not too obtrusive resonances in the vicinity of 150 cycles. The 2,500-3,500 resonance which is a frequent fault in small moving-coil loud speakers was entirely absent in this model.

A tapped transformer with ratios of 45:1, 55:1, and 25:1 working into the 2½-ohm speech coil is included, and the price is 27s. 6d. The makers are Whiteley Electrical Radio Co., Ltd., Victoria Street, Mansfield, Notts.

HEYBERD FILAMENT TRANSFORMERS

PARTICULARLY well-made filament transformers, giving an output of four volts, and especially well suited for use

when converting a receiver to A.C. mains operation, are obtainable from F. C. Heayberd and Co., 10, Finsbury Street, London,



Heyberd 4-volt 3-amp. filament transformer, model 723.

E.C.2. Three models are available, described as the types 723, 727, and 731, their respective current outputs being 3 amps., 5 amps., and 10 amps.

Tests were made with the smallest model, which will supply one to three A.C. valves. With one amp. flowing the secondary A.C. volts were 4.2, with two amps. 4.05, and with 3 amps. 3.92 volts. The regulation is quite satisfactory, and is as good as can be expected from a transformer of this type and size, irrespective of price.

The transformer is provided with a core of adequate size, and the winding is fully protected by the special cast aluminium end-plates adopted. It has a tapped primary winding to suit supply mains of from 200 to 250 volts at 50 cycles, while the secondary winding has a centre tapping. The price of the model 723 is 12s. 6d. The 5-amp. model costs 17s. 6d., and the 10-amp. type 22s. 6d.

UTEX TIME SWITCHES

SPECIAL switches designed to fit on the back of an alarm clock for the purpose of switching on and off the wireless receiver at any prearranged time can be obtained from the Utex Manufacturing Co., Ltd., 39, Holborn Viaduct, London, E.C.1. Two models are available, the one for use with battery sets, which costs 2s. 6d., and the other designed for including in the electric supply leads to an all-mains receiver. The price of this model is 5s. 6d. Either of these mounted in a full lever movement clock costs 5s. extra.

The switch is mounted close to the alarm winding handle and is actuated when the alarm mechanism is released by the rotation of the winding handle. They are quite easy to fit, as a special template is supplied with every model giving the correct position for the fixing holes.

A specimen mains model was mounted on an ordinary alarm clock, as described in the instructional leaflet, and has proved to be perfectly satisfactory. Having set the alarm to the hour at which a desired item in the programme is required, the clock then switches on the receiver without fail at the appropriate time.

B.S.R. AMPLIGRAM

An Electric Amplifier and Gramophone Unit
Giving 5.9 Watts Undistorted Power
Output

THE Ampligram is an A.C.-operated self-contained power gramophone designed primarily for public entertainment, and consists of a two-stage amplifier, an electric gramophone motor complete with automatic stop, a Marconiphone pick-up, tone and volume controls, and a high grade moving-coil milliammeter. The electrical equipment throughout is of the highest standard with all components conservatively rated to ensure that the unit will give a trouble-free service. Yet despite this wealth of equipment careful design has enabled the complete unit to be condensed to fit into a portable-type case of solid oak measuring 17in. \times 21 $\frac{1}{2}$ in. \times 11 $\frac{1}{2}$ in. high. The lid when raised gives access to the turntable, valves, and all controls, albeit there are two only, their respective functions being volume and tone adjustment.

Matching Output Valve and Speaker

The mains input and voltage adjustment, also the loud speaker sockets, are located at the rear of the case, access to these being obtained by removing a panel held in position by two screws. The mains transformer is tapped to suit supply voltages of from 190 to 250 at 50 cycles. Provision is made to match the output valve to loud speakers of different impedance, the output transformer fitted giving the choice of three ratios, viz., 1:37.5, 1:19.4, and 1:13.7, these giving correct matching where speakers of 2 ohms, 7.5 ohms, and 15 ohms, respectively, are employed.

An AC/SG. valve occupies the first position in the amplifier with its circuit arranged as described by McDonald in *The Wireless World* dated November

12th, 1930. This is linked by a resistance-capacity coupling to a PP5/400 valve giving an undistorted output of 5.9 watts as the maximum. The volume obtained from this amount of power, using one of the many suitable heavy duty loud speakers, is

FEATURES

General.—Portable electric gramophone entirely A.C. operated. Voltage range 190-250 at 50 cycles. Undistorted output 5.9 watts. One model has provision for microphone.

Circuit.—Screen-grid valve employed in first amplifying stage, resistance-capacity coupled to PP5/100 power valve. Output matching transformer with three ratios to suit loud speakers of 2 ohms, 7.5 ohms and 15 ohms. H.T. by full-wave valve rectifier.

Controls.—Tone and volume controls.

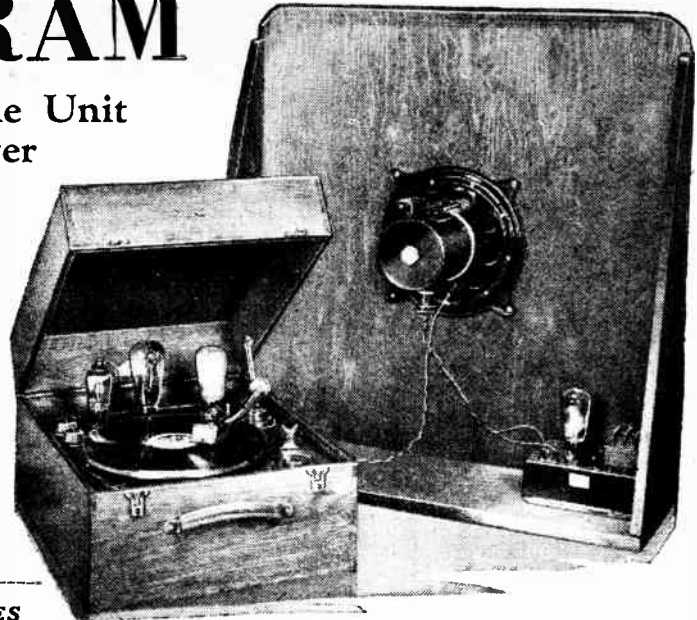
Price.—Model AG1., £26 10s.
Model AG2., £27 15s.

Makers.—Birmingham Sound Reproducers, Ltd., Claremont Works, Claremont Street, Old Hill, Staffs.

ample to fill a hall seating up to 300 people.

High tension is derived from a full-wave valve rectifier—a UU120/500—and the smoothing is carried out by a choke of generous size and large capacity high voltage condensers.

Two models of the Ampligram, both identical so far as general construction and design are concerned, are available. These are known as the types AG1 and AG2. The only difference is that the model AG2 has provision for the attach-



ment of a microphone and includes a special input transformer and a change-over switch.

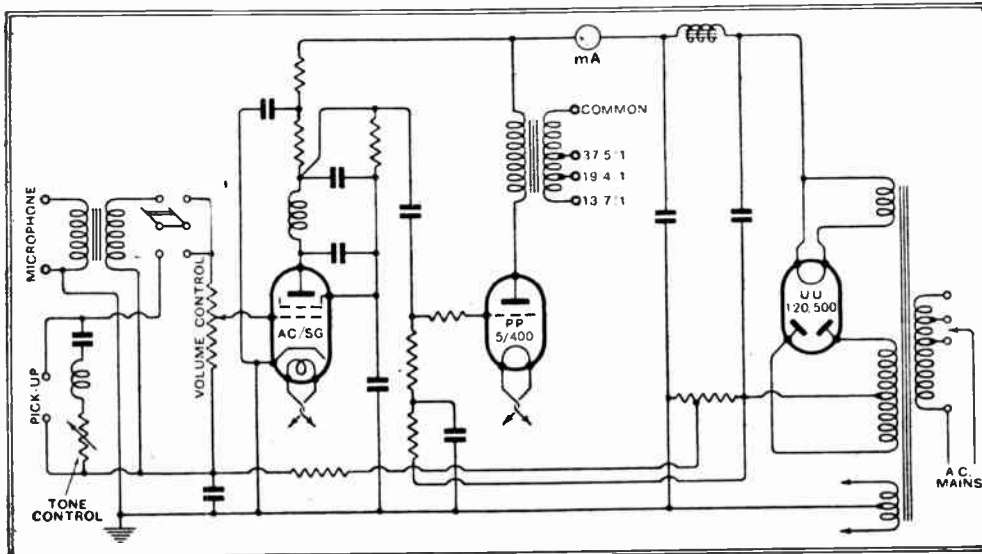
Since these units are intended primarily for entertainment purposes, special attention has been given to the matter of reproduction. The tonal quality is exceptionally good, the bass response in particular being most satisfactory, for drums and other orchestral instruments rich in low notes are well in evidence but do not obtrude or overshadow the middle and upper registers. As a whole the reproduction is definitely pleasing, needle scratch is not very noticeable which is due largely to the fact that a response curve of the unit shows that from 50 cycles up to 5,000 cycles the amplification is sensibly constant, but above this upper limit there is a marked attenuation. It can truly be said that the Ampligram has attained a very high standard in reproduction and is undoubtedly in a class apart so far as electric gramophone reproducers are concerned.

BOOKS RECEIVED

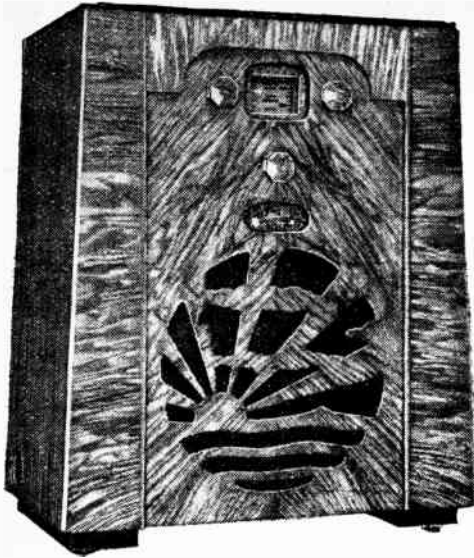
Radioactivity and Radioaction Substances (3rd Edition), by J. Chadwick, M.Sc., Ph.D.—Including the Nature of Radioactivity, Ionization of Gases, Methods of Measurements, The alpha, beta and gamma rays, Radioactive changes and substances, Production of Helium, etc. Pp. 116 xii, with 33 diagrams. Published by Sir Isaac Pitman & Sons, Ltd., London. Price 2s. 6d.

Alternating Current Electrical Engineering (4th Edition), by Philip Kemp, M.Sc. Tech., M.I.E.E., A.I.Mech.E., Mem.A.I.E.E.—Including General Considerations of Alternating E.M.F. and Current, Inductance, Reactance and Impedance, Capacitance and Condensers, Wave Form, Polyphase Currents, Alternators, Transformers, Motors, Converters, Rectifiers, and Valves, etc. Pp. 595+xi, with 418 Diagrams and Illustrations. Published by Macmillan & Co., Ltd., London. Price 15s.

Un nuevo sistema para la impresión foto-eléctrica del sonido. By Alberto Laffon y Soto and Ezequiel de Selgas.—A description of a new method of recording sound on a cinematograph film. Pp. 21, and numerous diagrams. Published by Revista de Obras Publicas, Madrid.



Circuit diagram of the amplifier embodied in the B.S.R. Ampligram.



IN view of the extraordinary appeal exerted by the Q.P.P. principle recently, considerable interest naturally attaches to the first review of a commercial receiver which includes this system. That the new push-pull development has been well applied in the Pye G/B set is evident from the large volume of sound obtainable from the receiver, despite the use of a small high-tension battery only. Nor is it on volume alone that the set thoroughly satisfies; a moving-coil loud speaker is incorporated providing quality which justifies its use in a battery receiver.

The circuit contains those refinements which characterise Pye sets and which raise them well above the level of mediocrity. The aerial is tapped down the primary of the band-pass filter for both medium and long waves, and is joined to earth via a 25,000-ohm variable resistance. This component is ganged to the bias potentiometer, and the two together form a single volume control of adequate range. Too often it is left to the bias potentiometer alone to adjust the volume level, with the unfortunate result that signals from local stations can be reduced appreciably only by the unsound expedient of decreasing screening-grid volts.

Circuit Refinements

The anode circuit of the H.F. valve is decoupled by a 10,000-ohm resistance and a 0.25-mfd. by-pass condenser, and although battery filters are not used in the other stages, no signs of instability were evident. With Q.P.P. the fluctuating anode and auxiliary grid currents preclude the use of common impedances in the H.T. circuits of the output stage and decoupling must perforce be omitted. Parallel-feed is used for the L.F. transformer coupling so as to maintain a high primary inductance; furthermore, in this circuit the necessity for a special anti-surge resistance to protect the pentodes is avoided.

A point of interest is the values of the condenser components of the H.F. filter in the anode circuit of the detector, for, together with the choke, complete immunity from unwanted H.F. responses in

Pye G/B Battery Receiver

A Three-stage Set with Q.P.P. Output

the L.F. amplifier is ensured. With all push-pull circuits parasitic oscillations are liable to occur, but the usual separate grid stoppers are not effective with Q.P.P., and recourse must be had to a single resistance in the grid return circuit. This can be seen in the circuit diagram.

An impedance-limiting device across the primary of the output transformer is included, which has the effect of preventing undue shrillness of reproduction. That the resistance value is high, and the capacity value low, speaks well for the characteristics of the speech coil. Since the advent of Q.P.P. the electrical reproduction of gramophone records in battery receivers has come into its own, and represents, perhaps, one of the most important advantages of the new system of amplification. A pick-up can be used with the set under review, but an external volume control is necessary. There is an intermediate position on the wave-range switch marked "Gram.," which links the pick-up to the detector grid circuit, and at the same time short-circuits the input to the H.F. valve.

A simple but ingenious connection for an external loud speaker is arranged on the left side of the cabinet, but the details cannot easily be shown on the circuit diagram. A plug to which leads from the extra speaker should be connected is supplied with the receiver. When the plug is pushed half-way into the sockets both speakers will be in circuit, and when pushed right home the internal speaker is cut out of circuit and contact is made to the extra speaker only. It is important that the instrument chosen for use with extension leads should have a speech coil impedance from 1.5 to 2.5 ohms, which means that with many speakers on the market the built-in matching transformer must be cut out of circuit.

On testing the receiver one is at once struck by the tremendous volume from the two small pentodes, which together deliver no less than 1,000 milliwatts for a quiescent anode current of approximately 1.8 mA. per valve. On the score of

quality, practically no adverse comment can be made. Individual instruments in an orchestra can be followed with ease, and harmonic distortion is not audible. The high-note output has been purposely curtailed, and the result is a pleasing immunity from heterodyne interference. Slight criticism might be levelled at a bass resonance, but this is hardly enough to be annoying. The selectivity reaches an entirely satisfactory standard, and close to Brookmans Park it was possible to receive a number of stations between the two local transmissions. The band-pass circuit fulfils its function admirably, giving a sharp cut-off on either side of resonance. The performance on long waves was exceptionally good, and reaction was not found to impair quality unless pressed to the limit.

Thanks to the attention paid by the designers to the tuning control, the identification of stations

is made extremely simple. A large illuminated drum dial driving the three ganged condensers by means of a chain, provides an ample surface area on which are printed both wavelengths and principal broadcasting stations. So that there should be no confusion between the two wavebands, all data appertaining to the medium range are printed in black, and to the long waves in red.

To enable a thoroughly satisfactory servicing scheme to be carried out, the

manufacturers have constructed the chassis so that it can be removed from the cabinet for examination or repair in a few moments, and every precaution has been taken against damage in transit by the inclusion of rubber buffers between the chassis and its container.

Altogether, the Pye G/B receiver must be considered a great advance in battery receivers, giving as it does an output which has hitherto been considered the prerogative of the mains user. The total average H.T. battery consumption is but 8.2 milliamps, and as matched Pen. 220 valves are supplied the consumer is not under the necessity of balancing the output stage.

FEATURES.

General.—A self-contained 3-stage receiver (4 valves) for battery operation with Q.P.P. output. For use with external aerial and earth. Built-in permanent-magnet moving-coil speaker and provision for gramophone pick-up. Sockets for external speaker, which can be put in circuit with or without the internal speaker.

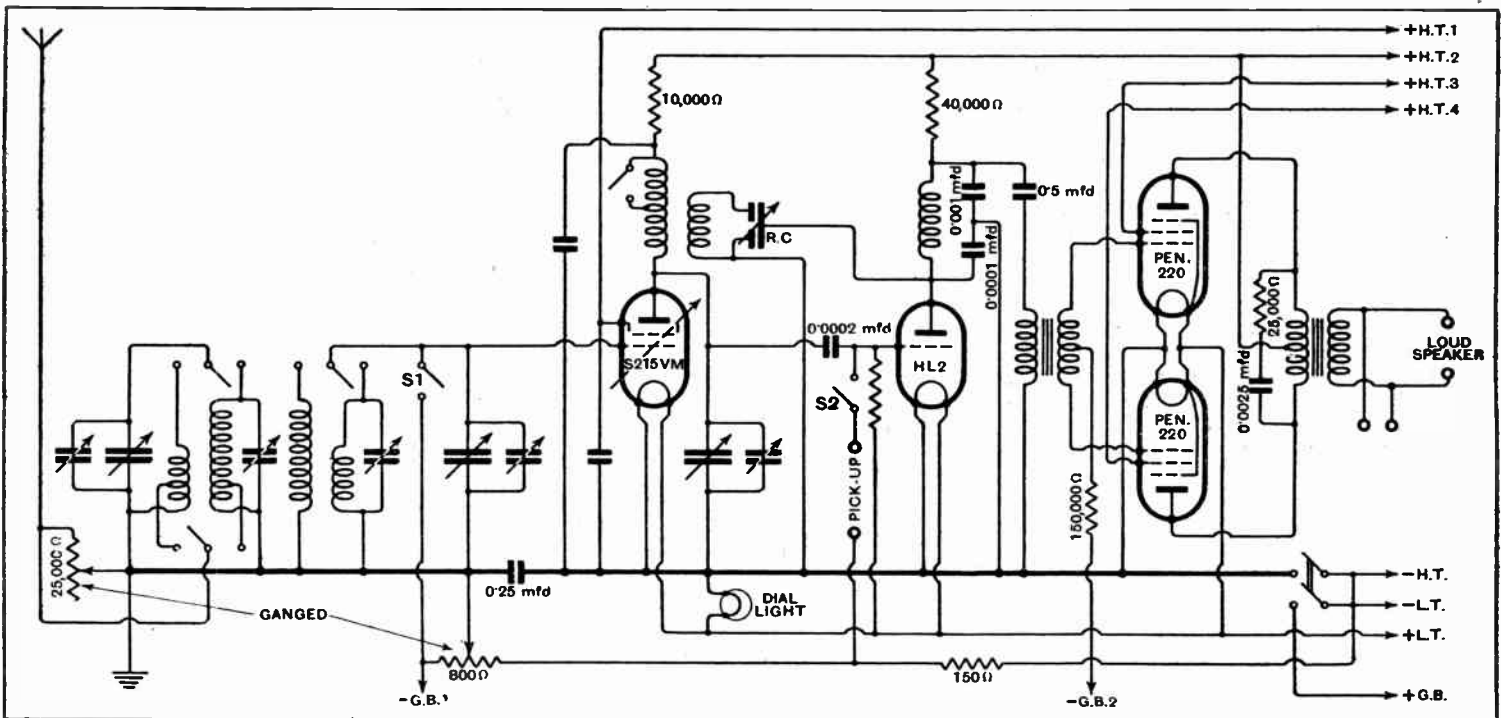
Circuit.—Band-pass input circuit, variable- μ H.F. valve with dual volume control actuating aerial resistor and bias potentiometer. Tuned anode coupling with reaction. Parallel-fed push-pull L.F. transformer linked to two Pen. 220 valves in Q.P.P. giving 1,000 milliwatts undistorted output.

Controls.—(1) Ganged tuning with illuminated dial calibrated in stations and wavelengths. (2) Combined wave-range and radio-gramophone switch. (3) Reaction. (4) Volume (dual). (5) On-off battery switch.

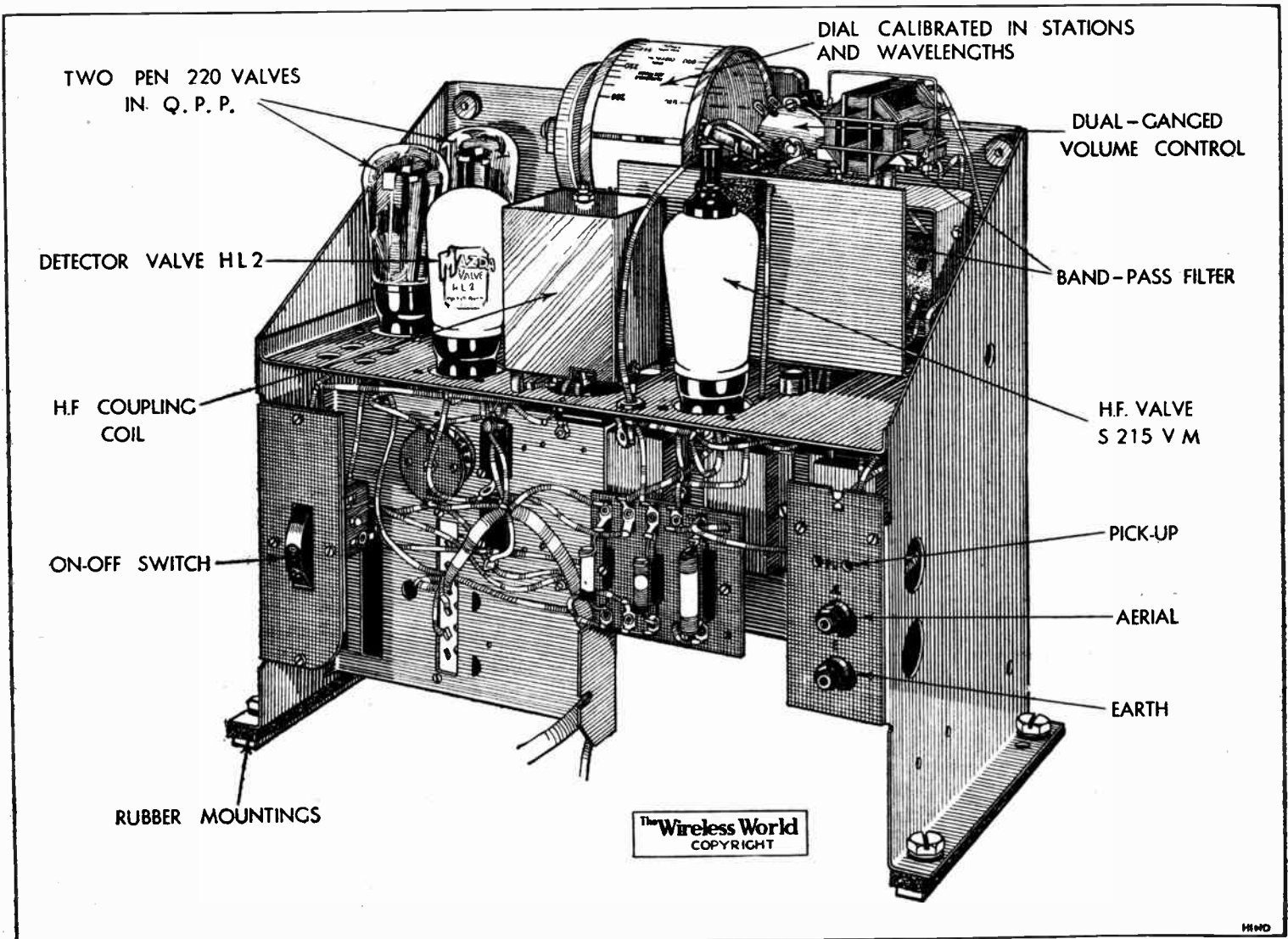
Price.—11 Guineas complete.

Makers.—Pye Radio, Ltd., Africa House, Kingsway, London, W.C.2.

Battery Receiver with Mains Output



Complete circuit diagram. Voltages and currents are as follows: Max H.T. volts 159; auxiliary-grid volts about 144; H.F. screening-grid volts 60; total H.T. consumption under working conditions 8.2 mA.



The receiver chassis which rests on rubber mountings. The large dimensions of the drum dial considerably assist the process of tuning.

READERS' PROBLEMS

Q.P.P. Amplification

IT should be emphasised that no resistance of high value—even remotely comparable with the resistance of the valves—should ever be included in the anode or auxiliary-grid circuits of a quiescent push-pull amplifier. Currents in these circuits are constantly changing under the influence of varying signal-frequency voltages applied to the grids, and anything which tends to restrict these changes is bound to introduce a loss of efficiency and distortion.

This rules out the use of potentiometers and voltage-dropping resistances for regulating anode and auxiliary-grid voltages. As has already been stated, the Q.P.P. amplifier is essentially for battery feed, and the difficulties in the way of adapting it for operation with an eliminator are considerable. In any case, this system of amplification loses most of its attractions when a source of ample anode current from the mains is available.

A.C. Filament Heating

A READER who has a power transformer with a 7.5-volt centre-tapped secondary asks whether this winding could be employed to supply filament current to an output valve requiring 2 amps. at 4 volts. Information is requested as to the value of the series resistance that will be necessary for absorbing surplus voltage, and also as to whether the centre tap should be connected in the usual way.

As the 7.5 volt winding will probably be designed to deliver about 2 amperes, it should be quite possible to use it for heating the output valve described. An extra series resistance of 1.75 ohms should be included in the filament circuit in the manner shown in Fig. 1.

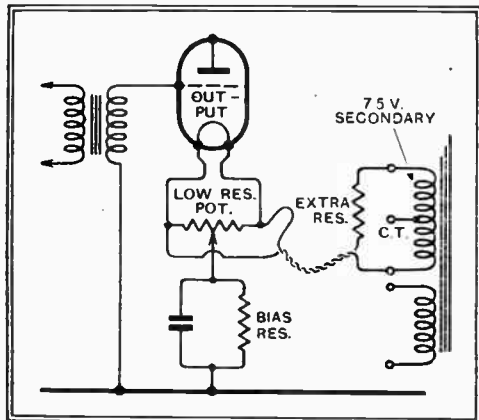


Fig. 1.—A typical output stage, with the addition of a resistance for absorbing excess filament voltage.

Under these conditions it will no longer be possible to employ the existing centre tap, but the same effect may be obtained by shunting the filament with a potentiometer of between 20 and 40 ohms; in this way an artificial centre point may be located.

Visual Indication

THE prospective constructor of a Station Finder, who does not believe in "spoiling the ship for a ha'porth of tar," asks our advice regarding the purchase of a detector anode current meter for use in conjunction with this device. It is in-

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which brief particulars, with the fee charged, are to be found at the foot of this page.

tended that the instrument should be permanently wired as a part of the receiver, and should be used as an aid to identification by means of the Station Finder.

Meters are always worth while having, but the use of one is by no means essential to the success of the Station Finder. Indeed, with most sets having two L.F. stages, the change of anode current in the detector anode circuit which corresponds to the maximum required output is usually so small that it is difficult to detect visually. This means in practice that in order to obtain an indication it would be necessary to increase the sensitivity to a point where overloading becomes evident. This is unpleasant, and so the aural method is probably actually preferable in this case.

When, on the other hand, the detector feeds directly into the output valve, it will usually be found that the change in detector anode current under normal working conditions is quite appreciable, and so an anode current meter becomes more valuable.

Distant Control of Grid Bias

IT is rather surprising that advantage is not more often taken of the fact that the grid bias voltage—and consequently the sensitivity—of a variable- μ valve may be regulated from a point at a distance from the receiver itself. In this way remote control of volume is made possible in an extremely simple manner.

The Wireless World

INFORMATION BUREAU

THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Tudor Street, E.C.4, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.

So far as A.C. valves are concerned, this matter has already been treated in the pages of *The Wireless World*. A correspondent, who realises that there is no basic reason why battery-fed valves of the same type should not be controlled from a distance, asks us to publish a circuit diagram showing how the potentiometer at the remote point should be connected to the receiver.

In actual fact the connections of this potentiometer need be no different from those applicable if it were included in the receiver, but to make the matter clear, a

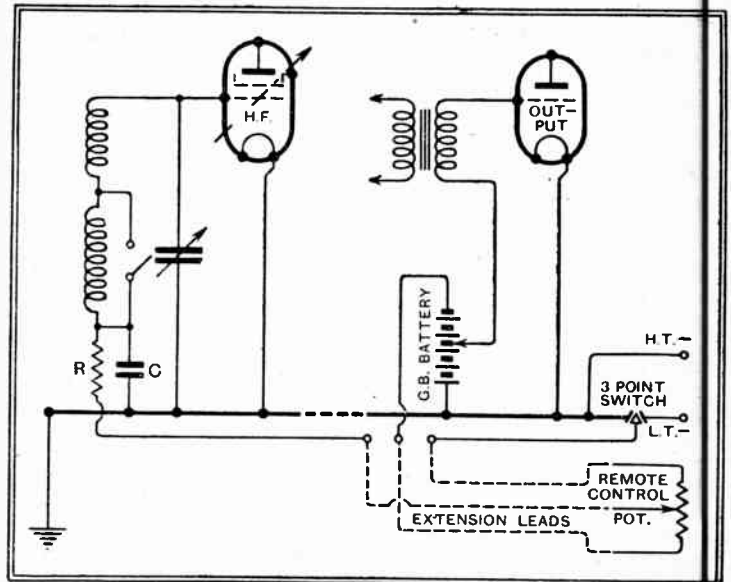


Fig. 2.—Remote volume control by variation of grid bias: connections of extension leads to the potentiometer.

diagram showing the connections of extension leads is given in Fig. 2.

As the extension leads are at low potential, so far as signal-frequency currents are concerned, the fact that they are extended to a distance should not affect stability adversely. As a rule, the amount of decoupling normally included in the H.F. valve grid circuit will be sufficient to prevent undesirable effects.

The All-Wave Monodial

IN order that the "All-Wave Monodial" (*Wireless World*, Jan. 27th and Feb. 10th) may be economical in the matter of anode current consumption, a maximum H.T. voltage of 100 volts was specified for all valves. When a source of ample H.T. current is available, there is no reason why the voltage applied to the anodes of the second detector and pentode output valve (and screen) should not be increased to the full 150 volts at which these valves are rated. The earlier valves in the receiver, however, should be worked under conditions laid down in the original descriptive articles.

Several readers who have written to us on this subject propose to feed the "All-Wave Monodial" from an eliminator; there is no objection to this course, and as a rule it will be unnecessary to include any extra decoupling beyond that provided in the original design. Of course, the eliminator must include provision for reasonably accurate adjustment of the various output voltages.

BIG PRICE REDUCTIONS in T.C.C. CONDENSERS

MICA CONDENSERS.

● OPERATIVE
MARCH 1st.

Capacity Mfd.	Type M. Moulded-in with Soldering Tags.		Type 34. Upright with Terminals.		S.P. Type (Series-Parallel)	
	New	Old	New	Old	New	Old
.00005	s. d. 0 8	s. d. 1 0	s. d. 1 3	s. d. 1 6	s. d. 2 0	s. d. 2 4
.0001/3	0 8	1 0	1 3	1 6	2 0	2 4
.0004/5	0 9	1 0	1 3	1 6	2 0	2 4
.001/4	1 0	1 4	1 6	1 10	2 6	2 10
.005/6	1 6	1 9	2 0	2 6	3 0	3 6
.01	2 0	2 3	3 0	3 0	—	—

PAPER CONDENSERS. TERMINAL TYPES

Capacity Mfd.	Type 50/61 200 V. D.C. Working		Type 80/81 400 V. D.C. Working		Type 101 800 V. D.C. Working		Type 121 1,500 V. D.C. Working	
	New	Old	New	Old	New	Old	New	Old
0.1	s. d. —	s. d. —	s. d. 2 0	s. d. 2 3	s. d. —	s. d. —	s. d. —	s. d. —
0.25	—	—	2 4	2 9	—	—	—	—
0.5	2 4	2 7	2 6	3 0	5 0	6 3	7 0	8 0
1	2 6	2 10	3 0	3 9	6 0	7 6	8 6	10 0
2	3 6	3 10	4 0	5 0	9 0	10 0	13 0	15 2
3	5 0	5 3	6 0	7 6	—	—	—	—
4	5 6	6 3	7 0	8 6	17 6	19 2	25 0	28 6
5	7 3	8 0	9 0	10 6	22 0	24 6	31 0	35 0
6	8 6	9 0	10 6	12 0	25 0	28 6	37 6	42 0
8	11 0	11 9	14 0	15 0	—	—	—	—
10	14 0	14 6	17 6	18 0	—	—	—	—

PAPER CONDENSERS. SOLDERING TAG TYPES

Capacity Mfd.	Type 65 500 V. D.C. Test 250 V. D.C. Working		Type 84 750 V. D.C. Test 350 V. D.C. Working		Type 87 1,500 V. D.C. Test 450 V. D.C. Working	
	New	Old	New	Old	New	Old
0.1	s. d. 1 8	s. d. 1 9	s. d. 2 0	s. d. 2 0	s. d. 2 2	s. d. 2 3
0.25	1 10	1 11	2 2	2 4	2 4	2 6
0.5	1 11	2 0	2 6	2 8	2 6	2 10
1	2 0	2 3	2 9	3 3	3 0	3 8
2	2 8	3 0	3 9	4 6	4 0	4 9
3	—	—	—	—	—	—
4	5 0	5 0	6 9	7 6	7 3	8 0
5	—	—	—	—	—	—
6	7 0	7 9	10 0	10 9	—	—
8	9 0	9 6	13 0	14 0	—	—
10	11 6	12 6	16 0	16 6	—	—

ELECTROLYTIC CONDENSERS

Capacity Mfd.	Type 802. Aqueous 440 V. D.C. Working		Type 801. Aqueous 460 V. D.C. Working		Type 902. Dry 500 V. D.C. Working	
	New	Old	New	Old	New	Old
8	6 0	9 0	—	—	6 6	9 0
4	5 0	8 0	—	—	—	—
7	—	—	6 0	9 0	—	—

THE PRICES OF ALL OTHER TYPES AND CAPACITIES NOT MENTIONED ABOVE REMAIN UNALTERED

HERE are the old and NEW Prices of T.C.C. Condensers. No longer is there an excuse to buy condensers of inferior quality—of doubtful characteristics. Every T.C.C. Condenser has behind it the experience of over a quarter of a century's specialised work. True to specification — unquestioned dependability are factors that have made T.C.C. the premier amongst condensers. And now you can get them cheaper.

T.C.C.

ALL-BRITISH
CONDENSERS

THE TELEGRAPH CONDENSER CO LTD., WALES FARM RD., N. ACTON, W. 3

BULGIN MAINS TOGGLE SWITCHES

In a Class alone.


Whenever switches are mentioned, Constructors and Manufacturers instinctively turn to the Bulgin range—the largest and most comprehensive in the world. Their reliability and first-class action places them in a class alone.

- List No. **S.80** Single Pole "On & Off" 750 watt with terminal connections. Price **1/6**
- S.81** Single Pole Change-over 750 watt with terminal connections. Price **1/9**

The above switches are incorporated and specified in this issue of the "Wireless World" for the "Ferrocart III" (S.1, 2 & 3).

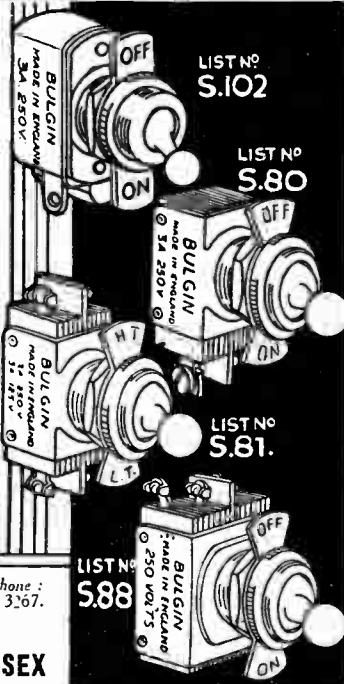
- List No. **S.102** Single Pole "On & Off," Bakelite Case, with tinned soldering tags. Price **1/3**
- S.88** Double Pole "On & Off" for D.C. Circuits, with terminals. Price **2/9**

Large stocks available for immediate delivery. In case of difficulty write direct. Send for 80 page catalogue "W." Enclose 2d. postage.



Telephone: Grangewood 3266. Telephone: Grangewood 3267.

A. F. BULGIN & CO. LTD., ABBEY RD., BARKING, ESSEX



THE WIRELESS ENGINEER

AND
EXPERIMENTAL WIRELESS
The Journal of Wireless Research and Progress

"THE WIRELESS ENGINEER" is published in the interests of professional wireless engineers, experimenters, and all keen radio enthusiasts, and is widely read by those who are intimately associated with wireless development.

A valuable monthly feature consists of a summary, under the title of Abstracts and References, of important articles appearing in technical wireless publications throughout the world.

Principal Contents in MARCH Issue

- SOME NOTES ON THE USE OF A DIODE AS A CUMULATIVE GRID RECTIFIER. *By E. Biedermann B.Sc. A.M.I.E.E.*
- A MULTI-RANGE MAINS-OPERATED VALVE VOLTMETER. *By C. Smyth B.Sc. (Eng.)*
- ATTENUATION OF TRANSMISSION LINES. *By Dr. M. J. O. Strutt.*
- VIBRATIONS OF A COIL-DRIVEN PAPER CONE. *By F. R. W. Stratford.*
- ELECTRONIC OSCILLATIONS AND THE MAGNETRON SHORT-WAVE OSCILLATOR. Abstract of a Paper read before the Wireless Section I.E.E. *By B. C. S. Meyne, B.Sc.*

Abstracts & References and Some Recent Patents

MONTHLY 2s. 6d. NET

Subscription: 32s. per annum, post free

ILIFFE AND SONS LTD
DORSET HOUSE, TUDOR STREET, LONDON, E.C.



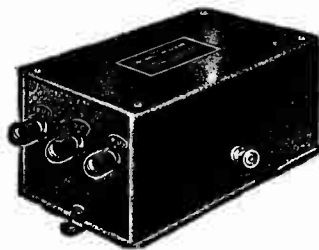
... is the ideal which is sought by every radio gramophone enthusiast. The only way of achieving this ideal is to fit a **NOVOTONE** compensator which will convert mere mechanical music into a living performance.

Read what Mr. F. C. Williams of Wallasey says after fitting a NOVOTONE to his radio gramophone:

20.1.33

"I am writing to tell you how pleased I am with the Novotone which you sent me. The difference is simply marvellous. The dullness and lifelessness which was quite noticeable before has simply vanished."

Even those who believed their reproduction to be beyond reproach have been astounded at the difference made by fitting a **NOVOTONE**.



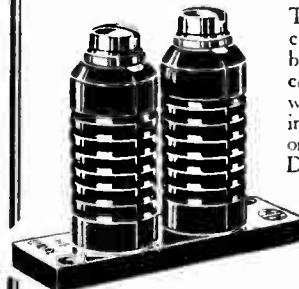
Write now for a free descriptive booklet "Realism from Records," which fully explains the application to your Radio Gramophone of this remarkable instrument.

THE 'NOVOTONE' COMPENSATOR

GAMBRELL BROS. LTD., MERTON ROAD, SOUTHFIELDS, S.W.18.
Telephone: Putney 3611.

THE McMICHAEL BINOCULAR JUNIOR H.F. CHOKE

(As used in "The Wireless World" Ferrocart III A.C. Receiver.)



The essential Choke for all screened grid valve circuits. Affords the maximum efficiency. Its binocular construction makes it fieldless, so that it can be placed in near proximity to other coils without interaction. Low self capacity and high inductance ensures complete absence of peak effects on all wavelengths. Inductance 90,000 m.h.r.s. D.C. Resistance 250 ohms.

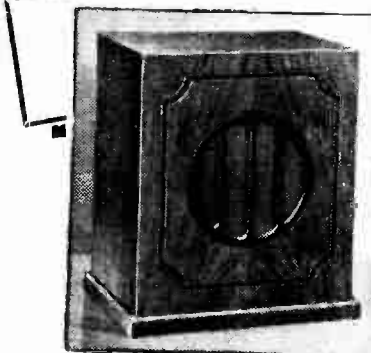
PRICE 4/- EACH (From all reputable dealers.)

McMICHAEL RADIO LTD.

London Showrooms: 179, Strand, W.C.2.

WEXHAM ROAD, SLOUGH, BUCKS

The SPEAKER CABINET for the EXPERT



Wonderful results are obtained with moving coil speakers housed in this Camco Cabinet—the "Nutone." It gives results equal to those obtained with large baffle board. Price in Oak, Mabogany or Walnut, **32/6**. Send for copy of free Camco Cabinet Catalogue, or see complete range in our showrooms, open 9.15 to 5.45 (Saturday, 12.30).

CARRINGTON MFG. CO., LTD.
Showrooms: 24, Hatton Garden, LONDON, E.C.1
Phone: Holborn 8402.
Works: S. Croydon.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

THE CHARGE FOR ADVERTISEMENTS in these columns is

12 words or less, 3- and 3d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

SERIES DISCOUNTS are allowed to Trade Advertisers as follows on orders for consecutive insertions, provided a contract is placed in advance, and in the absence of fresh instructions the entire "copy" is repeated from the previous issue: 13 consecutive insertions 5%; 26 consecutive, 10%; 52 consecutive, 15%.

ADVERTISEMENTS for these columns are accepted up to **FIRST POST** on **MONDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Tudor Street, London, E.C.4, or on **SATURDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 280, Deansgate, Manchester, 3; 26n, Renfield Street, Glasgow, C.2.

Advertisements that arrive too late for a particular issue will automatically be inserted in the following issue unless accompanied by instructions to the contrary. All advertisements in this section must be strictly prepaid.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed **& Co.** Notes being untraceable if lost in transit should not be sent as remittances.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

RECEIVERS FOR SALE.

MACMICHAEL Dimic All-electric S.G.3. long, medium and short (15 m. to 100 m.) waves, as new; £7 10/-74, Old Oak Common Lane, East Acton, W.3. [1974]

PYE K. latest model, 7 weeks old; £7/10/-Frost, Ashford (Middlesex), 372. [1973]

KILODYNE Short-wave 4. cabinet, valves, Pentode, utility slow motion dial; complete, £5.-Atkinson, 15, Balfour Rd., Acton, Acton 1212. [1971]

OSTARGANZ Combined A.C. and D.C. Receiver, in modern walnut cabinet, with Rola M.C. loud-speaker, unboxed, list price £12/12, our price 2 valves £5; 3 valves £6/10; c.o.d., carriage paid; state voltage.—Kay, 107, Oity Rd., Finsbury, E.C.1. [1632]

APPLEBY'S, Central London Office, 46, Bloomsbury St., New Oxford St., London, W.C.1. Museum £195. [1833]

LOTUS All-Mains Band-Pass Three, list 16 guineas, brand new, £9/5; Philips 1932 super-inductance Five, unused, £17; Amplion Six, £9 10; K.B. S.G. portable, £5.—Selby, 22, South End, Croydon. [2009]

FIDDYSTONE Kilodyne, 12-600 metres, new, cost £6 17/6, £4/10; also 3-valve short wave, £2.—290, Kennington Park Rd., S.E.11. [2005]

LOTUS All-Electric Band-Pass Three, £16/16 model, variable Mu screened grid, detector, pentode, Westinghouse, Magnavox moving coil, single knob tuning, dial calibrated in wavelengths, veneered walnut cabinet, mains aerial, pick-up and extra speaker plugs, 30 stations full speaker strength, not 2 months old, as new, full guarantee; £9/15 cash.—Box 6209, c/o The Wireless World. [1999]

"W.W." Short Wave Two, less valves, new; 55/-, or exchange.—St. Clare, Altwood Bailey, Maidenhead. [1987]

"WIRELESS World" Single Dial Super, perfect condition; £5.—Box 6203, c/o The Wireless World. [1979]

ULTRA Short Wave 6-valve Receiver, M.C. speaker, in walnut cabinet, new; £16.—Below.

4-VALVE A.C. Radiogram, 1933 model, Collaro electric motor, pick-up, Rola speaker, all in beautifully finished walnut cabinet, marvellous bargain, £14/14.—Below.

4-VALVE Receiver, M.C. speaker, gramophone, mains aerial, wonderful range and tone, walnut cabinet, either A.C. or D.C.; £10/10.—Sanders, 12, Eastbourne Rd., Chiswick, W.4. [1983]

"WIRELESS World" Super Selective Six, A.C., with speaker, less cabinet, as specified.—Barton, 18, Renrew Rd., Kennington. [2016]

CHARGERS AND ELIMINATORS.

TANTALUM for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [9346]

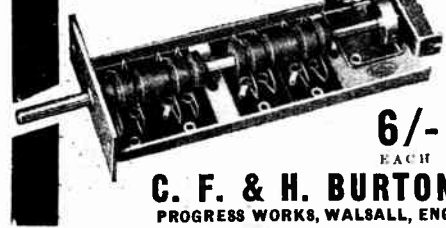
TRICKLE Chargers, 1/2 amp., with Westinghouse Rectifiers, complete, 11/9; 1 1/2 amp., 19/11; eliminators, 20 m.a., 34/6; particulars free.—Ardien Agency, Wellingborough. [1818]

7/6, A.C. battery charger kit; A.C. H.T. kit, 120v., 15 m.a., 25/-.—Frost Radio.

MAINS Transformers, from 6/6; chokes, 3/6.—Frost Radio Co., 21, Red Lion St., E.C.1. [2013]

BURTON FOUR POSITION ROTARY SWITCH

(Patents pending.)
A component which meets most switching requirements of modern Receivers. Will short three coils for long or short waves, operate gramophone pick-up, and "On" and "Off" at mains voltage. Maintains firm uniform pressure between surfaces. Ask your dealer for it.



6/- EACH

C. F. & H. BURTON
PROGRESS WORKS, WALSALL, ENG.

PARIMA SELENIUM CELLS

FOR ALL PURPOSES.

Parima Light-Sensitive Resistances are constant, mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months.

Prices from **5/-**
PARIMA MANUFACTURING CO.,
21, BROMLEY ROAD, S.E.6. *Ilford Green 3923.*

FIRST AGAIN!

"THE WIRELESS WORLD" THIS WEEK WITH THE **FERROCART III A.C. RECEIVER!** YOU, SIR, may require one of these quality Sets, but may be too busy to build it yourself—similarly, your friend may not be able to construct it himself and will come to you for advice on where he may obtain one fully assembled and tested—

SCOTT SESSIONS

provide such a service, and for **£18-10-0** (or for 1st Deposit of £2-6-3) supply the **FERROCART A.C. III** built with first class workmanship, and including all Valves and Royalty and S.S. Mains Transformer and Choke.



SCOTT SESSIONS
Original FIELD REPLACEMENT CHOKE (Specially recommended for FERROCART III in this issue) - - - **16/-** each.
All "W.W." sets constructed or repaired by our Expert Staff—**WRITE US NOW!**

SCOTT SESSIONS & CO.
RADIO ENGINEERS,
MUSWELL HILL, LONDON, N.10
Telephone No.: Tudor 5326.
Contractors to H.M. Government Departments, Crown Agents for the Colonies, Electricity Corporations, etc.

NUMBERED ADDRESSES.

For the convenience of private advertisers, letters may be addressed to numbers at "The Wireless World" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Wireless World." All replies should be addressed to the Box number shown in the advertisement, c/o "The Wireless World," Dorset House, Tudor Street, London, E.C.4. Readers who reply to Box No. advertisements are warned against sending remittance through the post except in registered envelopes; in all such cases the use of the Deposit System is recommended, and the envelope should be clearly marked "Deposit Department."

DEPOSIT SYSTEM.

Readers who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Wireless World," both parties are advised of its receipt.

The time allowed for decision is three days, counting from receipt of goods, after which period, if buyer decides not to retain goods, they must be returned to sender. If a sale is effected, buyer instructs us to remit amount to seller, but if not, seller instructs us to return amount to depositor. Carriage is paid by the buyer, but in the event of no sale, and subject to there being no different arrangement between buyer and seller, each pays carriage one way. The seller takes the risk of loss or damage in transit, for which we take no responsibility. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50, 5/-. All deposit matters are dealt with at Dorset House, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

SPECIAL NOTE.—Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post. When sending remittances direct to an advertiser, stamp for return should also be included for use in the event of the application proving unsuccessful.

Chargers and Eliminators. -Contd.

- SERADEN** Radio Products.
- F**ERROCART III Mains Transformer, as specified, stripped with flex leads, 16/9; terminal model, 19/6. See advert. on page 23.
- S**ERADEN Speaker Field Replacement Choke, 2,500 ohms; 12/6.
- S**ERADEN Special Pentode Output Choke, 35H, carry 35 m.a., tapped centre; 8/6.
- S**ERADEN Resistors, set of 14 for Ferrocart III, 10/- N.B.—This kit saves you 11/9, equal results to original guaranteed.
- S**ERADEN Type B Filter Condensers, 1 mfd., 1/6; 2 mfd., 2/3; 4 mfd., 4/5; 4x4 mfd., 7/3; 8x8 mfd., 14/6. 400 volts working.
- S**ERADEN Condenser Blocks, 400v. working, 4x2x2x2x2.1 mfd., 9/9; 4x4x4x2x2x2.1 mfd., 16/9; 4x4x2 mfd., 8/11. Fully guaranteed.
- S**ERADEN Non Inductive Tubular Condensers, 0.01 to 0.1 mfd., 8d.; 0.25 mfd., 9d.; 0.5 mfd., 1/-; 1.0 mfd., 1/3; 2.0 mfd., 1/9.
- S**ERADEN Quiescent Push Pull Output Choke, giving three ratios as specified; 10/-.
- S**ERADEN Mains Transformers, greatly reduced prices; list for stamp; all models fitted screened primary; inputs 200 to 250 volts 50 cycles; L.T. windings tapped at their electrical centre.
- 250-0-250** Volts 60 m.a., 4 volts 1 amp., and 4 volts 4 amps; 14/-.
- A.C.** Quality Amplifier Transformer, stripped with long leads, £1/9/6, terminal model £1/12/6.
- S**PECIAL Transformer for H.T.8 or H.T.9, 240v. 200 m.a., tapped 200v., with 4 volt 4a. winding; 16/6.
- S**ERADEN Resistances and Condensers; list now ready.
- S**ERADEN Products are Obtainable from Your Dealer, or from makers, Trevor Pepper, 48, Wakegreen Rd., Birmingham. [1995]
- B**BROWN and SALTER, Vortexion, Wimbledon, for the finest transformers made regardless of price; all models guaranteed 12 months, tested on full load and 2,000 volts between windings before despatch; all finished in cast aluminium frames or shroudings.
- V**ORTEXION Model Specified for the Modern A.C. Quality Amplifier, 400-0-400, 110 milliamps, 4v. 3a. C.T., 4v. 2a., 4v. 1a. C.T., any input, 50c., insulated terminal type; 24/-. [1995]
- V**ORTEXION Model for the Ferrocart III, 350-0-350v. 60 m.a., 4v. 2.5 C.T., 4v. 3.5 C.T., screened primary open type, 13/6; shrouded, 16/-.
- V**ORTEXION.—W5, 6, or 7 for Westinghouse H.T.5, 6, or 7, with 4v., 1-4a. C.T.; 11/6.
- V**ORTEXION.—W8, 9, or 10 for Westinghouse H.T.8, 9, or 10, with 4v. 1-2a. C.T., 4v. 2-5a., tagged leads, shrouded; 16/6.
- V**ORTEXION.—W11 for Westinghouse H.T.11, with 4v. 1-2, 4v. 1-6a., all C.T., shrouded; 40/-.
- V**ORTEXION.—250-0-250, 60 m.a., 4v. 1-2, 4v. 2-4a., all C.T., open type tagged leads; 11/6.

(This advertisement continued on next page.)

Chargers and Eliminators.—Contd.

(This advertisement continued from previous page.)
VORTEXION.—350-0-350, 120 m.a., 4v. 2-5, 4v. 1-5, 4v. 2-4, all C.T., shrouded type tagged leads; 16/6.
VORTEXION.—400-0-400 or 450 or 500-0-500, 120 m.a., open types, 4v. 2-4, 4v. 2-5a, 4v. 2-5a, all C.T.; 19/-; tagged leads.
VORTEXION.—500-0-500, 150 m.a., or 450-0-450, 160 m.a., or 400-0-400, 130 m.a., 4v. 2-5a, 4v. 4a, 4v. 2a, 4v. 2a, 4v. 2a, all centre tipped, any input, 50 C., beautifully shrouded, rare size, 2 1/2" dia., screened primary, and atrips, a £5 model, 35/-.

CABINETS.

RADIOGRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1636]
WE Can Supply Brand New Complete Gramophones, London made cabinets, at less than the cost of cabinets; ideal for converting to radiograms; 28 models to choose from; 52/6 to £10; illustrated list free.—Radley's, Ltd., Canal Rd., Bradford. [1735]

39/6.—Radio gramophone cabinet; 23 1/2", wireless cabinets; satisfaction guaranteed.—Barracough, 9, Nelson St., Southend-on-Sea. [2031]

RADIOGRAM Cabinet, cost £7/10 trade, as new; £5/10.—58, Felton St., Hoxton. [1991]

GRAMOPHONES, PICK-UPS, ETC.

B.T.H. Senior Pick-up, Garrard double spring motor; lot £2; almost new.—Walker, Camelon Rd., Falkirk. [2021]

H.M.V. Automatic Playing Desk, new, A.C.; £9/10.—130, Burns Av., Southall. [2003]

LOUD-SPEAKERS.

B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price 6 guineas.

HIGHLY Sensitive and Wonderful Tone Response; will handle up to 10 watts output; available for 6v., 100v., 200v., 30/-; also A.C. models, £2/10.

CARRIAGE Paid, c.o.d., or cash with order; send for list of other unused bargains.—Seekamp, 46, Farringdon St., London, E.C.4. [1425]

R. & A. Challenger, 20/-; new; Lotus A.M.10 eliminator, £3, or offers.—Connor, 56, Western Rd., Leigh-on-Sea. [1972]

EPOCH Domino for D.C. Mains, 1932 model; £4.—Yates, 87, High St., Dorking. [2024]

18/9 snip.—W type P.M. moving coil speaker, reputable manufacturers' new surplus, modern and guaranteed; Magnet weighs over 4lb., cone 3 1/2" dia. overall, complete with tapped transformer; originally 49/6, most genuine bargain ever offered; cash with order, returnable within 7 days, carriage paid.—Streete, 84, Riversdale Rd., N.5. [2001]

FERRANTI M1 Speaker, with O.P.M.6 output transformer, absolutely new; £5/19/6.—E. M. Thomson, A.M.Inst.B.E., Station Rd., Shotts. [1985]

30/-!—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; weight 30lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.

27/6!—6v. D.C. speaker, as above; £2/7/6, speaker as above, for 100-250 A.C.

CARRIAGE Paid, cash with order, or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [2006]

BALANCED Pair Rolas, F7, P6 2,500 fields, with rectifier, £3/5; Lissen A.C. eliminator, 25/-.—Sutton, 24, Kent Gardens, West Ealing. [1988]

PICTURE RECEIVER APPARATUS.

BAIRD Senior Kit, assembled and tested, as new; £6.—Thomson, Radio Engineer, Crieff. [1990]

TRANSMITTERS.

BIRMINGHAM RADIO MART Specialises in Short Wave Gear; example: T.C.C. 414 mld., 1,700 working; 25/- (G5N).—19, John Bright St. [1982]

VALVES.

THE Following Valves are Guaranteed as New, and any valve differing from the makers' characteristics will be exchanged; all latest types.

A.C./Pen.s., A.C.S1/V.M.s., M.P.T.4s., D.C.2/Pen.s., D.C.2/S.G., V.M.s., 11/-; M.S.4s., M.S.4B.s., A.C.S.G.s., S.4V.s., D.S.B.s., A.C.S.2s., D.C.2/S.G.s., 9/6.

M.L.4s., A.C.P.s., 41M.P.s., P.M.2As., 8/-; A.C.H.L.s., A.C.2/H.L.s., 354V.s., 41M.H.L.s., U10s., U.U.60/250s., M.H.4s., 7/6; P.T.2s., V.S.2s., 215H.G.s., P.M.2A.s., 9/-; D.C.3H.L.s., 8/.

ALL Types of Brand New American Valves in Stock; 247s., 235s., 224s., 236s., 237s., 12/-; 227s., 226s., 280s., 245s., 232s., 10/6.

U.X.250s, 7 watts output, 16/-; 282M. mercury vapour rectifiers, 11/-; for quickest delivery send telegraph money order.

OVER 2,000 Valves are Always in Stock for Immediate Despatch; carriage paid, cash with order or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [2007]

OSTAR-GANZ HIGH VOLTAGE MAINS VALVES. These valves work direct on either A.C. or D.C. supply. No transformers or resistances required. Remarkably free from mains hum.
A.520. U.P. - 178 E.G.50. 50 m.a. Half Wave - 14/6
W.310-R.C. - 178 E.G.100. 125 m.a. do. - 15/6
U.920. L.F. Power 178 N.G.40. 40 m.a. Voltage Doubler 28/6
L.1525. Super Power 18- V.O.45. 45 m.a. Full Wave - 42/-

SOUND SALES. First in every new development. SOUND SALES Speaker Field Replacement Choke. Specified First and Foremost in the "Wireless World". FERROCART III A.C. RECEIVER. Price 16/-.

YOU CAN TAKE IT FROM ME! NO STORE IN LONDON has so comprehensive a stock of Scientific Apparatus at such low BARGAIN PRICES for Aerials, Chargers, Buzzers, Dynamos, Bells, Motors, Batteries, Engines, Condensers, Instruments, Chokes, Lamps, Microphones, Neons, Meters, Wire, Transmitters, Spark Sets, Testers, Valves, Coils, Wavemeters. Write for New Bargain List. Electradix Radios, 218, Upper Thames Street, E.C.4

FIT THIS ELECTRIC CLOCK TO YOUR SET! NO MAINS NEEDED! KEEPS CORRECT TIME! NO WINDING! Works off small battery lasting 12 months, or can be plugged into G.B. Battery without affecting reception. Uses practically no current. Fits into hole 3 1/2" dia. in any panel up to 1/2" thick. Easy to fix—no screws required. Only 1" from front of panel to back of case. Swiss movement. Hands set from front. Nickel plated bezel. Useful addition to any set. RIVERSIDE MFG. CO., LTD., Dept. 20, Crisp Rd., Hammermith, W.6. Telephone: Riverside 0392. COMPLETE WITH BATTERY POSTAGE 6D

Valves.—Contd. NEW Large Purchase of a Set Manufacturer's Stock of Valves, guaranteed as new, all latest types, and any valve differing from the maker's characteristic exchanged free.
210H.L.s., 210H.F.s., 210F.L.s., P.M.1H.F.s., P.M.1L.F.s., 210H.L.210s., H.210., D.F.H.210s., L.210s., 3/9; 151P.s., 220P.s., L.P.2s., P.215s., D.E.P.215s., P.M.2s., P.220s., special, matched P.M.2A, for Quiescent push-pull, 12/ pair; D.H.s., 41M.H.L.s., 41M.H.s., M.H.4s., A.C./H.L.s., A.C./2H.L.s., 354V.s., 904V.s., D.C./3H.L., 7/-; 41M.P.s., M.L.4s., A.C./P.s., 7/6; P.T.4, P.T.41, P.E.N.4V., M.P./E.N.s., 12/-; latest metalised S.4V.B.s., M.S.4B.s., M.S.C./H.A., A.C./S.G.s., 9/-; Cosmo M.V.S.G., 12/-; 442B.V., 1807s., 7/9; 1821s., 7/-; 620T., 15/-.

2,000 Valves are Always in Stock for Immediate Despatch, prompt attention, for cash or c.o.d.—Newman, 309, Roman Rd., E.3. [1659]

ENAMELLED, D.S.C., D.C.C. copper and resistance.—Forest Radio, 21, Red Lion St., E.C.1. [2014]
COMPONENTS, ETC., FOR SALE. WESTON Moving Coil Milliammeters (301), 0-5 upwards; 22 6; Turner ditto, 17 5; Turner hermu couple ammeters, 0-1.5, 25/-; 3-range moving coil meters, 0-5 m.a., 6 and 120 volts, 22/6; electrostatic and moving coil voltmeters, 0-2,000, 32/6; moving coil milliammeters, 0-10 upwards, 10/6; alterations and repairs of every description.—The Victoria Electrical Co., 47, High St., Battersea, S.W.21. [10355]

CONDENSER Blocks 6d. per mfd., 650-volt test, in blocks of 6 mfd. upwards, wired in 2 mfd. units; 2 years' guarantee; send by return of post on 7 days' approval; cash with order.—Butlers Radio, Ltd., 191, Forest Rd., Walthamstow, E.17. 'Phone: 3134. [1936]

CHASSIS and Screen Panels, constructed to any design, aluminium sheet supplied; estimates free.—Mills, 19, Woodthorpe Rd., King's Heath, Birmingham. [1848]

TRANSFORMERS.—Ferranti, O.P.2. 10/-; R.T. push pull, 12 6; adjustable large choke, 22/6; and others; valves, speakers, as new; list.—Gaydon, 42a, Swenhams Rd., Craydon. [1969]

HOYNE'S Transformers and Chokes.

250-0-250v. 60 m.a., 4v. 1-2a., C.T., 4v. 3-4a. C.T.; 10/-, post 9d.

350-0-350v. 70 m.a., 4v. 2-3a., C.T., 4v. 3-4a. C.T.; 12/6, post 1/.

350-0-350v. 120 m.a., 4v. 2a., C.T., 4v. 4-6a. C.T.; 4v. 2a., C.T.; 16/-, post 1/.

450-0-450v. 150 m.a., 4v. 2-4a., C.T., 4v. 2-6a. C.T.; 4v. 2a., C.T., 4v. 2a., C.T.; 25/-, post 1/.

500-0-500v. 140 m.a., 4v. 2-4a., C.T., 4v. 2-6a. C.T.; 4v. 2a., C.T., 4v. 2a., C.T., or 6v. windings if preferred; 27/6, post 1/.

WESTINGHOUSE Model 150, 200, 240v., 300 m.a., 4v. 2a., C.T., 4v. 2-6a., C.T., suitable for H.T.8, H.T.9, or H.T.10; 15/-, post 1/.

LINE Transformers (auto wound), 0/100, 110, 200, 220, 240v., 60 watt, 7/9, post 1/-; 120 watt, 11/-, post 1/-; 130 watts 15/-, post 1/.

CHOKES, 30h, 150 m.a., 12/-, post 1/-; 20h, 120 m.a., 8/6, post 9d.; 30h, 60 m.a., 6/-, post 6d.; 30h, 30 m.a., 3/6, post 6d.

HOYNE'S Transformers are Guaranteed for One Year; every model is made from British material of best quality.

HOYNE'S Transformers. All primaries are tapped and screened, clamped in aluminium frames, and fitted with clearly marked terminal strips.

HOYNE'S Transformers for Reliability.

HOYNE'S for Best Condensers and Resistances.

HOYNE'S Stock M.C. Speakers.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., W. Wimbledon, S.W.19. 'Phone: Liberty 330. [1770]

EVERYTHING for Movies and Talks.—Phone, write or, better still, call and inspect immense stock of bargains.

ILLUSTRATED ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard. [1621]

FERRANTI Transformers, A.F.5c, 20/-; O.P.M.3c, 15/-; A.F.7, 17/6; Wearite Binowave v. coil, 7/6; Valves, 2 each, Osram P.240, 6/6; Mullard P.M.12, 8/6; new each Mullard P.M.1D.G., 12/6; Osram I.2B, 4/6; P.M.4, 5/6; Mazda H.L.210, 4/6; 215 S.G., 8/6; Wufa Speaker and chassis, 15/-; Converter D.C. to A.C., 200-240 volts input, 240 volts 90 watts output, Phantom type, £3, in good going condition; all above new condition; own new using A.C.—Gould, 31, Muswell Hill, N.10. [2033]

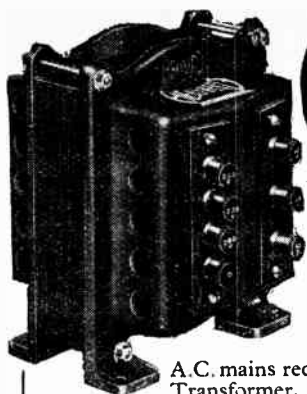
POWER Equipment. Epoch super M.C. speaker, 14in. cone, 6-volt field, list £13/10, mounted with 500 ohm transformer, £6/10; Rect. and Parmeco transformer to suit, 15/-; Philips M.C. 1-50, 1,000 v. valve, list £8, £4/5, new; two 6-volt Oldham accumulators, 123 amp., list £4/17/6 each, used once only, £4/15 the two, accept £15 lot.—Davis, 17, Teme St., Tenbury, Worcs. [2004]

INTERFERENCE Problems Solved by Filterets and Rejection aerial; particulars.—Blakey, Bull's Head Chambers, Manchester. [2000]

THAT New Component will Cost You Less if You Get Our Quotation for Your Second-hand Parts; we allow up to 50%.—Radio Exchange, 68, Colville Rd., E.11. [1973]

COSMIC RADIO SERVICE, 23, Water St., Liverpool. H.T. units, Eken 1V.20, No. 4A.60, and Pye H.T.6B., £12/6; Hardie pickup and arm, 15/-; Polar 3-gang tub, 14/-; Colverlynes, 7/6; Colvern K.21, K.22, K.23, ganged, £11/1; Ferranti T.C.1 trickle charger, £1/1. [1975]

POLAR Tub Three, 9/6; 2 Igranite M16 metal rectifiers, new, 6v. 3a., 6/6 each; Colvern K.61, 6/2, 61, ganged, 18/-, or 6/- each.—42, Huntington Rd., York. [2030]



The heart of a Mains Receiver!

The heart of an A.C. mains receiver is the Mains Transformer. Unless that heart is sound, the whole receiver is rendered weak and ailing. Ensure a healthy radio set by using a Heayberd Mains Transformer. There are models for valve or metal rectification—no matter what output you require—Heayberd can help you.

HEAYBERD W.35 TRANSFORMER
(For use with Westinghouse H.T.11 Rectifier).

Rectified H.T. output:
500v. 120 ma.
L.T. 2 | 2v. 5 amps. and
2 | 2v. 2 amps.

VISIT STAND
40—OLYMPIA
B. I. F.

Price - - - 65 -

POST COUPON TO-DAY

Enclose 3d. stamps for 35-page Handbook, containing technical hints and circuit diagrams

Mr.

Address

W.W.

F. C. HEAYBERD & CO.,
10, FINSBURY STREET, LONDON, E.C.2.
One minute from Moorgate Station.

EASY TERMS

PROMPT DELIVERY

Any Amplion, Blue Spot, Baker, Celestion, Epoch, Goodmans, Igranic, Lamplugh, R. & A., Rola, Sonochorde, or W.B. Moving Coil Speaker supplied promptly.

Send 5/- only

and pay the balance by monthly instalments. No references. Entirely private and confidential.

ROLA, SONOCHORDE and CELESTION DUAL SPEAKERS
from 6/- monthly

R. & A. VICTOR on page 2.

70/- cash, carriage paid, or 6/5 with order and 11 monthly payments of 6/5

Write for Catalogue and details to:

TURNADGE & PARTNERS, LTD.
110, Fleet Street, London, E.C.4.

Telephone: Central 1903.

IGRANIC COMPONENTS

WILL TELL YOU HOW GOOD THEY ARE

Components, etc., for Sale.—Contd.

R. SELECTED Parts for Sale, as new; any c.o.d., or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take all risk of damage in transit to our customers; all goods tested for callers and guaranteed, however low price. Notice.—Payment by cheque; no goods despatched until these are cleared.

T.C.C., type 84, 1 mfd., 375v. working, 1/3; T.C.C., 2 mfd., 375v. working, 1/6.

METERS, moving iron and moving coil, all new instruments, specially made for Ryall's Radio, all guaranteed for one year, moving coil meters to B.E.S. first grade specification, all panel flush type bakelite case.

MOVING COIL, 0-1 m.a., 25/-; 0-10 m.a., 0-50 m.a., 0-25 m.a., 0-5 m.a., 21/-; 0-250v., 1,000 ohm per volt, 31/-; 0-300v., ditto, 32/6; all with zero adjustment, size 3 1/4 in. diameter, 2 1/2 in. dial face.

MOVING IRON METERS, first grade air damped, with zero adjustment, A.C. meters, 0-250v., 18/-; A.C. and D.C., 0-50 m.a., 15/-, size as above.

MOVING IRON METERS, in cases, as above, A.C. meters, 0-5v., 10/-; 0-3 amp., 10/-; 0-12v., 10/-; 0-250v., 12/-; 0-6 amp., 10/-; A.C. and D.C., 0-20 m.a., 10/-; 0-50 m.a., 10/-; (0-10 m.a., 10/6, D.C.).

RYALL'S RADIO Offer Reliable Resistances, 1 watt, suitable for all "Wireless World" sets where a 1 watt resistance is specified, in values 100, 1,000, 2,000, 5,000, 6,000, 10,000, 25,000, 30,000, 75,000, 150,000, 250,000, 20,000, all values stated in ohms, 6d. each, guaranteed one year, wire ends, new goods.

RYALL'S RADIO Own Mains Condensers, offered with confidence, all with terminals, 4 mf. 250v. working, 400v. peak, 3/6; 4 mf. 400v. working, 600v. peak, 4/-; 4 mf. 750v. working, 1,000v. peak, 5/6; 2 mf. 750v. working, 3/6; new goods, guaranteed one year.

RYALL'S RADIO Mains Transformers, new goods, 250v. 60 m.a., 4v. 1 amp., 4v. 5 amp., 10/6; ditto, super type, with 4v. 5 amp., 15/6; 350v. 60 m.a., 4v. 2 amp., 4v. 4 amp., 12/9; step up or down transformer, 110v. to 220v., 10/6; 60 watt H.T.7, 10/9; filament, 4v. 5 amp., 8/6.

RYALL'S RADIO Chokes, 20H 120 m.a. resistance, 260 ohm, 8/9; 25H at 60 m.a., res. 260 ohm, 6/9; 40H 100 m.a. resistance, 600 ohm, 10/6, constant inductance chokes.

IGRANIC Mains Transformers, 110/250v. input, 250v. 75 m.a., 4v. 1 amp., 12/-; 460v. 120 m.a., 7.5, 8v., 15v., to clear at 17/6; ditto H/W. 550v., 60 m.a., 2.5v., 6/6.

MAGNAVOX D.C. 144, with transformer, 2,500 ohms, 12/6; Rola D.C. 2,000 ohms, with pentode transformer, 22/-; 6,500 ohms, ditto; post free.

SET Cabinets for 3v. A.C. Sets, room for speaker, suit "W.W." A.C.S. etc., brand new, fitted escautcheon, 20/-; used, 16/-.

SPECIAL Offer of Pye 20h, Chokes, 40 m.a., 130 m.a. maximum, D.C. resistance 300 ohms, in brown crystalline finish, new, unused, Pye 32h, chokes, D.C. resistance, 700 ohms, 50 m.a., 80 m.a. maximum, ditto, 6/3 each, post free.

RYALL'S Own Wire World Resistances, wound on vitreous tubes, wire ends, wattage ratings doubled when well ventilated, accuracy plus or minus 2 per cent. in value; 250 1-watt, 300 1-watt, 330 1-watt, 500 1-watt, 510 3-watt, 540 3-watt, 715 1-watt, 750 2-watt, 800 1-watt, 1,200 1-watt, 4,000 2-watt, 5,000 5-watt; prices, 1-watt 1/-, 2-watt 1/3, 3-watt 1/6, 5-watt 1/9; guaranteed one year.

SUITCASE Cabinets in Best Crocodile Leather, 14x 14 1/2, ample room for 12in. turntable and pick-up; 15/-, new.

EDISON BELL, 10,000, Eureka wire wound, with choppers, 1/-; Edison Bell C.0005 universal log all metal condensers, 1/6, new.

RYALL'S RADIO, 33, Chancery Lane, London, W.C.2 (nearest Tube Chancery Lane; bus 67 passes door, or train to Savoy St.), Holborn 3529. Open Saturday afternoon (close 7 p.m.), Thursdays 1 o'clock.

R. [1998]

BIRMINGHAM RADIO MART'S Weekly Selection B. Manufacturers' Surplus Stocks, new, unless otherwise stated.

RESISTANCES—Eric, H.M.V., etc., our selection, 5,000 to 100,000 ohms, 3/- dozen; Dubilier and T.C.C. mica condensers, 3/- dozen; H.M.V. hum stoppers, C.P., 9/-; anode oscillation stoppers, 3d.

METERS—British Flush, 2 1/2 in., nickel, any range above 20 m.a., 5/9; low Sitan M.C., 15/-; 2 m.a., 17/6.

CENTRALAB Dual Volume Control Radio and Pick-up, 3/6; logarithmic potentiometers, 6,000 and 10,000 wires and, for Varinon, 2/-.

GOLDFONE Cosmic Coils, comprising one dual range coil and one short wave on air spaced formers; the pair 2/6.

2-CANG 0.0005 Die Cast Frame, 1 in. spindle trimmers, w.c.t. 17/6, finest quality, similar Radiophone; 6/6.

REGENTONE Power Packs, containing mains transformers and Westinghouse rectifier, giving 150v. 25 m.a. and 4v. 4a., 25/-; filter packs for above, 7/6.

NON-RESONANT Insulated Baffles Prevent Cabinet Resonance; 3d. each to callers, ex Amplion.

LARGEST Stock in Midlands of Valves, condensers, Rola, etc., M.C., as new, at clearance prices.

SHORTWAVE Series Gap, all brass condensers; 2/6; expert advice by G.S.N.I. gratis.

RADIO MART'S Obsolete Sale Now in Full Swing, hundreds of snips for callers.—19, John Bright St., Birmingham. [1980]

FERRANTI A.F.5, 15/-; A.F.3, 10/-; O.P.M.1, 10/-; R.I. P.W. selector coil, 7/6. Cooke, 30, Church St., Enfield. [2020]

TRIX QUALITY AMPLIFIERS

Model T.P.10 illustrated gives 10 Watts Undistorted Output, self-contained with motor and pick up, including valves, 52s. Amplifier only, including valves, 41s 10s. Details of full range on request. Also MAINS TRANSFORMERS, CHOKES, OUTPUT TRANSFORMERS, ETC.



Manufactured by ERIC J. LEVER (TRIX), Ltd., 8/9, Clerkenwell Green, London, E.C.1. Contractors to H.M. Government.

★ ERIE RESISTORS

Recommended inevitably for the "FERROCART III"

Use Erie Resistors if you want absolute stability. You really need them . . . because Erie Resistors are positively GUARANTEED not to break down. They are safe. That's why everyone uses them and recommends them. Ask your dealer definitely for Erie Resistors. They save money, too!



1' PER WATT in all values

All values from 50 ohms to 5 megohms. In one, two, three and five watt ratings. All hand tested, tag identified and colour coded.

Write for Leaflet and Colour Code Chart.

THE RADIO RESISTOR CO.
1, Golden Sq., Piccadilly Circus, London, W.1.

Components, etc., for Sale.—Contd.

PREMIER SUPPLY STORES Offer the Following Brand New Goods at a Fraction of the Original Price; all goods guaranteed perfect; carriage paid over 5/-, under 5/- postage 6d. extra. (Ireland carriage forward.)

MAGNAVOX D.C.144, 2,500 ohm, 15/6; ditto, 200-250v. A.C., 25/6; Rola 2,500 and 6,500 ohm type P6, 17/6; Rola P.M.5 Permanent Magnet, 20/-; P6 Permanent Magnet, 31/-; all with output transformers.

B.T.H. Gramophone Motors, 100-250 A.C. and D.C.; listed £6/6, complete 45/-.

AMPLION Six Receivers; listed at £21; complete with valves, 200-250 A.C., £29/9.

PREMIER Eliminators, input 200-250 A.C., output 150 volts at 30 milliamps, 2 lower taps, incorporating Westinghouse rectifier, with 4-volt 3-4 amp. L.T., 37/6; with trickle charger, 42/6.

ACCUMULATOR Chargers, input 200-250v., all incorporating Westinghouse rectifiers, 2v. 1/4 amp., 8/6; 2, 4, 6 volt 1/2 amp., 17/6; 2, 4, 6 volt 1 amp., 22/6; up to 12v. 1 amp., 27/6; up to 6 volt 2 amp., 35/-; up to 6v. 3 amp., 47/6; up to 12v. 3 amp., 52/6; larger outputs to order.

BRITISH RADIOPHONE 4-gang Condensers, with trimmers, 12/6; fully screened, 16/-.

CELESTION C.24 Chassis Model Speaker; 50/-; 2 only.

PHILLIPS' 2-valve All Electric Set, 1 only, complete with valves, 50/-.

MAZDA U.U. 60-250; 7/6; callers only.

AMPLION Moving Coil Speakers, type E.M.644, dual fields, 2,500 and 5,000 ohms (100 or 200 volts), with multi ratio output transformer, 12/6; ditto, 200-250 A.C., 22/6.

PREMIER—Mains transformers, all guaranteed, terminal connections, 200-250 input 40-100 cycles, output 135 volts at 80 m.a. for voltage doubling, 8/6; 4 volts 4 amps. C.T. low tension, 2/- extra; Westinghouse rectifier for above, 180v. 30 m.a., 8/6.

MAINS Transformers, primary 200-240 volts, secondary 350-0-350 volts at 90 milliamps., 4 volts at 3 amps. (C.T.), 4 volts at 2 amps. (C.T.), 12/6.

AMPLION Transformers, input 100-250 volts, output 350+350 volts, 120 milliamps., 4 volts at 5 amps., 4 volts at 2 amps., 6 volts at 1 amp., all centre tapped; 17/6.

MAINS Transformers, 12 volts 1 amp., 7/6; 9 volts 1 amp., 7/6; 4 volts 4 amps, and 4 volts 2 amps., 8/6; 14 volts 4 amps., 12/6; 4 volts 3 amps., 7/6; 4 volts 5 amps., 8/6; 22v. 1a., 10/-.

H.T.9 Transformer, 230 volts 200 milliamps., with 4 volts 4 amps. (C.T.) winding; 15/- (with screened primary).

H.T.8 Transformer, with 4 volts 3-5 amps. low tension C.T., 15/-; with Westinghouse H.T.8 rectifier, 25/- (with screened primary).

MAINS Transformers, output 250-0-250 volts at 60 milliamps., 4 volts at 1 amp., 4 volts at 2 amps., 4 volts 3-4 amps., all centre tapped; 15/- (with screened primary).

MULTI-RATIO Output Transformers, 15 different ratios, 7/6; Fly chokes, 20 or 32 henrys, 4/-.

PREMIER Chokes, 40 milliamps., 25 henrys, 4/-; 65 milliamps. 30 henrys, 6/-; 150 milliamps. 30 henrys, 10/6.

SMOOTHING Chokes for Series Connected Filaments from D.C. mains, carry 1 amp.; 7/6.

KOLSTER-BRANDES 80 milliamp. 30-henry Chokes, tapped 1/3 and 2/3, 7/6.

T.C.C. Condenser, 2 mfd. 750 volts working, 4/-; 4 mfd. 750 volts working, 6/-; 4 mfd. 400 volts working, 4/-; 4 mfd. Electrolytic, 440 volts working, 4/-; 8 mfd., 4/6.

T.C.C. Block Condensers, 250 volts working, 8+2+2+1+1 mfd., 5/6; 375 volts working, 6+4+2+2+2 mfd., 10/-.

WESTERN ELECTRIC, 0.01+0.01 mfd., 400 volts working, 1/-; blocks 4+2+2+2+1+0.09 mfd., 400 volts working, 6/-.

FERRANTI Condenser Blocks, 300 volts working, 4+4+2+2 mfd., 10/-; all entirely separate.

VARIABLE Condensers, Polar, 3-gang tube type, fully screened, split end vanes and disc drive, 0.0005, 12/6.

ORMOND All-brass 2-gang Condensers, semi shielded, 0.0005, 5/-; Ormond all-brass 0.0005 slow-motion condensers, with knob and dial, 3/6; Polar 0.005 and 0.0035, Bakelite Dielectric condensers, with knob, 1/-.

PREMIER Eliminators, input 200-250 A.C., 40-100 cycles, output 250 volts at 60 milliamps., 80 volt and 120-volt taps, incorporating Westinghouse rectifier, 42/6; with 4 volts 4 amps. L.T., 7/6 extra.

PREMIER Eliminators, input 200-250 A.C., output 80, 100, and 120 volts at 20 milliamps, incorporating Westinghouse rectifier, 27/6; with L.T. charger incorporated, 35/-.

D.C. Eliminators, output 60, 90, and 120 volts, at 20 milliamps., 15/-; larger model, output 80, 120, and 200 volts at 50 milliamps., 25/-.

B.T.H., R.K., Minor, moving coil speaker, 2,500 ohm field; 15/-, with multi-ratio transformer.

15,000 Ohm Wire Wound Potentiometers, 1/6; Centralab potentiometer volume controls, 50,000 ohms, 2/-; Colverstats, logarithmically wound, potentiometers, 6,000 ohms, 1/9.

HEAVY Duty Variable Resistances (slider type), wound on porcelain; 2,000 ohms 1/2 amp., 5/-; 500 ohms 1/2 amp., 5/-; B.T.H. electric gramophone motors, induction type, 100-250 volts, A.C., 30/- complete; double spring gramophone motors, complete, 15/-; B.T.H. A.C. and D.C. motors, 55/-.

(This advertisement continued in third column.)


EPOCH

MOVING COIL SPEAKERS

The Finest in The World in Each of Their Price-classes.

Ask your dealer or call for a demonstration at Exmouth House.

Send for New Booklet W.S.5a. It is free.
EPOCH RADIO MANUFACTURING Co. Ltd.
Exmouth House, Exmouth St., London, E.C.1
At the junction of Roarbery Avenue and Farringdon Road.
Phone: Clerkenwell 8666 (4 lines).




engineers

PUT US TO THE TEST

All we ask is the chance to prove that you can earn \$300, \$400, \$500 per year and more. Other men are doing it and you can do the same.

The first thing to do is to send for our FREE Handbook "ENGINEERING OPPORTUNITIES." This 250-page book contains details of B.Sc., A.M.I.C.E., A.M.I.Mech.E., I.E.E., A.M.I.A.E., M.I.M.T., G.P.O., etc., Exams., outlines Home-Study Courses in all branches of Civil, Mech., Elec., Motor, Aero., Wireless and "Talking-Picture" Engineering, and explains the advantages of our unique Employment Dept. We urge you not to neglect our offer. Send for your copy of our Handbook to-day, FREE of charge.

BRITISH INSTITUTE OF ENGINEERING TECHNOLOGY,
387, Shakespeare House, 29/31, Oxford Street, London.



Gripshell Aerial Brackets

directly improve reception on all wave lengths. The reason why is carefully explained in a folder free on request.

PARTRIDGE WILSON & CO.,
Dept. 29, Davenset Works, Leicester.

CRESSALL RESISTANCES

"Cressall" Asbestos-Wire Woven Resistance Nets for voltage absorbing on D.C. Mains. Receivers. Mica - Wound Resistance Units. Sliding Resistances. Resistance Wires.

Please write for Lists.

CRESSALL MANUFACTURING COMPANY,
31-32, TOWER STREET, BIRMINGHAM.



GRIPSO

STANDARD PUSH-PULL INDICATING SWITCH

ADAPTABLE DOUBLE DIAL READINGS ON AND OFF—LONG AND SHORT WIRE ROBUST CONSTRUCTION

LETTS FROM MAKERS

16^D EACH

THE GRIPSO COY.,
28, VICTORIA STREET, LONDON, W.1.

Famous Maker's Offer!

PIANO-TONE!

CABINETS.

7 DAYS' FREE TRIAL
(OR 10/- MONTHLY)

Piano built (Pat. 8123), the acoustic tone brings a fine thrill (Piano Oaks, (Haddon Press, B.B.C., 300m clients). At Maker's Prices, 35/- to £15.

LIST FREE.

Send for photographs, detail drawings, Piano-Tone Cabinets, Albion Picketts Ed. (w.w.) Bristol/Heath, Kent.

RYALLS RADIO,
33, CHANCERY LANE, LONDON, W.C.2.

Offer range of new meters, A.C. and D.C., moving iron and moving coil, Mansbridge condensers up to 750v. working, Mains transformers and chokes, Moulded 1 watt resistances, Wire wound resistances 1 watt to 5 watt, all at very low prices. See our Classified advertisement under Components for details and prices. All new goods. Fully guaranteed.

Components, etc., for Sale.—Contd.

(This advertisement continued from first column.)

SPECIAL Offer of Kolster Brandes Gramophone Motors (electric), all complete with turntables, list price £5; No. 1, super A.C. 100-250v., induction type, 35/-; No. 2, super universal 100-250 A.C. and D.C., £2; No. 3 clockwork motor, electrically wound, £2 5.

WIRE-WOUND Resistances, any value up to 10,000 ohms, carry 3 watts, 1/- each, listed 3/-; 6 watts 2/-; 12 watts 4/-.

CONDENSER Blocks, 3 separate 4 mfd. condensers, 400v. working, 8/6; with 2 separate 1 mfd. condensers, 2/- extra.

T.C.C. Condenser Blocks, 3+2+0.5+0.5 mfd., 250 volts working, 3/6.

WESTERN ELECTRIC Condensers, 250v. working, 1 mfd. 6d., 2 mfd. 1/-; 400v. working, 1 mfd., 1/-; 2 mfd. 2/-.

AMPLION High Inductance Chokes Resistance, 2,500 ohms, 80 henrys, 60 milliamps., 5/6.

SPECIAL Offer of Mains Transformers, manufacturers type, any input, 250-250v. 60 m.a., 4v. 1a., C.T., 4v. 3a., C.T., 8/6; 180+180v. 40 m.a., 4v. 1a., 4v. 2a., 5/6; 175v. 50 m.a., 4v. 4a., 4v. 1a., 5/6; H.T.8, with 4v 3/4a., 8/6; with rectifier, 18/6.

EKO Microphones, complete with transformer, a really fine job, 18/6; wire-wound potentiometer, 50,000 2/6.

S. G. BROWN'S Power Units, consisting of tapped mains transformer, Westinghouse rectifier, and T.C.C. electrolytic condenser, output 6v. 1 amp., for charging and energising; 21/-, listed £3 15.

WESTINGHOUSE Rectifiers, 120 volts at 20 m.a. 6/6; 180 volts at 30 m.a., 8/6; 8 volts at 0.5 amp., 6/6; 250v. 60 m.a., 10/-.

ALL the Following Lines 6d. Each, or 5/- dozen as-ordered: Trimming condensers; shielded S.G. or Pentode leads; Dubilier 0.01 condensers; 2ft. lengths of screened wire; 5-pin valve holders; Crabtree sunk 5-amp. switches.

ALL Orders to 20-22-24, High St., Clapham, S.W.4 (Maccaulay 2188). Closed 1 o'clock Wednesday. Open till 9 o'clock Saturday. Nearest Station Clapham North Underground.

PEPPER Offers the Following under Usual Money Back Guarantee; cash or c.o.d.

BATTERY Chargers.—A.C. Ferranti, 1/2 amp., 22/6; Philips 3 amp., 14/6; Ekco 0.5 amp., 16/6; Oldham and Philips H.T. types, 16/6.

METERS—Sifam 0-1 amp. moving coil, also in 30 m.a. and 50 m.a., 9/11; Ferranti 0 to 50 m.a., moving coil, new, 19/6.

ELIMINATOR Kits.—Heavy duty power pack, output 550 v. 120 m.a., with I.T. winding, complete with valve, chokes, condensers, etc., £3 5/-; ditto, output 350 v. 125 m.a., £2 7/6; many others in our sales list.

BRAND New 400 v. Working Condensers, 3 mfd., 2/6; 4x4x1 mfd., 5/11; 4x4x4x2 mfd., 9/6.

COILS—Varley square peak, 7/9; see sales list for other offers.

MAINS Transformers from 5/-; few shop soiled Seraflex heavy duty chokes, 30 H, at 250 m.a., weight 10 1/2 lb., listed 35/-, 19/11.

8-PAGE List of Radio Bargains for Stamp, from Pepper Wakegreen Rd., Birmingham. [1996]

COLVERN K.B.L.C. and K.G.C. Coils, 4/6 each; Wearite Super Sixty coils, 19/6 the set.

R.L. Multi Ratio P.P. Output Transformer, 10/6; Varley P.P. input transformer, 12/6.

ORMOND 0.0005 2-gang Screened Condenser, 7/6; single 0.0005 screened, 4/6.

MAZDA D.C. Pentode, 7/6; D.C./H.L., 4/6; D.C./S.G., 7/-; unused.

IGRANIC Metal Rectifier, M.16, 7.5v. at 3a., 10/-; transformer for same, 7/6.

SONOCHORDE Standard P.M. Speaker, with universal transformer; £1; unused.

J.B. Unitone 2-gang Condenser, fully screened, with disc drive; 10/6; unused.

ALL Above Goods Guaranteed Perfect, sent on 7 days' approval against cash, or c.o.d.; we will allow you 50% of the list price on your surplus goods in exchange for new. W. B. Mackie, 61, Dartmouth Rd., Forest Hill, S.E.23. Phone: Syd. 6741. [2017]

CHALELECTRIC Special Offers of Brand New Surplus, all carriage paid, cash with order, or c.o.d.

MOVING Coil Speakers.—Rolas (U.S.A.) S type, with multi ratio transformer, 75 cycles, 90-130 volts, field resistance, 2,500 ohms, 200-250 volts, 6.520 ohms Res., 17/- each; A.C. models, 30/-; P.M. models, 26/-.

CONDENSER Banks, 1,500 D.C. Test, 20 mfd. (2), 4 mfd. (5), 2 mfd. (2), 1 mfd., 11/- each; 11 mfd. (1), 4 mfd. (3), 2 mfd. (1), 1 mfd., 6/9 each.

SMOOTHING Chokes, 20-henry 30 m.a. (570 ohms), 6/-; 30-henry 60 m.a. (600 ohms), 7/- each; 50-henry 60 m.a. (850 ohms), 8/6 each; 20-henry 120 m.a. (320 ohms), 9/3 each.

VARIABLE Condensers, 3-gang J.B. Nu-Gang, fully screened, with trimmers, escenthon, light, etc., 14/6; 2-gang, as above, 10/6.—Chal-Electric, 6, Conduit St., London, W.1. [2011]

MAINS RADIO'S Usual Guaranteed Set Manufacturers' Surplus, as new, all carriage paid, or call.

VALVES—Special offer V.D.S. (metallised), 8/9; S4V.A. (metallised), 7/9; M.S.4B (metallised), 7/9; M.H.4, 6/3.

REGENTONE 2-valve A.C. set, with valves, perfect, list £6 15, £2 18/6; Ekco 5-pin valve holders, 5d. each, 4/- dozen; Magnum screened switched H.F. coils, 2/3; ditto band pass coil, 2/3.

SCREENED Single Wire (for heaters), etc., 10ft. coils, 9d. each.—Mains Radio Development Co., 4-6, Muswell Hill Rd., N.6. [1981]

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

Components, etc., for Sale.—Contd.

SALE, L.S.5A, 8/-; Pye chokes, 32 henries, 6/-; wanted, V.M.S.G., 1/4, P.P.5/400.—Henshaw, 9, Bromwood Park, Mold, Flintshire. [2018]

BRITISH Radiophone 3-gang Condenser, with cover, unused; 18/6.—Wilson, 62, Pellerin Rd., N.16. [2019]

FERRANTI Transformers, A.F.3, 9/11 each; O.P.M.2, 13/6; A.P.5, 12/-; Mackay, Station Rd., Corstorphine, Edinburgh. [2015]

FARRAND Inductor Speakers green type, new and boxed, 35/-; Rola K.T.C. moving-coil speaker, 2,500 ohm field, fitted with pentode transformer, new and unused, 16/-.

BLOCK Condensers, T.C.C. 250 volts working, new and perfect, 2+2+2+1+1, separate earth connection, 2/-; 4+4+2+1, separately earthed, 2/3; 2+2+2+2+1+1, 2 earth connections, 2/3; 5 2 mid sections and 6 1 mid sections, 4 earth tags, 3/6.

ETA American Base Mains, screened grid valves, type 624; 6/- each; all brand new.

UTILITY Mite Drum Dials, with 0.0005 condenser, new and boxed; 2/6.

UTILITY 2-gang Condenser Air Spaced Type, with external trimmer for front section, 0.0005 each half, new and boxed, 10/6; T.C.C. wet electrolytic condensers, 440 volts working, 8 mid., 3/6, brand new.

SMOOTHING Chokes, wound on a massive core, 1,500 ohms, 30 henries, 30 milliamps, 4/6; 750 ohms, 30 henries, 20 milliamps, 3/6.

LOEWE Vacuum Type Grid Leaks, resistances, and condensers, 3d. each, 2/- per dozen; 10,000, 15,000, and 25,000, 2 meg., 0.0003 and 0.005.

T.C.C. Type 65 Condensers, 250 volts working, 1 mid., new and unused; 1/- each.

MAINS Transformers, extra heavy quality and fully guaranteed, 100-240 volts input, outputs 350-0-350 volt., 100 milliamps., 4 volts 4 amps. C.T., 4 volts 2.3 amps., type No. 2, 350-0-350 volts 60 milliamps., 4 volt. 4 amps. C.T., 4 volts 2.3 amps. C.T., 10/6 each; manufacturer's type, with all leads marked.

A BIG Selection of all Types of Radio Cabinets always on show.—Call and see them at Modern Radio, 25, York Terrace, Clapham, S.W.4. (Nearest Tube Clapham North.) [2010]

MISCELLANEOUS.

EASY Payments.—We supply, by easy payments, components, accessories, and sets, any make; 10% down, balance spread over 11 months.—Send list of requirements to London Radio Supply Co., 11, Oct Lane, London, E.C.2. [0337]

ENGINEERS and Technical Workers of All Kinds.—A proper training by post in your spare time will take you through your right examination, then employment is waiting. Our advice on all careers free.—Dept. 92, The Bennett College, Ltd., Sheffield. [0395]

AMBITIOUS Men.—Quality for a well-paid post by studying at home with The T.I.G.B. Write to-day for "The Engineer's Guide to Success," 144 pages, free, which contains the widest selection of engineering and wireless courses in the world, and shows you how to become A.M.I.E.E., A.M.I.Mech.E., A.Rad.A., etc. State branch, post or qualification that interests you.—The Technological Institute of Great Britain, 82, Temple Bar House, London, E.C.4. (Founded 1917. 19,000 Successes.) [1997]

PATENT AGENTS.

PATENTS and Trade Marks, British and foreign.—Gee and Co. (H. T. P. Gee, Member R.S.G.B. and A.M.I.R.E.), 51-52, Chancery Lane, London, W.C.2. Phone: Holborn 1525. [0001]

KING'S PATENT AGENCY, Ltd., 146a, Queen Victoria St., London, E.C.4. Phone: Central 0682. 45 years' experience. Advice Handbook free. [0381]

A. MATHISEN, B.Sc. (Elect. Eng.), specialist, patents for radio inventions.—First Avenue House, High Holborn, London. [1632]

REPAIRS.

REPAIRS to Loud-speakers, transformers and headphones, 4/- each; Blue Spots or Wula's, 5/-; mains eliminators, etc., quoted for; prompt service; satisfaction guaranteed; terms to trade.—Loud-Speaker Repair Works, 2, Shipka Rd., Batham London. Streatham 6618. [0394]

ANY Loud-speaker or Radio Receiver (American receivers particularly) repaired or reconditioned.—Radio Service Laboratories, 41, Southampton Rd., London, N.W.5. Culliver 3369. [1071]

GUARANTEED Repairs by Experts; specialists for repairs to S.G. Brown and Amplion radio apparatus, also loud-speakers, headphones, pick-ups, Blue Spots, any type rewound, remagnetised and adjusted; 4/-; post free; mains transformer repairs; terms to trade.—Howell, 91, Morley Hill, Enfield, Middlesex. [9716]

WIRELESS Sets Modernised, repaired, overhauled.—Write Woodward, 47, Whitehall Park Rd., Chi-wick. [1989]

EVERY PART FOR EVERY CIRCUIT

WHOLESALE DEPOT

HEYS

ALL FERROCART

requirements in stock. Cash or C.O.D. service to bona fide traders only. When ordering enclose Trade Card. (Catalogue on request.)

LEONARD HEYS: FARADAY HOUSE

HENRY STREET, BLACKPOOL.

ELEVEN YEARS' EXPERIENCE IN THE WIRELESS TRADE

Hear PERFECT radio

through a **PERMAC**

386 CHASSIS ONLY

496 CABINET MODEL

REPRODUCER

Ask your dealer or write to:

BAKER'S SELHURST RADIO

75 & 77, Sussex Road, Croydon.

Phone: Croydon 3441/2.

ERIE

Write for **NEW** Technical Brochure

● **THE RADIO RESISTOR CO**

1, Golden Sq., Piccadilly Circus, London, W.1

DICTIONARY of WIRELESS TECHNICAL TERMS

Compiled by **S. O. PEARSON, B.Sc., A.M.I.E.E.,** and issued in conjunction with "THE WIRELESS WORLD"

Second Edition. Completely revised and brought up to date

This handy volume is very much more than a Dictionary. It not only takes the technical terms of wireless and explains their meaning, but in doing so it concentrates into a small space a large amount of information on wireless subjects. It has become, in fact, a compendium of current wireless knowledge, and an invaluable handbook for all who are interested in wireless transmission and reception. Diagrams and illustrations are freely interspersed throughout the book to amplify the explanations of the text.

272 pp., bound in cloth boards
Size 5 by 3 inches

Price 2/- net. By post 2/2

From all leading booksellers or direct from the Publishers

ILIFFE & SONS LTD.
Dorset House, Tudor Street, London, E.C.4. W.W.48

BOOKS on WIRELESS

Write for complete list to **ILIFFE & SONS LTD.**
Dorset House, Tudor St., London, E.C.4. w.w.1

Repairs.—Contd.

LOUD-SPEAKERS, headphones, any type, rewound and overhauled, 3/6; Blue Spots, 4/-; post free; 24 hours' service guaranteed; terms to trade.—Devon Radio and Loud-speaker Repair Depot, Salem St., Plymouth. [1910]

ELECTRIC CLOCKS.

MAINS Synchronous Clock Movements, 50 cycles, 200-240 volts, 12 6 each, 135/- dozen; no hours or dials.—Lincoln Electric Clock Co., 155a, Burnt Ash Hill, S.E.12. [2029]

EXCHANGE.

COSMIC RADIO SERVICE, 23, Water St., Liverpool, accept high class components, receivers, and speakers in part exchange or for cash; no small parts or obsolete coils. [1976]

FINANCIAL PARTNERSHIPS.

LEADING Public Address Publicity Experts' Radio Sales and P.A. Coach Hire Firm. Now forming a private company owing to the death of partner. Require two young men as directors, experienced radio engineer, and sales of business qualification, £250; company buying contracts with national newspapers and public company's assets £2,000 business and bankers references exchanged.—Box 6213, c/o The Wireless World. [2027]

WANTED.

NEW or Second-hand Wireless Parts Wanted for Cash, any amount, any condition; send yours, stating reasonable price; cash by return; top prices paid for 1932 parts; also meters, etc.; will call London districts.—Mildmay Radio Exchange, 24, Mildmay Grove, London, N.1. [1637]

WANTED, Amplion M.C.6 Unit.—Write, Heaton, 7, Allan Way, London, W.3. [2025]

WANTED, all types of A.C., D.C., and battery valves; also A.C. and D.C. receivers, and any other components in quantities for spot cash.—Ward, 12, Tredegar Rd., Bow, E.3. [2008]

BIRMINGHAM RADIO MART.—Best prices given for manufacturers' clearance and surplus stocks.

WE Buy and Exchange Experimenters' Surplus; wanted, Ferranti and Weston meters, U.X.210 and transmitting valves, Ferranti inter-valve transformers.—19, John Bright St. [1981]

ETA Hand Driven Coil Winding Machine.—Box 6210, c/o The Wireless World. [2002]

WANTED, new or second-hand copy of "Wireless Loud-speakers," by McClachlan.—Box 6207, c/o The Wireless World. [1986]

TUITION.

WIRELESS as a Career.—Whether you are engaged in the radio industry and wish to improve yourself, or if you wish to obtain employment in this profession, we can help you. Our students are engaged in responsible positions in the majority of the large wireless firms in England. Booklet describing Home Study Course, post free.—Northern Counties Wireless School, Preston. [0373]

BUSINESSES AND PROPERTY FOR SALE, TO BE LET, OR WANTED.

RADIO Business for Sale, West Riding.—Freehold shop and house, central, next to P.O., first-class agencies, battery charging, suit radio-electrician, ample scope; stock and fittings at valuation; £650 mortgage on property; low rates; about £1,000 all in.—Write: Box 6214, c/o The Wireless World. [2028]

SITUATIONS VACANT.

IF You Wish to Enter the Wireless Profession with a Thorough Training, or if you wish to improve your present position, you will need the certificate issued by Britain's leading wireless college. This is not a correspondence college. Apparatus of all leading makes installed for instructional purposes. Boarders accepted. Training fee can be paid after appointment. Prospectus free.—Wireless College, Colwyn Bay. [0588]

YOUNG Man, keen, energetic, and with ideas, required to manage new retail branch, preferably with experience of London component dealers; excellent prospects for the right person; state age, salary required, and other relevant details in first instance to Box 6186, c/o The Wireless World. [1970]

IMPORTANT Firm of Radio Manufacturers Requires a First Class Radio Engineer to control the Technical Department, must be thoroughly acquainted with modern receiver design, testing and production methods, and capable of acting in an executive manner on all technical matters.—Reply, giving full details in strict confidence, Box No. 23, Osborne-Peacock Co., Ltd., 11, Piccadilly, Manchester. [1977]

SITUATIONS WANTED.

DO You Want Skilled, Certified Service Engineers and Salesmen? Then consult the Principal, The Wireless College, Colwyn Bay Phone: 2407. [0392]

RADIO Engineer, experienced test and research, seeks position.—Box 6208, c/o The Wireless World. [1998]

BOOKS, INSTRUCTIONS, ETC.

"MOTOR Racing," by S. C. H. Davis ("Casque" of "The Autocar"). A book of speed and thrills by a racing driver of international repute who secured notable successes at Le Mans in 1927, and in the 500 miles race in 1930. Demv 3vo., 320 pages, 6 maps, numerous illustrations from photographs, and pen sketches by the Author. Price 7/6 net, by post 8/-, from the Publishers, Iliffe and Sons Ltd., Dorset House, Tudor St., London, E.C.4.

ALEXANDER BLACK

WIRELESS CONSULTANT

53. EBURY STREET, LONDON, S.W.1

ESTABLISHED IN 1928

SILVANE 3065

McMICHAEL PORTABLE SETS FOR HIRE.

has available **FOR HIRE**

RADIO, MICROPHONE & GRAMOPHONE AMPLIFIERS

giving exceptional quality and volume, suitable for Danes, Sports Meetings, Fetes, etc.

SETS (all types) Supplied, Serviced and Visited in any district, or may be sent for Full Test and Report.

Trade Enquiries Invited.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

GUARANTEED TO RECEIVE AMERICA DAY OR NIGHT

Anywhere in the British Isles.

Faraday Allwave Wireless Ltd. give a money-back guarantee that you can receive Programmes from the U.S.A in normal conditions on their

ALLWAVE SUPERHETERODYNE

Tuning Range 15-2000 METRES—No coil changing—no reaction—single knob tuning. Sent on a money-back guarantee against cash for

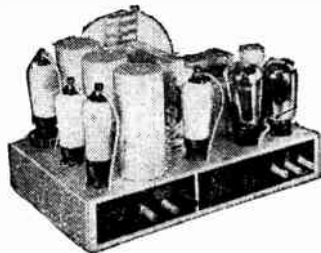
SEVEN DAYS' TRIAL

Write for our Booklet.

PRICE 27 GNS.

inclusive of Royalties. Table Stand 35/- extra. Chassis complete with Speaker and Valves, £25-13-0, including Royalties.

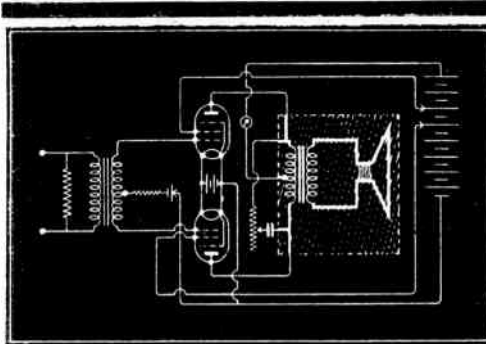
Special Model for overseas available, £30, in walnut cabinet, or £32 in teak cabinet.



FARADAY ALLWAVE WIRELESS LTD.

1, SALCOTT ROAD, S.W.11.

TEL.: BATTERSEA 2085.



MAKE THE MOST OF Q.P.P.

FIT A GOODMAN SPEAKER

To make the most of Q.P.P. it is imperative to use a correctly designed output transformer.

Goodman speakers for Q.P.P. are fitted with a transformer which gives maximum results from this form of output. It maintains a high working inductance and has a low d.c. resistance. This ensures that no valuable H.T. volts are lost. Incidentally, it ensures also the Goodman standard of reproduction.

This standard has been attained by years of technical research and manufacturing skill. It is represented by excellent quality at low cost.

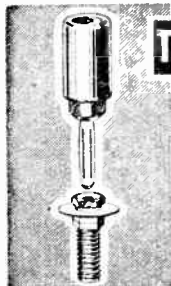
- For Q.P.P.
- "DREADNOUGHT" Chassis Model (Complete with auxiliary battle) 39/6
 - "DREADNOUGHT" Cabinet Speaker (Real walnut cabinet) 59/6
 - "REOWN" Chassis Model 27/6
 - "REOWN" Cabinet Speaker (Real walnut cabinet)... 42/-
- HAVE YOU SENT FOR OUR LEAFLET YET? IF NOT, DO IT NOW!

The leaflet is fully illustrated and FREE.



Scientific Speakers

69, St. John Street, London, E.C.1
Clerkenwell 3838-9



THE UP-TO-DATE CONNECTION

Lisenin Positive Grip Plugs and Sockets are rapidly replacing the old style screw down terminal. They are many times more efficient and much neater. The special Banana Plug ensures smooth clean contact. The special cone grip holds the lead like a vice and positively protects it from accidental pulling; it cannot work loose. Use Lisenin Plugs and Sockets and you will ensure perfect contacts at all times.

Red, Green or Black.
PRICE 4d. EACH



Plain or engraved.

LISENIN

WIRELESS COMPANY
66, Newman Street, London, W.1.

35/-

NEW RADIO-GRAM CABINET BY OSBORN



MODEL No. 201. Same Osborn standard of workmanship, but at this amazing price—35/- in Figured Oak, 3' 2" high, 1' 10" wide, 1' 4" deep. Height between motor board and baseboard 12". Height for pick-up 4". Accommodates a baseboard 18" x 11" or smaller. Ample room for any type of speaker and batteries. Mortised and tenoned throughout. Silk fabric, battle board and baseboard are included. The panel above fret will be cut to your specification.

PRICES:
Machine Ready to Assemble..... £1 15 0
Assembled Ready to Polish..... £2 10 0
Assembled and Polished..... £3 5 0
ALL MODELS CARRIAGE PAID.

Figured Mahogany or figured Walnut 10/- extra. Carving on top rail omitted on all Mahogany and Walnut models, as it is not suitable for these woods.

OSBORN SUPER ACOUSTIC BAFFLE BOARD. Prevents 90% speaker worry. Any size hole cut FREE. Guaranteed no vibration. 18in. x 18in., 2'- 24in. x 24in., 5'- 30in. x 30in., 8'- 30in. x 30in., 11 3/4. Carriage paid U.K. Send for FREE SAMPLE.

CHAS. A. OSBORN, Dept. W.W., Regent Works, Arlington St., London, N.1. Tel.: Clerkenwell 5095.
Showrooms: 21, ESSEX RD., ISLINGTON, N.1. Tel.: clerkenwell 5634.

INDEX TO ADVERTISEMENTS.

	PAGE		PAGE		PAGE
Alton Battery Co., Ltd.	6	Epoch Radio Manf. Co., Ltd.	22	Partridge & Mee, Ltd.	Inside Front Cover
Apollis Gramophone Co., Ltd.	6	Exile & Drydrex	3	Pepper, Trevor (Seralex)	23
Atwater Kent (G. A. Brittain, Ltd.)	Inside Front Cover	Faire Bros. & Co., Ltd.	4	Peter-Saunt Co., Ltd.	13
Automatic Coil Winder & Elec. Equipment Co., Ltd.	23	Faraday All-Wave Wireless, Ltd.	25	Picketts	22
Baker's "Selhurst" Radio	24	Fornio Co.	6	Postlethwaite Bros.	22
Barber & Colman, Ltd.	24	Gambrell Bros., Ltd.	18	Radio-Gramophone Development Co.	Outside Back Cover
Belling & Lee, Ltd.	24	General Electric Co., Ltd.	9	Radio Resistor Co.	21 & 24
Black, Alexander	VI	Goodmans	25	Reproducers & Amplifiers, Ltd.	22
Britannia Batteries, Ltd.	VI	Graham Farish, Ltd.	14	Rich & Bundy, Ltd.	20
British Institute of Eng. Technology	22	Gripco Co.	22	Rugbyside Manf. Co., Ltd.	20
British Pix Co., Ltd.	v	Haynes Radio	16	Rutax, Ltd. (M.L. Equipment)	Front Cover
British Radiophone Co., Ltd.	5 & 11	Holywell, F. C. & Co.	21	Rotor Electric, Ltd.	4
British Reba Co., Ltd.	v	Hoy, Leonard	24	Ryalls Radio	22
Bryce, W. Andrew, & Co.	6	Igranite Electric Co., Ltd.	21	Savage, W. Bryan	23
Bulgin, A. F., & Co., Ltd.	18	Lever, Eric J. (Trix), Ltd.	21	Scott Sessions & Co.	19
Burton, C. F., & H.	19	Lisenin Wireless Co.	25	Sifam Electrical Instrument Co.	23
Carrington Manf. Co., Ltd.	18	London Electric Wire Co. & Smiths, Ltd.	4	Smith, S. & Sons (Motor Accessories), Ltd.	6
Challis, O. M.	4	London Radio Supply Co.	23	Smochode Reproducers, Ltd.	Front Cover
Columbia Gramophone Co., Ltd.	12	Milnes Radio Co.	8	Sound Sales, Ltd.	20
Colvern, Ltd.	26	Multi-tone Electric Co., Ltd.	2	Telegraph Condenser Co., Ltd.	16 & 17
Cosson, A. C., Ltd.	22	McMichael Radio, Ltd.	18	Telson Electric Co., Ltd.	Front Cover
Cressall Manf. Co., Ltd.	22	Osborn, Chas.	25	Turnadge & Partners, Ltd.	21
Direct Radio, Ltd.	15	Ostar-Ganz (Eugen Forbat)	23	Varley (Oliver Pell Control, Ltd.)	15
Dubilier Condenser Co. (1925), Ltd.	Front Cover	Parima Manf. Co.	19	Westinghouse Brake & Saxby Signal Co., Ltd.	Inside Back Cover
Edison Swan Electric Co., Ltd.	7	Partridge, Wilson & Co.	22	Willmott and Co.	23
Electradix Radios	20			Wright and Weather, Ltd.	8
Electrical Trading Association, Ltd.	2				

In your

WIRELESS WORLD

FERROCART



A.C. MAINS RECEIVER

In selecting the valves for the "Ferrocart III," the *Wireless World* technicians turned, naturally, to Cossor. They required the maximum efficiency from each stage—the utmost in performance—coupled with outstanding selectivity—using three valves only. Their object was achieved—with Cossor. For efficiency, consistency in performance and for long-life use Cossor in your "Ferrocart III." To do otherwise is to risk disappointment. The exclusively specified types are listed below.

EXCLUSIVELY SPECIFIED :

- No. 1. H.F.
Cossor M.V.S.G.* 19/6
 - No. 2. Detector
Cossor 41M.H.L.* 13/6
 - No. 3. Output
Cossor M.P./PEN. 20/6
 - No. 4. Rectifier
Cossor 442 B.U. 15/6
- *Metallised



USE

COSSOR VALVES



KINGS OF THE AIR

A. C. Cossor Ltd., Highbury Grove, London, N.5. Depots at Birmingham, Bristol, Glasgow, Leeds, Liverpool, Manchester, Newcastle, Sheffield, Belfast, Cardiff and Dublin.

To A. C. COSSOR LTD., Melody Department, Highbury Grove, London, N.5.

Please send me, free of charge, a copy of the 40-page Cossor Valve and Wireless Book B.17.

Name

Address

W.W. 1/3/33.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

ATHLONE

413 metres; 60 kW.; and GORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Popular Music on Gramophone Records. Music on Gramophone Records. 6.0, 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, German Lesson. 8.0, Concert by the St. James' Brass and Reed Band. Conductor: R. O'Dwyer. 9.0, Tenor Solos by Joseph O'Neill. 9.10, The Corner—Sketch by Mary Sheridan and Company. 9.40, Edith Kelly Lange's Instrumental Trio. 10.0, Tenor Solos by Joseph O'Neill. 10.10, Instrumental Trio Music (contd.). 10.30, Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJI, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert: Selection from The Barber of Seville (Rossini); Diana (Lefebvre); Selection from La Navarraise (Massenet); The Musical Box (Liadov); Italian Serenade (Holmes); Polonaise in F (Schubert). 7.0, Request Gramophone Concert. 7.30, Exchange Quotations. 8.0, Light Music on Gramophone Records, followed by News Bulletin. 9.0, Chimes from the Cathedral; Weather Forecast and Market Prices. 9.5, Concert by the Station Orchestra. 10.0, L'Estiuet de Sant Marti; Play in Three Acts in Catalan (Apeles Mestres). 11.0 (in an interval), News. 12.0 Midnight (approx.), Close Down.

BARI

270 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Talk and Dopolavoro Announcements. 7.20, Giornale Radio and News Bulletin. 7.30, Time Signal and Announcements. 7.35 (approx.), Concert of Chamber Music: Overture, Gri-Gri (Lincke); Suite for Harpsichord (Arne-Gubitosi); Soprano Solos: (a) Fremiti (Giannini), (b) Nera Nerella (Gubitosi); Violin Solos: La fille aux cheveux de lin (Debussy-Hartmann), (b) Gavotte (Mozart-Aner); Soprano Solo: Soap Bubbles (Cesare Franco); Pianoforte Solos: (a) Prelude, Op. 116 (Gretchaninov), (b) Mazurka, Op. 116 (Gretchaninov); Overture, On the Rhine (Mario Mascagni); Violin Solos: Adagio and andante con moto (Casanova); Soprano Solo: Nimm nanna (Ottone Pesce); Pianoforte Solo: Clair de Lune (Debussy); Violin Solos: (a) Polichinelle (Kreisler), (b) Tambourin chinois (Kreisler); Soprano Solos: (a) Chi vuol comprar la bella calandrina (Tommeini), (b) Vegghelies Ständchen (Bradins); Pianoforte Solos: Two Pieces (Chopin), (a) Waltz, Op. 61, No. 2, (b) Etude in G Flat, Op. 10. In the Interval: Miscellaneous Announcements. 9.30, Popular Music on Gramophone Records. 9.55, News.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Classical Concert from Berlin (Witzleben). 2.0, Programme for Children. 2.30, Weather and Exchange. 2.45, Reading (Maxim Ziese). 3.0, Talks on Health: (a) Vaccination, (b) Infectious Diseases. 3.30, See Hamburg. 4.10, Talk: Modern Systems of Defence—Militia and a Standing Army—Switzerland and England. 4.30, Legal Talk. 5.0, Recital of German Student Songs, by Franz Baumann: Wir lügen hinaus in die sonige Welt; Auf den Bergen die Burgen; Du buntes Band; Und Bonn!; Eine Mütze auf dem Schädlel. 5.25, Topical Talk. 5.40, Talk on Wireless Technique. 5.55, Weather and Announcements. 6.0, English Language Lesson. 6.30, A Poem. 6.35, Programme from Hamburg. 7.10, Talk on the Winter Relief Fund. 7.15, Programme to be announced. 9.0, Weather, News and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Dance Music from Berlin (Witzleben). 10.30, Dance Music from the Kit-Cat Restaurant. London. 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—6.0 p.m., Topical Talk. 6.15, Recital of Folk Songs. 6.45, Variety Programme. 7.35, Announcement. 7.40, Topical Talk. 7.55, Concert by the Berlin Philharmonic Orchestra, conducted by Edwin Lininger: Overture, Oberon (Weber); Symphony in E Flat (Haydn); Scherzo for Orchestra, Masken im Karneval (Ferdinand Scherler). 9.0, Weather, News, and Sports Notes, followed by Dance Music. 11.0 (approx.), Close Down.

BERNE

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

WEDNESDAY

MARCH THE EIGHTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL: Orchestral concert from Bournemouth. Symphony concert from Queen's Hall. Strange Music. Vaudeville programme. Orchestral concert.

LONDON REGIONAL

MIDLAND REGIONAL: Choral concert. "Etc., Etc., One Inconsequential Thing After Another," feature programme.

NORTH REGIONAL: "How Hollywood Goes to Work," Mrs. C. Gordon.

WEST REGIONAL: Orchestral concert from the National Museum of Wales.

SCOTTISH REGIONAL: "Free Wheel," a Scottish revue.

BELFAST: Orchestral concert from Stranmillis.

ABROAD

ATHLONE: 9.10 p.m., "The Corner," a sketch by Mary Sheridan and Company.

BORDEAUX-LAFAYETTE (from Lille): 8.30 p.m., "Le Roi d'Ys," opera by Lalo.

BRUSSELS (No. 2): 8.30 p.m., Concert by the Royal Zoological Society, from Antwerp.

HAMBURG: 6.30 p.m., Mozart Concert, by the Station Orchestra.

HUIZEN (announced Hilversum): 8.5 p.m., Leoncavallo concert, by the Station Orchestra and soloists.

PRAGUE: 7.5 p.m., Concert by the Czech Philharmonic Orchestra and Choir, conducted by Prof. Jirak.

RADIO PARIS: 9 p.m., Beethoven concert by the Lamoureux Concert Society, from the Salle Gaveau.

WARSAW: 9.40 p.m., Talk in Esperanto on General Pilsudsky.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News Bulletin and Market Prices. 7.40, Dramatic Criticisms. 7.55, Lottery Results. 8.0, Agricultural Talk. 8.15, News Bulletin. 8.30, Le Roi d'Ys—Opera in Three Acts (Lalo).

BRATISLAVA

279 metres; 14 kW.—5.0 p.m., Hungarian Programme: Talk on Masaryk, followed by Concert: Part I—Evening Songs (Smetana), Part II—Pianoforte Solos: (a) Variations in E Minor (Haydn), (b) Rondo capriccioso in E, Op. 14 (Mendelssohn), (c) Valse lente (Debussy), (d) Arabesque, No. 1 (Debussy). 6.0, See Prague. 6.10, See Brno. 6.25 till Close Down. See Prague. 9.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 60 kW.; and GLEIWITZ, 253 metres.—12.10 p.m., Gramophone Concert. Dance macabre (Saint-Saëns); Fifth Movement from the Fantastic Symphony (Berlioz); The Venusberg Scene from Tannhäuser (Wagner); Air from Der Freischütz (Weber); Dance of the Sylphs from The Damnation of Faust (Berlioz); In the Hall of the Mountain King, from Peer Gynt (Grieg). 12.45, Time, Weather, News and Exchange. 1.5, Gramophone Concert. Scherzo from A Midsummer Night's Dream (Mendelssohn); Air from Goyescas (Granados); Gilda's Aria from Rigoletto (Verdi); Rondo alla Aragonese (Granados); Fandanguillo (Turina); Aria from The Merry Widow (Lehar); Five o'Clock Tea with the Kraus Family (Brown); Foxtrot, Let's put out the Lights (Hupfeld). 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 3.0, Talk: Shall we have Death Rays? 3.30, Dafnis Lieder (Arno Holz), set to Music by Alfons Blümel. Song Recital by Albert Gaertner (Tenor); Er lässt nie sein Maul hängen; Er rastet mit seinen Gesellen an einem schönen May Morgen in einem Birken-Hayn; Er bringt ihr ein Morgen-Ständchen; Er berent nichts; er wünscht nur, dass ihm noch einmal der Frühling freit; Er sieht nacht hartem Winter von seiner letzten Street; Er spürt ihn kommen; Er spricht noch aus dem Grabe. 4.0, Reading (Rafael Urban). 4.25, Market Prices. 4.30, Talk: Training in Domestic Economy. 4.45, Talk: Bishop Johann Michael Sailer and his Significance To-day. 5.5, Orchestral Concert, conducted by Albin Eserlich. Entry of the Guests, from Tannhäuser (Wagner); Overture, Handel (E. Bach); Nachtmusik for Strings and Harp (Jokl); Hungarian Rhapsody in D (Liszt); Second Orchestral Suite from L'Arlesienne (Bizet). 6.35, Weather for Farmers and Cattle Market Report. 6.40, Talk: Hereditary Talents and the Choice of a Career. 7.0, Humorous Programme by Gustav Jacoby, with Music by the Station

Orchestra, conducted by Franz Marszalek. 7.50, News. 8.0, Film—Radio Play (Erik Ernst Schwabach), with Music by Allan Gray. 9.0, Time, Weather, News, Sports Notes and Programme Announcements. 9.20, Talk: A Tour through Marienburg Castle. 9.40, Concert of Light Music and Dance Music by the Station Orchestra, conducted by Franz Marszalek, with Song Refrains by Hellmut Hallendorf (Tenor). 11.0 (approx.), Close Down.

BRNO

342 metres; 35 kW.—4.10 p.m., Programme in Honour of President T. G. Masaryk. 5.5, Review of Periodicals. 5.15, Talk for Workers. 5.25, German Transmission: News, Agricultural Talk, and a Talk for Workers. 6.0, See Prague. 6.10, Talk on Radio Phys. 6.25, A Choir Rehearsal. 6.55, See Prague. 9.15 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Concert from the Memline Hall, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Orchestral Concert conducted by M. Leemans; Overture: Figaro (Mozart); Waltz (Rachmaninov); Violin Solo: Caprice viennois (Kreisler); Selection from The Daughter of the Regiment (Donizetti); Moorish Song (Turina); La Burgonde (Vidal); Selection from Le Comte Orlgado (Moretti). 5.0, Chamber Music: Concert by the Little Radio Orchestra conducted by M. Leemans; Sonate à quatre, in B Minor, for Violin, Viola, Cello and Pianoforte (Loeillet); Sonata for Violin and Pianoforte (Lekst); Märchenzerhählung, for Clarinet, Viola, and Pianoforte (Schumann). 6.0, Talk: Literature for Children Abroad. 6.15, Die schöne Müllerin; Song Cycle (Schubert), on Gramophone Records. 6.30, Songs for Male Voice Choir (Benoit). 7.0, Die schöne Müllerin (contd.). 7.15, Talk: The Financial Committee of the League of Nations. 7.30, Medical Review. 8.0, Concert by the Radio Symphony Orchestra conducted by René Baton; Overture: Benvenuto Cellini (Berlioz); Symphony (Franck). 8.45, Criticisms, Suggestions and Answers to Correspondence. 9.0, Concert (contd.), Prélude à l'après-midi d'un faune (Debussy); Pour les familles d'un marin breton (Rhené Baton); Two South American Sketches (de Bourguignon); L'apprenti sorcier (Dukas). 9.40, Gramophone Records of Light Music. 10.0, Le Journal Parlé. 10.10, Orchestral Concert from the Ancienne Belgique.

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW.—12 Noon, Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans; Overture, Boimkehrer aus der Fremde (Mendelssohn); Romance (Tchaikovsky); Intermezzo from Le pavillon d'Armide (Tcherepnin); Scene and Waltz from Gretchen Green (Guiraud); Promenade matinale (Van

Hoof); Minuet (Pallomaerts); Suite Jeux d'enfants (Bizet); Melody (Sileau); Russian Potpourri, Saschinka (Balf). 1.0, Le Journal Parlé. 1.10, Concert by the Paul Moreaux Orchestra, relayed from the Memline Hall, Antwerp. 5.0, Dance Music relayed from the St. Sauveur Palais de Danse. 6.15, Talk. 6.30, Talk on Peter Benoit's Romantic Oratorio, De Schelde, with Musical Illustrations. 7.0, Danzas fantasticas (Turina), on Gramophone Records. 7.15, Talk: The Russian Carpathians. 7.30, Theatre Notes. 8.0, Pianoforte Recital of Peter Benoit's Music by Alice Peeters: Ballad in F Minor; Conte in D Minor; Fantasia No. 4. 8.15, Reading: Reminiscences of Peter Benoit. 8.30, Concert by the Royal Zoological Society, relayed from Antwerp. 10.0, Le Journal Parlé. 10.10, Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert by the Radio Orchestra. 5.0, News and Time Signal. 5.10, Talk. 5.25, Concert (contd.). 6.0, Talk on Romania: Her Wood and Paper Industries. 6.40, Popular Music on Gramophone Records. 7.0, Fugal Recital by E. Ziano. Sonata (Bach); Scherzando (Lalo); Nocturne (Barere); Scherzo (Mendelssohn). 7.25, Talk. 7.40, Pianoforte Recital. Larghetto (Mozart-Reinecke); Polonaise (Chopin); Cordoba (Albeniz); Harmonies du Soir (Liszt); Tarantella (Liszt). 8.5, Violin Recital. Chaconne (Bach); Alter Refrain (Kreisler); Sicilienne (Nottara); Two Pieces (Suk); (a) Quasi balatto, (b) Appassionata. 8.35, Dance Music relayed from the Grand Hotel Restaurant. 9.0, News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 840 metres from 6.45 to 11.0 p.m.—5.30 p.m., Dance Music from the Café Ostende. 6.15, Talk by Lajos Horamzy: Reminiscences of Paris. 6.45, Concert by the Waldbauer-Kerpely String Quartet and Ernst Dolnanyi: String Quartet in D Minor (Mozart); String Quartet in A Minor (Dohnanyi); The Trout Quintet (Schubert). 8.45, News. 8.50 (approx.), Dance Music, relayed from the Café New York, with Karl Vajda in his Repertoire. 10.0, Talk in French: The History of the Franco-Hungarian Alliance. 10.15, Concert by a Gipsy Band, relayed from the Café Baross. Soloist, Imre Vargha (Hungarian Folk Songs). 11.0 (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—11.0 a.m., Time and Chimes from the Town Hall. 11.5, String Ensemble Concert relayed from the Wivex Restaurant. 12.15 p.m., Broadcast for Schools. Talk on Natural Science. 12.45 to 2.0, Interval. 2.0, Gramophone Concert: Audelia Galli-Curci: Song from Dinorah (Meyerbeer); Enrico Caruso: Song from Carmen (Bizet); Pablo Casals: Prelude (Chopin-Sievoking); Im Kreuz zum grünen Kranze (Zöllner); Sophie Tucker: Some of these Days (Brooke); Marelli Pallotti: Liebe kommt einmal von irgendwo her (Künneke); Stuart Ross and Joe Sargent: The Wedding of the Gigolo (Pala); The Boswell Sisters: Old Yazo (Waller). 2.50, Concert by the Station Orchestra, conducted by Emil Reesen: Overture, Martha (Flotow); Waltz from Hansel and Gretel (Humperdinck); Two Norwegian Dances, No. 1 in D Minor, and No. 2 in A (Grieg); Selection from The Girl of the Golden West (Puccini); Habanera (Chabrier); Overture, Tannered (Rossini); Serenade for Strings (Chaminade); Three Airs from The Nutcracker Ballet (Tchaikovsky); (a) Arab Dance, (b) Chinese Dance, (c) Valse des fleurs; La Zarzuela from La Folia (Lacôme); Marche parisienne (Ganne). 4.40, Exchange and Fish Market Prices. 4.50, Talk: The Use of Gas and Electricity in the Household. 5.20, French Lesson for Beginners. 5.50, Weather Forecast. 6.0, News. 6.15, Time Signal. 6.30, Agricultural Talk. 7.0, Chimes from the Town Hall. 7.5, Quartet in A, Op. 50, for Pianoforte, Violin, Viola and Cello (Kuhlan). 7.30, Topical Talk: Technocracy. 8.0 to 1.0 a.m. (Thursday), Radio Ball for Young People. 8.0, Dance Music by Louis Prell's Dance Band, with Refrains by Victor Cornelius. In the interval at 9.0, News. 10.15, Programme by the Valencia Orchestra, conducted by Aage Juhl-Thomsen. 11.0, Time and Chimes from the Town Hall. 11.5, Dance Music from the Ritz Restaurant. 12 Midnight, Dance Music from Nimb's Restaurant. 1.0 a.m., Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—12.0 Noon, Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Concert of Opera and Operetta Music. 6.0 to 7.0, Programme in English by the I.B.C., C. Danvers Walker, R. Chene, and B. McNab announcing. 6.0, Concert for Portsmouth and Southsea Listeners. Gilbert and Sullivan Programme: Selection from The Mikado; A Regular

Royal Queen, from The Gondoliers; The Moon and I, from The Mikado; Brightly dawns our Wedding Day, from The Mikado; Selection from Iolanthe; Now let the Loyal Lieges, from The Gondoliers; Take a Pair of Sparkling Eyes, from The Gondoliers; Selection from The Pirates of Penzance. 6.30, Song Recital for Isle of Wight Listeners: Good-bye (Tosti); The Song of Songs (Moya); Parted (Tosti); String Ensemble: Cavatina (Ruff); Love Everlasting (Friml); If I'm dreaming; You are my Heart's Delight (Lehár); String Ensemble: Pearl of mine. 7.0, Local News and Popular Music on Gramophone Records. 7.30, Radio Gazette. 8.0, Talk. 8.15, The Listeners' Quarter-of-an-hour and News. 8.30, Concert. 9.0, Bonlogne Evening. 10.0 p.m. till Close Down. Programme in English by the I.B.C. 10.0, Dance Music: I love you so much; The Parade of the Blues; Broken Dreams; A Cottage for Sale; It must be true; Dream Star of Araby; That tiny tea-shop; Dance away the night; Around the corner; My baby just cares for me; Without a song; Harmony Heaven; Wasn't it nice?; Dream Lover; I lost my girl again. 11.0, Organ Recital: Minuet antique (Walling); To a Wild Rose (MacDowell); Waltz Suite, No. 3 (Coleridge-Taylor); Le Cygne (Saint-Saëns); Suite Gothique (Boieldieu). (a) Prière à Notre Dame, (b) Toccatina; Come ye Children; The Storm (Shaw). 11.30, Vocal Concert: My ain folk; Three Fishers went sailing; On the banks of Athlan Water; Orchestra: Mignonette (Friml); Silver threads among the gold; Caller Herrin'; Love's old sweet song; Orchestra: Roses from the South (Strauss). 12 Midnight, Variety Concert: What is home without a mother; Polly; Winnie the woman; My dear old grey-haired Mother; Cornet Solo: I hear you calling me; Feminine Company; The Barber. 12.30 a.m. (Thursday), Vocal Duets: Molly; You're driving me crazy; Ro-ro-rolling along; Duet: Waltz, Lorentina; Shout for happiness; Tears; You're the one I care for; Duet: Overture, Trieste. 1.0, Tango Band: Te fuiste ja ja; La Paloma; Adios Argentina; Tesoro mio; Plegaria; Mama, yo quiero un novio; Madrid; Adios Juventud. 1.30, Concert of Songs: Love is like that; Some as we used to do; Somewhere in Old Wyoming; Orchestra: Potpourri of Melodies; When you're smiling; You'll never realise; Life's desire. 2.0, Dance Music: One night alone with you; Lady Luck; Sweet Jennie Lee; Telling it to the Daisies; The Alpine Milkman; Shout for happiness; My heart is bluer than your eyes; I've got a feeling; Oh, what a night; Bandy Bertha's Birthday; In a quiet corner; Reaching for the Moon; If you forgot; It's unanimous now; If I didn't have you; Sam sat with Sophie on the sofa; When Niccolò plays the Piccolo. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLensburg.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259 metres; 17 kW.; and CASSEL, 245.9 metres; and TRIER, 259.3 metres.—5.25 p.m., Dialogue on sickness insurance. 5.50, Topical Talk. 6.15, Time, Programme Announcements, Weather and Exchange. 6.20, Hans Ileyck discusses his own books. 6.40 to 8.10, See Stuttgart. 8.10, Concert by the Station Orchestra, conducted by Hans Rosbaud, Soloist, Eduard Erdmann (Pianoforte). Overture to Goethe's Faust (Schumann); Introduction and Allegro appassionato in G. Op. 82 (Schumann); Prelude a Papress-midi d'un faune (Debussy); Fantasia for Pianoforte and Orchestra (Debussy). 9.15, Time, News, Weather, and Sports Notes. 9.30, Song Recital by Hilde Crevenna, from the Cycle, Gesänge des späten Jahres (Ernst Krenek); Ballade von den Schiffen; Unter Herbstlaub und Regenschauer; Vor dem Tod; Ballade vom Fest; Liebeslied. 10.0, Concert from Munich. 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 277.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—3.30 p.m., Concert conducted by Otto Ebel von Sosen; Overture, Genoveva (Schumann); Selection from Faust (Gounod); Waltz from the Fifth Symphony (Tchaikovsky); Romantic Suite (Armand-Qua); Military March, Eins, zwei, drei (Hermann Dostal). 4.30 (from Kiel), Talk: The Months of the Year in Folk Customs and Belief. 4.55, Clemens Schmalstich Concert, conducted by Adolf Secker. Soloists: Eva Schlee, Herbert Ernst Groh (Songs) and Heinrich Ritter (Cello). Exotic Dance Scene, Scheherazade; Herbert Ernst Groh: (a) Ich traze von deiner Seele, (b) Bei sinkender Nacht; Die Glocken von St. Cyre; Eva Schlee: (a) Still ist, doch tief, (b) Weissst Du's noch?; Romance; Herbert Ernst Groh: Aus Spaniens Rosen; Reigen from Peterhens Mondfahrt; Herbert

MARCH 8th WEDNESDAY continued

Ernst Groh: Die Sonne hat den Rhein geküsst; Intermezzo, Die launische Yvette. 5.50, Exchange and Market Prices. 6.0, Dialogue: The Skilled Trades under the Capitalist System. 6.25, Weather Report. 6.30, Mozart Concert by the Station Orchestra, conducted by Horst Platen: Overture, Figaro; Aria from Figaro; Three Movements from Eine kleine Nachtmusik; Duet from The Magic Flute; Minuet from The Magic Flute; Minuet from Don Giovanni; Duet from Don Giovanni; German Dances; Overture, The Magic Flute. 7.15, The Jupiter Symphony in C, Op. 551 (Mozart) by the Station Orchestra, conducted by José Eibenschütz. 8.0, News Bulletin. 8.10, Kämpfer ohne Schwert—A Radio Play (Paul Leubsenring), with Music by the Station Chamber Orchestra. 9.10, News Bulletin. 9.30, Dance Music from the Hans Siegler. 10.20 (in an interval), Ice Report.

HANOVER.—See Hamburg.

HEILSBERG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—12.5 p.m., Gramophone Concert of Popular Music. In the interval at 12.20 p.m., News. 1.30, Programme with Gramophone Records, arranged by the Post Office. 2.0, Exchange and Market Prices. 2.20, Talk for the Housewife. 2.30, Programme for Children. 3.0, Talk for Parents. 3.30, Concert by the Little Orag Orchestra, conducted by Eugen Willeken. Prelude to and Sicilienne from Cavalleria rusticana (Mascagni); Erotikon-Suite (Adolf Jensen); Waltz, Klänge aus Polen (Lehár); Two Pieces (Lindemann); (a) Doloresa, (b) Gankler aus dem Orient; Selection from Il Trovatore (Verdi); Overture, Der Lebe-mann (Grünfeld). 4.50, Books on Wireless Technique. 5.15, Market Prices. 5.20, Ice Report. 5.30, Talk on Health. 6.0, Bridge Lesson. 6.30, Dance Music by the Little Orag Orchestra, conducted by Eugen Willeken, and the Ehnur Runde Band. 7.0 (in an interval), News. 8.30, Imaginary Dialogues by Paul Ernst. 9.0, Weather and News. 9.15, Popular Concert on Gramophone Records.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Christian Radio Society (N.C.R.V.).—10.40 a.m., Song and Pianoforte Recital. 11.25, Talk. 11.40, Police Announcements. 11.55, Concert by the Utrecht Municipal Orchestra, conducted by H. v. Gondevoer. Overture, Cyrano de Bergerac (Wagenaar); Eine kleine Nachtmusik (Mozart); Valse de concert (Glazunov). 12.40 p.m., Talk. 12.55, Concert (contd.). The Nutsacker Suite (Tchaikovsky); Will-o-the-Wisp; Minuet; Dance of the Sylphs and Hungarian March from The Damnation of Faust (Berlioz). 1.40, Quartet Concert. 2.25, Talk. 2.40, Choral Concert. 3.25, Talk. 3.40, Concert for Young People. 4.55, Concert of Sacred Music, relayed from St. George's Church, Amersfoort. 5.40, Talk. 5.55, Sacred Music (contd.). 6.40, Talk. 7.10, Police Announcements. 7.25, Religious Information. 7.40, Choral and Orchestral Concert, with Addresses. In the intervals, Talk, and at 9.25, News. 10.10, Orchestral Concert. March, Gott mit uns (Müller); Selection from Romeo and Juliet (Gounod); Violettes (Waldteufel); March, Granada (Wittmann); Durch Nacht zum Licht (Laukien); March, My Regiment (Blankenburg); Officer of the Day (Hall); Psalm; National Anthem. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 5.5 kW.—9.55 a.m., till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 9.55, Concert by the Small Station Orchestra, with Popular Music on Gramophone Records. 1.25 p.m., Interval. 1.40, Talk for Women. 2.40, Programme for Children. 5.10, Organ Recital by J. Jong, with Songs by A. de Booy. March (Schubert); Occhi di Fata (Denza); Cor ingrato (Cardilla); Song: Mattinata (Leoncavallo); Minuet (Boccherini); Serenade (Rombert); The Rosary (Nevin); Song (Rimsky-Korsakov). 5.40, Concert by a Mandoline Orchestra. Indianapolis (Henry-Onivas); Porzellappüppchen (Lübeck); The Pigeon (Vradier); My Pretty Home (Howler). 5.55, Light Music. 6.30, Concert by a Mandoline Orchestra (contd.). Solidaritätslied (Eysler); The Worker's Song (Kok). 6.40, Talk. 7.0, Orchestral Concert. Dance Suite, Op. 24 (Strümer); Selection from The Nothing-doing Bar (Milhaud); Selection from La Création du Monde (Milhaud). 7.40, S.O.S. Announcements. 7.45, Talk. 8.5, Leoncavallo Concert by the Station Orchestra and Soloists: Mlle. H. Ludolph (Soprano) and M. P. Perlot (Baritone). Extracts for Voice and Orchestra from I Pagliacci; Serenade, Selection and Duet from I Pagliacci; Selection from La Bohème. 8.45, Dramatic Programme. 10.30, Light Music on Gramophone Records. 10.40, News. 10.50, Light Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., Talk: Manners and Customs in Canada. 6.20, Announcements and Gramophone Records. 6.30, See Warsaw. 9.20, Dance Music. 10.0, The Letter Box in France.

KAUNAS

1,935 metres; 7 kW.—6.30 p.m., Instrumental Concert: Xylophone Solo: March (Seele); Flute Solo: Waltz (Krautz); Clarinet Solo: Concert Polka (Waldteufel); Cello Solo: Bereuse (Järnefelt); Violin Solo: Serenade (Hubay). 7.10, Talk for Housewives. 7.30, Variety Programme. 7.50, Scientific Talk. 8.10, Concert: Song (Massenet); Slav Dance (Dvorak); Dream of Love (Bece); Descriptive Piece (Siede). 8.40, Sports Notes. 8.50, Concert (contd.). Selection from The Bartered Bride (Smetana); Gnometzug (Blon); Ballet Suite (Popy). 9.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 40 kW.; and HELSINKI, 368.1 metres.—5.15 p.m., Estonian Lesson. 5.40, Programme relayed from Tampere (560 metres). 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert, conducted by Eysoldt. Overture, Schicksalsstunde (Clemens); Selection from Fidelio (Beethoven); Ballet Music from The Queen of Sheba (Goldmark); Prelude (Chopin); Vorherrlichung (Albort); Slav Rhapsody (Friedemann); Waltz, Märchen aus schöner Zeit (Faust); Potpourri, Viribus unitis (Richter). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Economic Notes and Time. 2.50, Programme for Children. 3.20, Review of New German Books. 3.40, Talk: Wireless in Schools. 4.0, Concert by the Station String Quartet and Margarete Dörr (Songs). String Quartet in A, Op. 41, No. 3 (Schumann); Folk Songs (Brahms): (a) Die Sonne scheint nicht mehr, (b) Sehnsucht, (c) Der Überläufer, (d) Vom verwundeten Knaben, (e) Klage, (f) Dort in den Weiden, (g) Vergebliches Ständchen; String Quartet No. 3 in G, Op. 25 (Bethoven). 5.20, Talk: Plants and Animals. 5.45, Weather, Time, Economic Notes, and Sports Results. 6.0, Talk on Social Reform. 6.20, Health Talk. 6.35, Talk: Conscience—its Strength and Weakness. 6.55, News. 7.0, Probable Relay of another Station. 9.5, News and Sports Notes. 9.25, Serenade on Gramophone Records. 9.45, See Munich. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW., and DRESDEN, 319 metres.—11.0 a.m., Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber; Overture, Rump um die Liebe (Oscar Strauss); Suite, Fama und Eifenreigen (Kark); Melodies from Der Evangelinmann (Kienz); Three Pieces for Strings (Krautz): (a) Die sieben Schwaben, (b) Dornröschen und der Prinz, (c) Der Wolf und die Geisslein; Waltz from Der Rastelbinder (Lehar); Selection from The Carnival Fairy (Kahman); Wiegendlied (Pfitrich); So schön wie's einmal war (Ziehrer); Overture, Der Wahrheitsmünd (Flatzbecker); Viennese March (Recktenwald). In an interval at 12 Noon, News, Weather, Snow Report and Time. After the Concert, Exchange Quotations. 1.0 p.m., Programme for the Unemployed. 1.30, Programme to be announced. 2.35, Exchange and Market Prices. 3.0, King Thrushbeard—Play for Children (Hans Peter Schmiedel). 4.0, The Princess and the Dwarf—Children's Opera (Friedrich Frischenschlager). 4.50, Exchange Quotations, Weather and Time. 5.10, Book Review: (a) Brave New World (Aldous Huxley), (b) Ansichten (Alfred Polgar). 5.35, Italian Lesson. 5.55, Programme to be announced. 6.5, Talk: The South-East in the Industrial Policy of Europe. 6.30, Military Band Concert, conducted by Ferdinand Bier. 7.30, Talk on Fenimore Cooper's Books. 8.15, Topical Talk. 8.25, First Symphony in C (Beethoven), by the Leipzig Symphony Orchestra, conducted by Willy Steffen, with Commentary by Dr. Alfred Heuss. 9.25, News Bulletin. 9.45, Programme from Munich. 11.0 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 7 kW.—5.0 to 5.30 p.m., Programme in English by the I.B.C.: Waltz, Roses from the South (Joh. Strauss); I know of two Bright Eyes; Albumblatt (Wagner); Träumerei (Wagner); Lies; Romance; In my Heart; Deep River; Waltz, Wine, Woman and Song (Joh. Strauss). 5.30, Light Music on Gramophone Records. 6.0, Russian Lesson. 6.30, Literary Talk. 7.0, Programme to be announced. 9.0, Time, Weather, and Popular Music on Gramophone Records.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Le Roi d'Ys—Opera in Three Acts (Lalo). After the Opera, News Bulletin.

MADRID

ARANJUEZ (EAQ); 30.43 metres; 20 kW.—10.30 p.m., Popular Music. 10.45, Radio Chronicle. 11.0, Popular Music (contd.). 11.35, Talk. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Literary Talk: Ramon de la Cruz, and Request Gramophone Concert. 7.30, Agricultural Talk and Request Gramophone Concert (contd.). 8.25, News Bulletin and Political Review. 8.30 to 9.30, Interval. 9.30, Chimes, Time Signal, Political Review and Confessions before the Microphone, by M. Sanchez de Palacios, with Amparo Manuel Angel, Amparo Taberner, Galleguito, M. Ligerio and M. Alonso. 10.0, Radio Play submitted in connection with the Radio Play Competition. 11.45, News Bulletin. 12.0 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—5.10 p.m., Light Music on Gramophone Records. 5.15, Talk for Workers. 5.25, Song Recital by L. Maaková. 6.0, See Prague. 6.10, See Brno. 6.25, See Prague. 9.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—4.30 p.m., Concert. 5.30, Symphony Concert, relayed from the Radio Theatre. Part I.—Music by Soviet Women Composers. Part II.—Music by Borodin and Rimsky-Korsakov. 8.0, Talk in English: International Women's Day.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—4.0 p.m., Concert, conducted by Erich Kloss. 5.15, English Lesson. 5.35, Talk for the Business Woman. 5.55, Time, Weather, and Agricultural Notes. 6.5 (from Nürnberg), Orchestral Concert: March, In die Welt (Halter); Sonnenwäude (Vorpha); Grossmütterchen erzählt (Ritter); Intermezzo, Vor der Schmiede (Halter); Song, Sei nicht böss, from Der Obersteiger (Zeller); Karl Boss-Marsch (Schuppe). 6.40, Review of Foreign Affairs. 7.0, Orchestral Concert of Music by Franz Lachner; Conductor: L. K. Mayer; Soloist: Margot Leander (Soprano); Allegretto in E flat, Catarina's Aria; Auf immer getrennt; Overture, Scherzo, Chaconne, and Fugue from Catarina Cornaro from the Seventh Suite in D Minor. 7.45, Prologue and Finale from I Pagliacci—Opera (Leoncavallo), on Gramophone Records. 8.20, Orchestral Concert, conducted by Karl List: Overture, Light Cavalry (Suppé); Waltz (Tchaikovsky); Japanese Carnival (de Basque); Suite, Reminiscenzen au Wien (Joachim-Albort von Preussen); Music for a Punch and Judy Show (Marie); Selection from The Bartered Bride (Smetana); Aquarellen-Walzer (Jos. Strauss); Arabian Dance (Grieg); Viennese Waltz (Benatzky); Petersburger Schlenker-takt (Eilenberg). 9.20, Time, Weather, News, and Sports Notes. 9.45, Concert, conducted by Erich Kloss.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 43.2 metres; and Rjukan, 447.1 metres.—4.0 p.m., Concert of Popular Music, relayed from the Continental Hotel. Conductor: Willy Johansen. 5.0, French Lesson. 5.30, Talk for Boys. 6.0, Announcements, Weather and News. 6.30, Educational Talk. 7.0, Time Signal. 7.1, Concert by the Station Orchestra, conducted by Hugo Kramm. Soloist: Mme. Berit Cleve (Pianoforte). Holberg Suite for Strings (Grieg); Concerto for Pianoforte and Orchestra (I. Eyvind Alnæs); Two Norwegian Dances (Karl Andersen). 8.20, Reading. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Talk on Bridge, relayed from Aalesund (447.1 metres). 9.55, Dance Music on Gramophone Records. 10.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

537.6 metres; 3 kW.—7.0 p.m., Dopolavero Notes, Tourist Talk, Agricultural Notes and Giornale Radio. 7.20, Light Music on Gramophone Records. In the interval at 7.30, Time and Announcements. 7.45, Orchestral Concert; Soloists: A. Gonzaga (Soprano), and A. Saporetto (Violin); Spanish Caprice (Rimsky-Korsakov); Songs: (a) Ogni cosa più spiciata, (b) Waltz, Belta (Pieroni); In the Steppes of Central Asia (Borodin);

MARCH 8th

WEDNESDAY

continued

Violin Solo: Sonata (Porpora); Songs: (a) Il giardino dei baci (Ranzato), (b) Rondo from Act III of I Puritani (Bellini); Andante (Geminiani-Marinuzzi); Violin Solos: (a) Largo (Veracini), (b) Capriccio, No. 28 (Florillo); Overture, Oberon (Weber). In an interval: Talk. 9.0 (approx.), Song Recital. 9.55, News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signal (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals)—5.45 p.m., Le Journal Parlé. 7.20, Weather Report. 7.30, Programme for Children. 8.0, Scientific Talk. 8.15, News Bulletin. 8.20, Orchestral Concert, conducted by Edouard Flament: Suite (Purcell); Violin Solo: Selection from Le Sire de Vergy (Terrasse); Canzonetta (Souhoun); Trauand-Walzer (Fueick). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—5.45 p.m., Journal Parlé. 7.0, Gramophone Concert of Popular Music. 8.0, Tourist Report. 8.5, Talk on Economics. 8.15, Interval. 8.30, Sponsored Concert. 9.0, Interval. 9.10, Concert. 10.10, Dance Music by the Lido Band. 11.0, News.

PARIS

RADIO PARIS; Call CFR; 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd.). 7.45, Gramophone Records: A Summer Night (Peterson-Berger); Estrellita (Ponce Davis); Selection from La Mousmé (Ganne); Roses from the South (Strauss). 8.0, Press Review and Weather. 12 Noon, Educational Talk. 12.15 p.m., Concert by the Station Orchestra: Selection from Le Petit Duc (Lecocq). 12.30, Organ Recital relayed from Gannont Palace: Melody (Woods); Selection from The Daughter of the Regiment (Donizetti); What would you do? (Whiting). 1.0, Exchange, News and Weather. 1.5, Concert by the Radio Orchestra (cont'd.): Selection from Madame Chrysanthème (Messager-Delsaux); Selection from J'adoro ça (Christine); Selection from The Count of Luxembourg (Lehar); Selection from La fiancée du Scaphandrier (Terrasse); Selection from L'étoile del'Andalousie (Tavan); 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.40, German Lesson. 7.0, Medical Talk. 7.20, Concert: A Gipsy Fête (Heyckes); In the Gardens of Love (Hartung); Selection from Monsieur de Pourceaugnac (Lully-Vidal); Sérénade lointaine (Van Parys); Cécile Idylle (Trémiscent); Dance and Flirt (Sudessa); Sérénade à Pierrette (Szulc); Prelude (Silvay); Minuet (Schubert). 7.45, Commercial Prices and News. 8.0, Reading. 8.30, News and Weather. 8.40, Fashion Review. 8.45, Kinderszenen, for Pianoforte (Schumann), on Gramophone Records. 9.0, Beethoven Concert by the Lamoureux Concert Society, relayed from the Salle Gaveau. Conductor: Henri Rabaud. Soloists: Pierre Maillard-Vergier (Pianoforte) and Germaine Hoerner (Songs). The Eroica Symphony; Concerto in G for Pianoforte and Orchestra; Scene and Aria from Ah, Perillo; Overture, Leonora, No. 3. In the interval at 9.15, Press Review and Weather.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Work-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Pianoforte Interlude. 9.53, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, KDKA Orchestra. 10.30, The Singing Lady. 10.45, Little Orphan Annie, from New York. 11.0, Booth Tarkington's Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45 to 3.15 a.m. (Thursday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m. (Thursday), Carson Robinson and his Bantrol Buckaroos. 12.30, Five Star Theatres—Dramatisation of Short Stories. 1.0, Eno Clinic Club. 1.30, Time Signal and Harriett Lee and her Leaders. 1.45, Country Doctor. 2.0, Adventures of Sherlock Holmes. 2.30, Woodbury Programme with Marton Downey and Donald Novis. 3.0, D. W. Griffith's Hollywood. 3.15, Around the Cracker Barrel. 3.30, Bridge School of the Air by E. Hall Downes. 3.45, Bradley Kincaid. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Smith Fallow and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, College Inn Orchestra, from New York. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by Otakar Jeremias. Soloist: P. Danel (Violin). Overture, The Hussite Bride (Sobor); Fantasia for Violin and Orchestra, Op. 51 (Provažnik); Selection from Rusalka (Dvorák). 4.0, Medical Talk for Mothers. 4.10, Programme for Women. 5.5, Agricultural Programme from New York. 5.30, Time Signal and Good-night.

German. 5.30, German Transmission: Talk for Workers: The Fiftieth Anniversary of the Death of Karl Marx. 6.0, Chimes. 6.1, News Bulletin. 6.10, See Brno. 6.25, Programme to be announced. 6.55, Talk on the following Transmission: 7.5, Concert by the Czech Philharmonic Orchestra and the Philharmonic Choir, conducted by Karel Jirák: Rhapsody, Taras Bulba (Janacek); Symphonic Poem, Op. 34, Maturity (Suk). In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.1, News Bulletin. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS; 403 metres; 25 kW; LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.0 p.m. (from Lausanne), Programme for Children. 6.0 (from Geneva), Weather, News and Announcements. 6.30 (from Lausanne), Talk on Potato-growing. 7.0 (from Geneva), Talk: The Opening of the Automobile Show-Rooms. 7.15 (from Geneva), Concert of Chamber Music by the Station Quartet. 8.0, Organ Recital, relayed from St. Nicolas Cathedral, Fribourg. 8.20, News Bulletin and Weather Forecast. 8.30, Le Roi d'Ys—Opera in Three Acts (Lalo), relayed from Paris. 11.0 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes and News. 9.30, Reading. 10.0, Violin Solos by Thorarinn Gudmundsson, followed by Arias and Eine kleine Nachtmusik (Mozart) on Gramophone Records.

RIGA

525 metres; 15 kW.—6.0 p.m., Weather. 6.5, Orchestral Concert, conducted by Prof. Medins. 7.0, News Bulletin. 7.20, Song Recital. 7.40, Concert of Popular Music. In the interval at 8.0, Weather and News. 8.30, Concert of Light Music. 9.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 2RO, 25.4 metres.—7.0 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Orchestral Concert. Santiago (Nissim); Mamma (Canducci); Le ragazze scozzesi (Cattolica); Selection from A Waltz Dream (O. Strauss); Come with me (Henderson); Pastorale montana (Ranzato); Pianoforte Solo, Piccolo (Pete Baxter); Dance of the Hours from La Gioconda (Ponchielli); Melody (Fischer); Vesuviana (Marchetti). In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30 to 5.30, Vocal and Instrumental Concert. Soloist: Renata Pellegrino (Violin). Violin Solos: (a) Romance (Svendson). (b) Caprice viennois (Kreisler). Soprano Solos: (a) Aria from The Daughter of the Regiment (Donizetti), (b) Air from Cinq Mars (Gounod). Violin Solos: (a) Canzonetta (d'Ambrosio), (b) Capitan Fracassa (Castellonov-Tedesco), Soprano Solos: (a) Strimpellata (Tarenghi), (b) Aria from La contessa d'Amalfi (Petrella). Violin Solo: Danse tzigane (Nachez). 6.10 (Naples), Shipping and Sports Notes. 6.15, Agricultural and Dopolavoro Notes. 6.20, Giornale Radio. 7.0, Time, Announcements, and Light Music on Gramophone Records. 7.15, Medical Talk. 7.30, Sports Notes and Tourist Report. 7.45, Relay from a Theatre. In the interval: Poems by Giovanna Scotta, Announcements, and News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—7.30 p.m. to 12.15 a.m. (Thursday), New York Relay. 7.30, Westminster Choir. 8.0, Two Seats in the Balcony. 12 Midnight, Mischka Weisbrod (Viocny). 12.15 a.m., Stock Reports. 12.30 to 1.0, New York Relay. 12.30, Van and Don—Comedy Team. 12.45, The Goldbergs—Comedy Sketch. 1.0, The Royal Vagabonds with Ken Murray. 1.30, The Shadow—Mystery Drama. 2.0, Fictal Club Programme. 2.15, Three Shades of Blue—Male Trio. 2.30, Supper Club Orchestra and Programme Resume.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres, 60 kW.; BASEL, 244.1 metres; and BERNE, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Concert of Gramophone Records by Famous Artists: Mendelin, Kreisler, Bohlen, Chaliapin, Mengelberg and Firtwangler. 12.35 to 12.45 p.m., Weather and Exchange. 2.30, Light Music on Gramophone Records. 3.30 (from Berne), Programme for Children.

4.0, Spanish Folk Music on Gramophone records. 4.30 to 4.35, Weather. 5.30 (from Zürich), Review of Books for Children. 6.0, Time, Weather and Market Prices. 6.15 (from Zürich), English Conversation Lesson. 6.45 (from Berne), Symphony Concert by the Berne Municipal Orchestra, conducted by Dr. Albert Nef; Soloist, Ernst Schläfli; Music by Schubert, Pätzner and Mendelssohn. 8.0 (from Berne), Bedtime Stories. 8.30, Weather and News. 8.40 (from Berne), The Little Match Girl, Fairy Play (Lautner), after the Story by Hans Andersen, Music by Luc Balner, the Composer conducting. 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—12 Noon, Broadcast for Schools. 4.5 p.m., Peasant Programme, relayed from Boden. 4.30, Reading. 5.0, Variety Music on Gramophone Records. 5.55, Talk from Uppsala, 453.2 metres. 6.15, Weather and News. 6.30, Talk. 7.0, Violin Recital by Lottie Andreasson. Tempo di minuetto (Pugnani-Kreisler); Air (Porpora); Arieta española (Mandó); Introduction and Presto (Senaillé-Manón). 7.15, The Whiteclad Boy Comedy in Three Acts (Lemoine Robinson). 8.45, Weather and News. 9.0, Dance Music. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert: Suite, Impressions d'Italie (Charpentier); Petite Suite (Debussy); Danse Slave and Fête polonaise from Le roi malgre lui (Chabrier); Scottish March (Debussy). 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Selection from La Mascotte—Operetta (Audran), on Gramophone Records. 2.0 to 4.45, Interval. 4.45, Talk in German on Electricity in the House. 5.0, Concert in Honour of M. T. G. Masaryk, President of the Czechoslovak Republic. The Station Orchestra, conducted by M. Villers, and the Czechoslovak Students' Choir from Strasbourg University. Soloist: M. R. Scheuch (Soprano). Introductory Talk by M. Jan Laska (Czechoslovak Consul at Strasbourg). 6.0, Trio Concert of Variety Music, relayed from Lille (265.4 metres). 7.0, Sociological Talk: Children and the Cinema. 7.15, Popular Music on Gramophone Records. 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.20, Lottery Results. 8.30, Orchestral Concert, conducted by Paul Bastide, relayed from the Palais des Fêtes; Symphony in E Minor, No. 5 (Tchaikovsky); La grande certitude (Monfouillard); Le Triptyque (Le Flem). 10.30, Popular Music on Gramophone Records. 11.0, Concert by the Jean Clergue Quintet, relayed from Radio Coloniale (Paris) (25.63 metres). 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—11.0 a.m. (from Freiburg), Concert by the Freiburg Concert Orchestra, conducted by R. Fried; Soloist: Nell Uter (Violin); Overture and Suite from Rodrigo (Handel); Concerto in A Minor for Violin (Vioti); Rossini Fantasia, Rossiniana (Respighi); Overture, Zaida (Mozart); Selection from My Country (Smetana); Humoresque (Dvořák); Jota from the Suite populaire espagnole (Fallay); Evening Music (Foerster); Music from The Miracle (Humperdinck). 12.15 p.m., Time, News, Weather, and Programme Announcements. 12.30, Concert from Langenberg. 1.0, Concert, arranged by the Post Office. 3.0, Programme for Children, relayed from Karlsruhe. 4.0, See Munich. 5.5, Time, Weather, and Agricultural Notes. 5.15, Talk: The Great Memorials and Monuments of Württemberg. 5.40, Talk: Workers' Testimonials and other Papers. 6.5, Time, News, and Produce Market Report. 6.15, Recital of Hermann Löns Songs set to Music by Franz Albert Gabriel; Soloist: Bruno Müller (Baritone); Schäferlied; Rose im Schnee; Vergissmeinnicht Der fern Stern; Herzblatt am Lindenbaum; Versehnt; Das Vogelwästel; Der Strömer. 6.40, Violin Recital: Sonata, II Trillo del Diavolo (Tartini-Kreisler); Adagio (Franz Ries); Bohemian Dance (Weinberger); Romanian Folk Dances (Beia Bartok). 7.10, Unfamiliar Europe—Ireland, the Emerald Isle—Programme arranged by Josef Eberle and Karl Köstlin on Gramophone Records). 8.10, See Frankfurt. 9.15, Time, News, Weather, and Programme Announcements. 9.45, Concert from Munich. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, La Boite à jonionux (Debussy), by a Symphony Orchestra. 6.30, Opera Music: Selection from: (a) The Tales of Hoffmann (Offenbach), (b) The Damnation of Faust (Berlioz), (c) Faust (Gounod); Hérodiate (Massenet). 6.50,

Talk. 7.15, Racing Results, Market Prices, and News Bulletin. 7.25, Local News. 7.30, Light Music. 7.45, Orchestral Music: Selection from: (a) Le Grand Mogol (Andran), (b) Les Cloches de Corneville (Planquette), (c) Elle est à vous (Yvain). 8.0, Airs from Opera: (a) Carmen (Bizet), (b) Rigoletto (Verdi), (c) Romeo and Juliet (Gounod). 8.15, Concert by a Viennese Orchestra. 8.45, Melodies from Sound Films. 9.0, Concert, arranged by the Philharmonic Society; Conductor: M. Massonnier. In the interval, Light Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco: Cello Solo: Spring Song (Mendelssohn); Song of the Volga Boatmen; Selection from The Duchess of Chicago (Kálmán); Air from Mignon (Thomas); Dreamland (Fueick). 11.0, Instrumental Solos. 11.15, Orchestral Concert. 11.30 to 12 Midnight, Programme in English by the I.B.C. 11.30, Military Band: National Emblem March; Serenade; Gaiety Echoes; King Cotton March; Cupid's Army; Waltz, The Blue Danube (Joh. Strauss); March, Old Comrades (Teike). 11.57, I.B.C. Goodnight Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Thursday), Vocal Tangos. 12.15, Classical Music: Quartet in G Minor (Debussy); Variations on a Theme for Two Clarinets (Beethoven). 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.0 to 6.0 p.m., See Turin. 6.0, Variety Music on Gramophone Records. 6.20, See Turin. 6.35, Orchestral Music from the Café Dante. 7.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—4.0 to 5.0 p.m., Tenor and Soprano Song Recital. 5.35, Giornale Radio, Dopolavoro and Agricultural Notes. 6.0, Light Music on Gramophone Records. 6.20, Giornale Radio. 6.30, Time, Announcements, Tourist Report, and Variety Music on Gramophone Records. 7.0, Giornale Radio and Weather. 7.15, Medical Talk. 7.30, A Comedy in Three Acts, followed by Light Orchestral Music. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in Spanish. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—3.50 p.m., Concert by the Jsy Geiger Orchestra. Selection from The Mask (Hubay); Waltz Fantasia, Sehnsucht (Weinberger); Selection from Hansel and Gretel (Humperdinck); Go on (Rawicz); Dancing Stars (Rawicz); Ballad, Tom the Rhymer (Loewy); Song from The Little Dutch Girl (Kálmán); Song, Ich bin ein Wiener Kind, from Der Gastelbinder (Lehar); Song, Vera Violetta (Eysler); Intermzzo, Wiener Blumen (Kreuzberger); Song, Du wirst für mich die Frau gewesen, from Frühlingsstürme (Weinberger); Popular Songs, 1931-32 (Geiger). 5.5, Talk: Protecting the Skin from Injuries caused by Sport. 5.30, Talk for Workers. 5.55, Talk on Great Men of History: The Emperor Charles V. 6.20, Time, Weather and Programme Announcements. 6.30, Hammele Matterns Himmelfahrt—Dream Poem in Two Parts (Gerhart Hauptmann), recited by Karl Kraus, with Musical Accompaniment by Franz Mitter. 7.45, Concert of Light Music by the Josef Holzer Orchestra and the Bohème Quartet. 9.15, Report on the Austrian Musical Festival. 9.25, News, Weather and Announcements. 9.40, Instrumental Concert, relayed from the Krantz-Ambassador Hotel, Gustav Macho (Violin), Hans Quirquez (Cello), and Eugen Billig and Gustl Heintze (Pianoforte).

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.20 p.m., Weather Report. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.30, Boy Scout's Report. 2.35, Programme for Children. 3.0, Popular Music on Gramophone Records. 3.20, Educational Talk: The Crusades. 3.40, Talk: The Part Played by Poland in the Brzezany Treaties of 1918. 4.0, Gramophone Concert: Songs by Mue. Jeritza (Soprano) and Enrico Caruso (Tenor); In the interval: Announcements. 4.40, Talk for Workers. 4.55, Programme Announcements. 5.0, Talk on Polish Literature. 5.20, News. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Report. 6.30, Literary Talk: Post-War Czechoslovakian Novels. 6.45, Radio Journal. 7.0, See Berlin (Witzleben). In the interval: Sports Notes and Radio Journal. 9.0, Topical Talk. 9.15, Dance Music. 9.40, Talk in Esperanto on General Pilsudsky, relayed from Cracow, 312.8 metres. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music.

ZÜRICH.—See Schweizerischer Landesseender.

ATHLONE

413 metres, 60 kW.; and **CORK**, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.10, Dublin Cattle Market Report. 7.20, News. 7.30, Time Signal. 7.31, French Lesson. 7.42, Literary and Dramatic Talk. 8.0, The Station Orchestra. 8.40, Soprano Solos by Josephine Hennessy. 8.55, Pianoforte Solos by Arthur Dunt. 9.15, Dr. Annie Patterson in a Programme of her own Compositions. 9.45, Song Recital by R. Harris. 10.0, Gramophone Concert of Light Music. 10.30, Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. Talk in the interval. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations and Educational Talk in Catalan. 8.0, Popular Music on Gramophone Records, and News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, and Market Prices. 9.5, An Opera relayed from the Gran Teatro del Liceo. 11.0 (in an interval), News Bulletin.

BARI

278 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Talk, and Dopolavoro Notes. 7.20, Giornale Radio and News. 7.30, Time Signal and Announcements. 7.35 (approx.), Military Band Concert, conducted by M. Salvatore Rubino. Overture, Tannhäuser (Wagner); Extracts from Acts I and II of Adrienne Lecouvreur (Cilea); Melody from Act III of Don Carlos (Verdi); Selection from Marcella (Giordano); Suite, Scene calabrese (de Nardis); Military March (Schubert). In the interval: Art Notes. 9.30, Popular Music on Gramophone Records. 9.55, News Bulletin.

BASLE.—See *Schweizerischer Landessender*.

BELGRADE

430.4 metres; 2.8 kW.—4.0 p.m., Talk. 5.26, Time and Programme Announcements. 5.30, Dialogue in French. 6.0, Orchestral Concert: Overture, Lysistrata (Lincaé); Yugoslav Rhapsody No. 3 (Dominis); Melody (Tijardovic); Romantic Suite: A Day in Venice (Nevin). 7.0, Programme relayed from Zagreb (307 metres). 9.0, News. 9.5, Cigány Music, relayed from the Potrosacka Zadruga Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert of Classical Music from Berlin (Witzleben). 2.0, Musical Programme for Children. 2.30, Weather and Exchange. 2.45, Reading (Rudolf Huch). 3.0, Two Talks for Women. 3.30, Concert from Berlin (Witzleben). 4.10, Talk: The Loss of the East Mark. 4.30, Pianoforte Recital: Album Sonata for Franz Mathilde Wesendonck (Wagner); Ankunft bei den Schwarzen Schwänen (Wagner); Turkish Rondo (Bizet); Pictures of the Rhine (Bizet). 5.0, Advanced Shortland Lesson. 5.30, Two Sonatas for 'Cello: Adagio from the Solo Sonata (Zoltan Kodaly); Solo Sonata (Paul Hermann). 5.55, Weather and Announcements. 6.0, German Lesson for Germans. 6.30, A Poem. 6.35, Talk: Can the Fishing Industry survive the Crisis? 7.0, Concert of Light Music by the Bernard Derksen Band: Arias in Old Style (Brog); Poem (Eibich); Verborgtheit (Wolf); Waltz, Weener Herzen (Derksen); Wiegenlied (Mozart); Cradle Song (Gretchenau); Sérénade mélancolique (Tchaikovsky); Waltz from the Second Sérénade (Volkman); A Wedding Day on Trolldaugen (Grieg); Selection from Barfisselle (Heuberger). 7.30, See Berlin (Witzleben). 8.30, See Stuttgart. 9.0, Weather, News and Sports Notes. 9.45, Weather Report for Shipping. 10.0 (approx.), Concert and Report of the Six Days' Races from Berlin (Witzleben). 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—3.30 p.m., String Quartet Concert: String Quartet (Windsperger); String Quartet in D (Mozart). 4.25, Talk on Young Nations. 4.45, Sports Talk: Handball. 5.5, Orchestral Concert relayed from the Café Corso. 5.30, Josef Buehner reads from his Prose. 5.45, Talk on Magdeburg. 5.55, The Witzleben Station informs its Listeners. . . 6.0, Topical Talk. 6.15, A Rehearsal in the Play House—a Radio Report. 6.45, Announcement. 6.50, Mass in G (Schubert) by the Station Choir and Orchestra, conducted by Maximilian Albrecht. Soloists: Mary Wurm-Meisener (Soprano), Heinz Marten (Tenor), Georg Höliger (Baritone), and Hans Georg Görner (Organ). 7.20, Dance Music, with Margit Suchy (Soprano). 9.0, Weather, News, and Sports Notes. 9.20, Song Recital in Aid of the Berlin Winter Relief Fund, followed by Concert of Light Music relayed from the Central Hotel Burgund. 11.0 (also relayed by Zeesen on 31.33 metres), Song Recital by Karl Erb: Three Petrarch Sonnets (Liszt); Songs (Schubert): (a) Wehmüt, (b) An die Leyer, (c) Totengräbers Heimweh, (d) Das Lied im Grünen.

BERNE.—See *Schweizerischer Landessender*.

BEROMÜNSTER.—See *Schweizerischer Landessender*.

BODEN.—See *Stockholm*.

BODO.—See *Oslo*.

THURSDAY

MARCH THE NINTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL

"Leaders in Other Lands," Vernon Bartlett. "The Fall of the House of Usher," a play, after E. A. Poe, by Peter Creswell and Barbara Burnham. Concert from Queen's College, Birmingham. Royal Philharmonic Society's concert, from Queen's Hall. From the operas: Orchestral programme. Symphony concert from the Town Hall, Birmingham. Hallé concert, from the Free Trade Hall, Manchester.

LONDON

REGIONAL

MIDLAND

REGIONAL

NORTH

REGIONAL

SCOTTISH

REGIONAL

BELFAST

"Early Motoring Days in Scotland," J. Inglis Ker. Reid orchestral concert.

"In Lighter Vein," orchestral concert.

ABROAD

BERO-

MUNSTER

8.40 p.m. Old Swiss Songs to the Spinnet, by Hans Visscher van Gansbeek (tenor) and Martha Hamm-Stoecklin (spinnet).

HEILSBERG

8.10 p.m. "Masters of their Crafts": Famous soloists on gramophone records.

HUIZEN

(announced

Hilversum)

LANGENBERG

7.55 p.m. Programme by the Concertgebouw Orchestra, Amsterdam, conducted by Pierre Milhaud.

LEIPZIG

7 p.m. "In the Moonlight," an orchestral and choral concert.

ROME

6.30 p.m. Concert of Folk Music (zithers, mandolins, guitars, etc.).

STUTTGART

WARSAW

7.45 p.m. Symphony concert conducted by Alceo Tomi.

8.30 p.m. The Jupiter Symphony (Mozart).

7 p.m. Concert of Ukrainian music, by the Lysenko National Choir.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News Bulletin and Exchange Quotations. 7.40, Talk arranged by the International Labour Bureau. 7.55, Lottery and Charade Results. 8.0, Talk on Wines. 8.15, News Bulletin. 8.30, Monsieur Alphonse—Comedy in Three Acts (A. Dumas, fils).

BRATISLAVA

279 metres; 14 kW.—5.25 p.m., Light Music on Gramophone Records. 5.45, Talk on Tariffs. 6.0, See Prague. 6.10, Talk: Creative Art. 6.25, See Prague. 6.40, Song Recital. 7.30, See Brno. 9.0, See Prague. 9.15, Dance Music relayed from the Carlton Hotel. 10.0 (approx.), Close Down.

BREMEN.—See *Hamburg*.

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ**, 253 metres.—12.15 p.m., Orchestral Concert, conducted by Franz Marszałek: Selection from Countess Maritza (Kálmán); Rhythmic Fox-trot (Hofmann); Intermezzo from Glückliche Reise (Künneke). 12.45, Time, Weather, News and Exchange. 1.5, Gramophone Concert of Opera Music: Selection from The Bird Fancier (Zeller); Aria from Der Bettelstudent (Müllacker); Selection from The Mikado (Sullivan); Waltz, Du und Du, from Die Fledermaus (Joh. Strauss); Mein Herr Marquis, from Die Fledermaus (Joh. Strauss); March from The Gipsy Baron (Joh. Strauss). 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Talk: Suggestions for Winter Travel in the Silesian Mountains. 2.50, Review of Silesian Magazines. 3.15, Talk for Children. 3.45, Concert from Heilsberg. 4.30, Agricultural Prices. 4.35, "Cello Recital of Brahms Music by Fritz Bimowsky: Allegretto quasi Menuetto from the Sonata in E Minor, Op. 38; Ballad, Op. 10; Intermezzo, Op. 117; Sapphic Ode; Hungarian Dance No. 18. 5.0, Talk on Music. 5.20, Topical Talk. 5.35, Talk for Workers. 6.0, Talk: Teaching and Learning Art. 6.30, Weather and Market Prices. 6.35, Popular Concert by the Station Orchestra. Soloist: Bruno Jagielski (Tenor). 7.20, See Berlin (Witzleben). 9.0, Time, Weather, News, Sports Notes and Programme Announcements. 9.30, Esperanto Lesson. 9.40, Sailors' Yarns from Polar Seas by Dr. Amadeus Grolmann. 10.0 (approx.), Close Down.

BRNO

342 metres; 35 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by Jan Janota. Soloists: Zdenka Pokorna (Songs), and J. Polásek (Violin). 4.10, Talk for Young People. 4.20, Programme for Children. 4.50, Talk for Students. 5.0, Literary Review. 5.15, See Prague. 5.25,

German Transmission: News, Book Review and Talk. 6.0, See Prague. 6.25, Chromatic Accordion Solos. 6.40, See Bratislava. 7.30, On ne badine pas avec l'amour—Play (Alfred de Musset), translated by Ivaňek, with Music by F. Suchy. In the intervals, Old French Music. 9.0, See Prague. 9.15, See Bratislava. 10.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Gramophone Concert: Ballet Égyptien (Luigini); Ce dique vous dira (Borel-Clerc); Burlesque (Marcel Poot); A Little Nest (Bill Buddie); Hungarian Dances Nos. 1, 2, 5, 6, 7, and 8 (Brahms); Le Pas des écharpes (Chaminade); Selection from Marietta (Oscar Straus); Dances from Othello (Verdi). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Little Radio Orchestra, conducted by M. Leemans: Military March (Schubert); Ballet Music from Henry VIII (Saint-Saëns); 'Cello Solo: La Cinquintaine (Gabriel-Marie); Selection from The Three Musketeers (Friml); Graziella (de Tayo); Selection from a Sound Film (Heymann). 5.0, Gramophone Records: Cardas (Grossman); Four Airs from Die Dreigroschenoper (Kurt Weill); Frühlingsstimmen (Joh. Strauss); Tatianna (Lindsay); Alsatian Peasant Dances Nos. 1 and 2 (Merkling). 5.30, Literary Programme for Young People. 6.0, Medical Talk. 6.15, Escapes (Dert), on Gramophone Records. 6.30, Orchestral Concert of Light Music, conducted by M. Leemans. 7.15, Review for Workers. 7.30, Sports Review. 8.0, Orchestral Concert conducted by M. Franz André. Soloist: M. Kerschaver (Tenor). Overture, Piccolino (Guiraud); Three Dances from Nell Gwynn (German); Histoires (Dert); Songs: (a) Matineta (Leonevallo), (b) Chant Hindou (Bemberg), (c) Ständchen (Schubert), (d) Der Haidau (Schumann); Ballet russe (Luigini); Cardas (Michiels). 8.45, Talk: The Reduction of the Working Day in the Mines. 9.0, Concert by the Radio Orchestra. Soloist: M. Lory (Accordion). 10.0, Le Journal Parlé. 10.10, Gramophone Concert, Part I: Old and Modern Dances; Part II: Symphony Music. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW.— Programme in Flemish. 12 Noon, Concert by the Small Station Orchestra, conducted by P. Leemans: Potpourri, From Seville to Triana (Luceschi); Selection from Hérolinde (Massenet); Rhapsody in Blue for Two Pianofortes and Orchestra (Gershwin); Song without Words (Mendelssohn); Selection from Countess Maritza (Kálmán); Tango (Albeniz); Marche chinoise (Demaë). 1.0 p.m., Journal Parlé. 1.10, Gramophone Concert, Part I: Sacred Music. Part II: Light Music. 5.0, Concert by the Station Orchestra: Marche française (Saint-Saëns); Potpourri of Popular Songs (Schneider); Down South (Myddleton); Selection from Show Boat (Kern). 5.45, Programme for Children. 6.30, Gramophone Concert:

Overture, Egmont (Beethoven); Spanish Caprice (Rimsky-Korsakov); Ballet Music from Céphale et Procris (Grétry); Kleiuer Wienermarsch (Kreisler). 7.15, Talk: Catholic Women's Organisations. 7.30, Journal Parlé. 8.0, Concert of Flemish Music by the Station Symphony Orchestra and Two Choirs; Conductor, Arthur Meulemans; Soloists: M. Toutenel (Baritone) and M. Steylaerts (Violin); Fantasia on Two Flemish Airs (De Boeck); Romance for Violin and Orchestra (Alpaerts); Four Old Flemish Songs by a Mixed Choir; Symphonic Poem, L'Éclair, for Baritone, Mixed Choir, and Orchestra (Benoit). 8.50, Catholic Review. 9.15, Concert (cont'd.): Canadian Fantasia (Gilson); Waltz, Habanera (Maes); Barcarolle (Tinelli); Van Veldeke Cantata (Meulemans); K.V.R.O. War Song (Meulemans); De Vlaamsche Leeuw (Miry). 9.55, Evening Prayer. 10.0, Journal Parlé. 10.10, Gramophone Concert: Overture, Les Saltimbanques (Ganne); Aubade (Lyschakov); Waltz, No. 50, Lulu ('Claude Valby); A Week-end in the Land of Cocksaigne (Armandola); Arab March (Ganne); Selection from The Gipsy Baron (Joh. Strauss); Ständchen (Hofmann); Waltz from Der Fremdenführer (Zehrer); Potpourri, Metropolis (Brinkman); Air from The Merry Widow (Lehar); Serenade No. 2 (Toselli); March (Fueck). 11.0 (approx.), Close Down.

BUDAPEST

550 metres; 18.5 kW.— Programme also relayed on 840 metres from 5.45 to 11.0 p.m. 4.30 p.m., Concert by the Imre Magyari Cigány Band. 5.15, Programme by Johann Urbanyi. 5.45, Pianoforte Recital by Iwan Engel: Fantasia in C Minor (Mozart); Rondo in G, Op. 21, No. 2 (Beethoven); Sonata in A Flat, Op. 110 (Beethoven); Nocturne in C Minor (Chopin); Mazurka (Chopin). 6.30, Review of Foreign Politics. 6.45, Cigány Music—Tragedy in Five Acts (Shakespeare) arranged for Radio. 8.30, News. 8.40, Orchestral Concert of Light Music. 9.30, Weather. 10.15, Concert by a Cigány Band relayed from the Café Spolarich. 11.0 (approx.), Close Down.

CASSEL.—See *Frankfurt*.

COPENHAGEN

281 metres, 0.75 kW.; and **KALUNDBORG**, 1,153 metres, 7.5 kW.—11.0 a.m., Time and Chimes from the Town Hall. 11.5, String Ensemble Concert, relayed from the Hotel d'Angleterre. 1.0 to 2.0 p.m., Interval. 2.0, Recital of Danish Songs by Grethe Posselt; Songs (Rosenfeld): (a) Ak, I skåne stumme Engle, (b) Hver Sommerdag jeg sytte vil; Hvis du har varme Tanker (Borresen); Songs (Emma): (a) Og er der et eneste Herte kun, (b) Folk Song; Sving dig kun Lærke (Meyer). 2.20, Orchestral Concert from the Vivax Restaurant. 4.0, Programme for Boys. 4.40, Exchange and Fish Market. 5.50, Talk on Aerofronics. 5.20, English Lesson. 5.50, Weather Forecast. 6.0, News. 6.15, Time Signal. 6.16, Talk: The Dutch Church. 6.45, Danish Lesson. 7.10, Concert by the Station Symphony Orchestra, relayed from the State Broadcasting Building; Conductor, Nikolaus Malko; Soloist, Emanuel Esmernann ('Cello); Concerto grosso No. 10 in D Minor (Handel); Concerto in D, Op. 101, for 'Cello and Orchestra (Haydn). Ten Minutes' Interval. Introduction and Waltz from The Swan Lake (Tchaikovsky); Selection from the Ballet Ruses d'amour (Glazounov); Polka from The Sleeping Beauty (Tchaikovsky); 'Cello Solos (Glazounov): (a) Chant du Ménestrel, (b) Spanish Serenade; Selection from Petronushka (Stravinsky). 9.5, News. 9.30, Reading. 9.50, Dance Music from the Ritz Restaurant. In the interval at 11.0, Time and Chimes. 11.30 (approx.), Close Down.

CORK.—See *Athlone*.

DANZIG.—See *Heilsberg*.

DRESDEN.—See *Leipzig*.

FECAMP

225.9 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Programme for Children. 6.0 to 7.0, Programme in English by the I.B.C.: C. Danvers Walker, R. Chene and B. McNabb announcing. 6.0, Orchestral Concert for Hastings Listeners: Waltz, The Blue Danube (Joh. Strauss); The Wedding of the Rose (Jessel); Columbine (Garland); Down in the Forest (London Road); At the Convent Gate (Johnson); Ich liebe dich (Grieg); In Pierrette's Garden (Brookes); Invitation to the Waltz (Weber). 6.30, Military Band Concert for Eastbourne Listeners: La Grive (Cole); Viscount Nelson (Zehle); Ballad Memories (arr. Baynes); Pomp and Circumstance (Elgar); A Frangosa (Costa); New Colonial March (Hall); Selection from The Country Girl (Monckton); The Thunderer (Souza). 7.0, Local News and Popular Music on Gramophone Records. 7.30, Radio Gazette. 8.0, The Listeners Half-Hour and News Bulletin. 8.30, Concert, relayed from the Town Hall, Rouen. 10.0 p.m. till Close Down, Programme in English by the I.B.C.: 10.0, Dance Music: For the Love of Mice; Come and have a Cuddle on the Common; This is the Day of Days; On a Cold and Frosty Morning; Honey-moon Love; Speed-boat Bill; Just Once for all Time; The Pagan Serenade; Hold my Hand; Roll on Mississippi;

MARCH 9th

THURSDAY

continued

I've got a Feeling; The Lights of Paris; Miracle Melodies Selection; The Same as We Used to Do; Blaze Away; Sittin' on a Rainbow. 11.0, Musical Comedy Programme: Selection from The Maid of the Mountains; Song: Live for To-day; Duet: Farewell; Three Songs: (a) My Life is Love, (b) A Bachelor Gay, (c) Love Will Find a Way; Duet: A Paradise for Two. 11.30, Concert of Songs: Songs of Other Days; River stay 'way from my Door; Shoo the Hoodoo away; The Empire Parade; Song Memories; There's Happiness over the Hill; Going Home; Around the Corner. 12 Midnight, Variety Concert: Tan MacTartan; The Polar Bear; A Yodelling Lullaby; Where the Rainbows Rest; The Gondolier; The World snaps its Fingers; Ha, ha; Thinking of You; When Baby cries for the Moon. 12.30 a.m. (Friday), Concert of Songs: The First weekend in June; I'm in the Market for You; Sweet Temptation; Orchestra: My Sunshine is You; I fell for You; Just like in a Story Book; Who Cares?; Good-night Sweetheart. 1.0, Hawaiian Duets: Alma Mia; Bone Festa; Hawaiian Twilight; Sing something Simple; Kamshamola; Three Little Words. 1.30, Concert of Songs: Whoopie Medley; Exactly like You; I like to do Things for You; My Lover; Monte Carlo Medley; More than you know; Swingin' in a Hammock; On the Sunny Side of the Street. 2.0, Dance Music; Love is the Sweetest Thing; Good Morning, Mr. Sun; I'll do my best to make you happy; The Voice in the Old Village Choir; Smile and sing your cares away; The turning of the Tide; Where the Blue of the Night meets the Gold of the Day; Day by Day; Was that the Human thing to do?; Good-night Vienna; She didn't say Yes; Five Minutes to Twelve; Snap your Fingers, clap your Hands; Somebody Loves You; Sungled on Your Shoulder; Majah-General Thing-a-bob. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259 metres, 17 kW.; and CASSEL, 245.9 metres; and TRIER, 259.3 metres.—4.0 p.m., Ninth Concert of the Academy of Music, relayed from Darmstadt. The Academy Orchestra and Madrigal Society and Hedwig Fassbender (Violin); Overture, Der Schauspielfeldirektor (Mozart); Four Madrigals (Peterson); (a) Säterspruch, (b) Vor der Ernte, (c) Schmitzlerlied, (d) Requiem; Concerto in A for Violin and Orchestra (Mozart); Two Medleys: (a) Zwischen merrienen (Katgeber, arranged Noack), (b) Die Martinsgans, Op. 36 (Bodo Wolf); Little Ballet Suite for Orchestra (Bodo Wolf). 5.15, Exchange Quotations. 5.25, Dialogue: The Modern Educational Film. 5.50, A Dialogue on Arbitration. 6.15, Time, Programme Announcements, Weather, and Exchange. 6.20, Edwin Erich Dwinger discusses his own books. 6.35, Mandoline Concert: Eröffnungs-Festmarsch (Fries); Paraphrase on the Song Das Bild der Rose (Ritter); Fairy Tale Overture (Eilender); Nachtfalter (Mandt); Paraphrase on the Song Aeneas von Thauran (Schanno); March, Old Comrades (Teike). 7.0, Talk: The Reclamation of the Zuider Zee. 8.0, Gramophone Concert of Popular Music. 8.30, See Stuttgart. 9.0, Time, News, Weather, and Sports Notes.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—6.0 p.m., Health Talk: A Discussion with the School Doctor. 6.25, Weather. 6.30, Armins, der Cherusker (Arminius, the Chensian)—Historical Radio Play (Hans Heyck). 7.30 (from Bremen), Organ Recital by Gottfried Gallert, relayed from North-east Friesland: Prelude and Fugue in D (Bach); Variations on an Old Choral (Helm). 8.0, Concert by the Chamber Orchestra, conducted by Gerhard Maasz, Soloist, Bernhard Yaksehtat (Bass-Baritone). Max and Moritz (Zimmer); Humoresque (Vreuls); Songs from Jobsade (Roth); Intermezzo from Comedy Music (Maasz); Ständchen from Julchen (Sürnsen); Burlesque (Schmitt). 8.30 (from Kiel), Literary Programme (Wilhelm Busch), by Hans Balzer; Der Nöckerkreis; Am Vorabend von Rosas Geburtstag; Four Small Pieces: (a) Ganz unverhofft auf einem Hügel, (b) Es hat einmal, (c) Ein dicker Sack, (d) Auf leichten Schwingen; Extracts from Eduards Traum. 9.20, Topical Talk. 9.30, Dance Music by the Chamber Orchestra, conducted by Gerhard Maasz. In an interval at 10.20, Ice Report.

HANOVER.—See Hamburg.

HEILSBURG

275.5 metres; 60 kW; and DANZIG, 453.2 metres.—12.15 p.m., Gramophone Concert of Variety Music. In the interval at

12.20 p.m., News Bulletin. 2.0, Market Prices. 2.30, Talk for Young People: Catching Wild Animals in the Primitive Forests of Liberia. 3.0, Concert by the Little Organ Orchestra, conducted by Eugen Wilcken; Overture, King Stephen (Beethoven); Barcarolle (Grünfeld); Romance, Op. 51, No. 5 (Tchaikovsky); Selection from The Cricket on the Hearth (Goldmark); Andante from the Violin Concerto in E Minor (Mendelssohn); Romance from the Violin Concerto in E Minor (Wieniawsky); Liebeswalzer (Moszkovsky). 4.45, Talk: Heroic Deeds of the East Prussian Regiment in the First Three Weeks of the War, 1914. 5.15, Market Prices. 5.20, Ice Report. 5.30, Agricultural Talk. 6.30, Elementary English Lesson. 7.0, Weather and News. 7.10, Abschied von der Liebe—Play (Hans Kayser). 8.10, Masters of their Crafts on Gramophone Records. George Kulenkampf; Fugue in A for Violin (Tartini-Kreisler); Adolf Busch (Violin); Charonne (Bach); Gaspar Cassado (Cello); Concerto in A Minor for Cello and Orchestra from the Sonata for Piano (Schubert, arr. Cassado); Vasa Prihoda (Violin); Waltz in A (Dvorák-Prihoda); Erica Morini (Violin); Andalusian Romance (Sarasate); Serie Kussewitzky (Double Bass): (a) Minuet in G (Beethoven), (b) Valse miniature (Kussewitzky); Henri Marteau (Violin); Carmen Fantasia (Sarasate); Pabls Casals (Cello); Gavotte tendre (Hillemacher); Arnold Földesy (Cello); Chanson villageoise (Popper); Jacques Thibaud (Violin); Waltz (Brahms); Josef Szigeti (Violin); Slav Dances in E Minor and G Minor (Dvorák-Kreisler). 9.15, Weather, News and Sports Notes.

HILVERSUM

Announced HUIZEN; 296.1 metres; 20 kW.; (7 kW up to 4.40 p.m.).—11.55 a.m. to 1.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Orchestra, conducted by Johan Gerriens; Overture: Die Abreise (d'Albert); Selection from Cavalleria Rusticana (Mascagni); Selection from Tiedland (d'Albert); Berceuse (Ilijinsky); Mazurka (Scriabin); Barcarolle (Arensky); Pas des fleurs (Delibes); Rakoczy Overture (Kéler Béla); Selection from Les Saltimbanques (Ganne); Waltz, Accolaterionen (Joh. Strauss); Le canari (Pellikani); March, Onze jeugens (van Leeuwen); Gramophone Records in the Interval. 1.40 till Close Down. Programme of the Christian Radio Society (N.C.R.V.). 1.40, Relay of a Political Assembly: Addresses and Music. 3.40, Bible Reading and Sacred Music. 4.40, Bass-Baritone Song Recital by P. Brederode: Soll's sein, so sei's (J. W. Franek); Gib dich zufrieden (Bach); Aria from Joshua (Handel); Aria from St. Paul (Mendelssohn); Wir werden ruh'n (Rachmannov); Der Wanderer (Schubert); Der Lindenbaum (Schubert); Freisinn (Schumann); The Two Grenadiers (Schumann); Gramophone Records, Four Dutch Songs. 5.25, Handwork Lesson for Young People. 5.55, Talk. 6.25, Dressmaking Lesson. 6.40, Weekly Review. 7.10, Police Notes. 7.25, Religious Address. 7.55, William the Silent—Cantata (Goldschmeding), in Memory of William the Silent, relayed from the Matheneser Kerk, Rotterdam; A Children's Choir, conducted by E. Leydekker; A Boys' Choir, conducted by J. Blok, and an Orchestra, conducted by P. Jordans; Soloists: A. de Zeeuw Sierendrecht (Soprano); J. Pouse (Baritone); G. Goldschmeding (Pianoforte), and C. Nogaredo (Organ). 8.40, Religious Address (contd.). 9.20, Religious News. 9.30, News Bulletin. 9.40, Organ Recital by Leo Mens with Oboe Solos by Jaap Stotyn relayed from St. Peter's Church, Leyden. 10.40, Variety Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM; 1,875 metres; 5.5 kW.—Programme of the Algemeene Vereeniging Radio Orntrop (A.V.R.O.). 11.41 a.m., Concert by the Station Orchestra, conducted by Nico Troep; March, Einzug der Gladiatoren (Fueck); Overture, Die Felsenmühle (Reiszigler); Selection from Cavalleria Rusticana (Mascagni); Romantic Waltz (Heinecke); Selection from The Gipsy Princess (Kálmán); Berceuse from Jocelyn (Godard); Macht Platz der Jugend (Leopold); Im Rosengarten Mendelssohn (Urbach); Waltz, Wiener Kinder (Strauss); March, Wien bleibt Wien (Sehrammel). 1.55 to 2.10, Interval. 2.10, Concert (contd.): Torch Dance of the Brides of Kashmir, from Feramois (Rubinstein); Selection from Turandot (Puccini); In a Hong-Kong Street (Humphries); Serenade (Titl); Sambre et Mouse (Turlet). 2.40, Talk. 3.25, Popular Music on Gramophone Records. 3.40, Talk. 4.10, Pianoforte Recital by Jaap Brill. 4.40, Programme for Children. 5.10, Light Orchestral Concert, with Songs by Bob Scholte. 6.10, Sports Talk. 6.40, Light Orchestral Concert (contd.). 7.10, English Lesson. 7.40, Time Signal. 7.41, Gramophone Concert of Variety Music. In the interval, News. 7.55, Concert, relayed from the Concertgebouw, Amsterdam. The Concertgebouw Orchestra, conducted by Pierre Monteux. Soloist, Darius

Milhaud (Pianoforte). 10.10, A Musical Comedy. 11.10, Light Music on Gramophone Records. 11.40 (approx.), Close Down.

INNBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., Sports Notes. 6.15, Announcements and Gramophone Records. 6.25, Report for Boy Scouts. 6.30, See Warsaw. 10.0, Dance Music from the Café Astoria.

KAUNAS

1,935 metres; 7 kW.—6.30 p.m., Märchen-zählungen (Schumann). 7.0, Talk on Weaving. 7.20, Variety Programme. 7.50, Reading in Esperanto. 8.10, Concert: Overture, Simiramis (Rossini); Fantasia, Ein Fest in Aranjuez (Demerssemann); Waltz, Du und Du (Joh. Strauss); Suite, Exotic Impressions (Manton); Japanese Bell Dance (Yoshitomo). 9.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 40 kW. and HELSINKI, 368.1 metres.—6.5 p.m., Song Recital by Elli Vilho: Air from Samson and Delilah (Saint-Saëns); Ich liebe dich (Grieg); Song (Melartin); Two Songs (Klemetti); Polska (Palgren); Air from Orpheus (Gluck). 6.30, Talk. 6.50, Pianoforte Recital by Margaret Kilpinen. 7.15, A Visit to Leather Works. 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert conducted by Wolf. Overture, Hans Heiling (Marschner); Waltz, Donauweibchen (Joh. Strauss); Selection from The Magic Flute (Mozart); Suite, The Fables of La Fontaine (Mouton); Prairie Roses (Poldini); Walzerfreude (Provanik); Selection from Der Bettelstudent (Müllbeyer); In einem chinesischen Theater (Dreyer); Japanese Bell Dance (Yoshitomo); Potpourri, Quintessenzen (Moresna); March, Furchtlos voran (Halvas). In an interval at 1.0 p.m. (approx.), Announcements. 1.30, Sponsored Programme with Gramophone Records. 2.30, Economic Notes and Time Signal. 2.50, Programme for Children. 3.20, Notes on the Broadcasts for Schools. 3.25, Educational Talk. 4.0, Concert conducted by Eysoldt: Overture (Alphonso and Estrella (Schubert)); Suite, Prometheus (Beethoven); First Suite, Liebeslieder-Walzer (Brahms); Largo from the Fifth Symphony (Dvorák); Selection from The Cricket on the Hearth (Goldmark); Ein Immortellenkranz auf das Grab Lortzings (Rosenkrantz). 5.20, French Conversation. 5.45, Weather, Time, Economic Notes and Sports Forecast. 6.0, Reading. 6.20, Talk on the Feminist Movement. 6.30, Talk: Industry in the Rhineland, Westphalia, and the Hanseatic Districts. 6.55, Announcements. 7.0, In the Moonlight, Orchestral and Choral Concert, conducted by Buschkötter and Zimmermann. Soloists: Hansen (Soprano), Guernanova (Contralto), Strienz (Bass), and Grape (Pianoforte). Overture, The Merry Wives of Windsor (Nicolai); Movement from the Moonlight Sonata (Beethoven); Serenade (Mozart); Die verkörperte Nacht (Schönberg); Songs and Choruses; Reading of Poems by Goethe, Hölderlin, Claudius, Droste-Hülshoff, and Morgenstern. In the interval, Our Neighbour, the Moon—an instructive sketch (S. Christoph). 9.15, Announcements, Educational Notes and Sports Notes. 9.30, Serenade and Dance Music, conducted by Eysoldt. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319 metres.—11.5 a.m., Gramophone Concert: Waltz, Träume auf dem Ozean (Gungl); March, Mit Standarden (Blom); Hunters' Chorus, from Der Freischütz (Weber); Old English Dances of Shakespeare's Day; Four German Dances (Mozart); Douanagen (Fueck); Intermezzo, Pierrot and Pierrette (Hueck); Potpourri of Songs of the Moonlight (Hueck); Overture, Lord Spleen (Lothar); Moonlight Serenade (von Platen); Solvieg's Song (Grieg); Dance of the Marionettes (Winteritz); Zapfenstreich im Biwak (Becker); In a Clock Store (Orth); Potpourri of Bavarian Melodies. 12 Noon, News, Weather, Snow Report, and Time. 12.15 p.m., Gramophone Concert: Theme with Variations from the Sonata in D for Violin and Piano (Beethoven); Neapolitan Serenade (Sgambati); Cavatina and Scherzo from the String Quartet in A Minor, Op. 37 (Beyler); Liebestraume No. 3 (Liszt); Berceuse (Chopin); Canzonetta (d'Ambrosio); Sarabande (Bach); Air (Bach); Adagio from the Sonata in E Minor for Zither (von Reigersberg); Andantino from the Concerto in D Minor for Zither (von Reigersberg); Adagio cantabile and Rondo from the Sonata in C Minor, Op. 13 (Beethoven). After the Concert, Exchange Quotations. 1.0, Film Review. 1.30, Talk:

Practical Results of the School Courses for Unemployed. 2.0, Talk: Stromboli. 2.35, Exchange and Market Prices. 3.0, Concert by the Endé Orchestra: Overture, Masanillo (Auber); Waltz, Wiener Bonbons (Joh. Strauss); Czardas, Der sohn der Heido (Keler-Bela); Memories of Grieg (Urbach); Dorrischens Brautfahrt (Rhode); Trühneri (Schumann); Two Cossack Dances (Sternberg); Waltz Intermezzo, Ein Ballnachtstraum (Translater); Potpourri, Von deutschen Walde (Gaudert); Waltz, Dorfschwalben aus Oesterreich (Josef Strauss); March, Deutsche Eichen (Blatzheim). 4.30, Weather and Time. 4.50, Exchange Quotations. 5.0, Health Talk. 5.15, Talk for Taxpayers. 5.30, Spanish Lesson. 5.50, Talk: Scientific Work. 6.5, Talk: The Protection of the Worker in Modern Industrial Concerns. 6.30, Concert of Folk Music: Zither Solos: (a) Erinnerung (Kollmanek), (b) Gavotte, Frauenherzen (Stelzl), (c) Polka, Vögelin in den Zweigen (Obermeier); Six Pieces for Mandoline: (a) Capriccio (d'Arizno), (b) Serenata (Sylvester), (c) Al Mandolino (Nöck), (d) Wiedengied (Pressmann), (e) Pierrot Serenade (Randeegger), (f) Zigeunerweisen (Francaes); Minuet (Sai); Guitar Solo, Mandolinata (Albert). 7.30, See Berlin (Witzleben). 8.45, Pianoforte Recital by Otto Weinreich: Sonata appassionata in F Minor, Op. 57 (Beethoven); Prelude and Fugue in E Flat, Op. 26 (Kögler). 9.15, News Bulletin and Silent Night.

LINZ.—See Vienna.

LWOW

381 metres; 16 kW.—6.0 p.m., Literary Talk. 6.15, Miscellaneous Items. 6.30 to 9.15, See Warsaw. 9.15, Relay of Foreign Stations. 9.55 to 10.0, See Warsaw. 10.0, Dance Music from the Bagatela Variety Theatre. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Popular Concert, conducted by Gaston Billet. Soloists: Mme. Stradella (Soprano) and M. Georges Rambaud (Tenor). After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAQ); 30.43 metres; 20 kW.—10.30 till Close Down, Programme arranged by the Spanish-American Radio Society. Details to be announced.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Programme for Children and Request Gramophone Records. 8.15, News Bulletin and Political Review. 8.30 to 9.0, Interval. 9.0, Linguaphone English Lesson. 9.30, Chimes, Time Signal, Political Review, Talk on Astronomy and Band Concert, relayed from the Hotel Nacional. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—5.0 p.m., Light Music on Gramophone Records. 5.15, See Prague. 5.30, German Transmission: Talk on Karl Marx, and Readings. 6.0, See Prague. 6.25, Medical Talk: Cancer. 6.40, Concert of Popular Music by the Station Orchestra, conducted by B. Trdy. 7.30, See Brno. 9.0, See Prague. 9.15, See Bratislava. 10.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—4.30 p.m., Literary Programme: Anecdotes about Famous People. 5.30, Concert, relayed from the Conservatoire. 8.0, Talk in French; International Women's Day.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—4.0 p.m., See Langenberg. 5.15, Scientific Report. 5.35, Agricultural Talk. 5.55, Time, Weather, and Agricultural Notes. 6.5, Talk: A German Discovery—the Diesel Motor. 6.25, A Tour through the Gross Rachelhof (founded 1485) in Grassau am Chiemsee with Otto Willi Gail, Dr. Karl Hoffmann, Georg Siehler, the Zither Club, and the Grassau Choral Group and Musical Society. 7.5, Orchestral Concert, conducted by Karl List. Soloist: Marcel Wittrisch (Tenor). Part I: Prelude to Don Gil von den grünen Hosen (Braunfels). Songs (R. Strauss): (a) Cécilie, (b) Morgen; Capriccio (Piechler); The Flower Song from Carmen (Bizet); Mazurka from Coppelia (Delibes); Arias from: (a) Martha (Plow), (b) Madame Butterfly (Puccini). Part II: Old English Suite after Sixteenth Century Composers (Max Ettlinger): (a) Walsingham (Byrd), (b) Wolseys Wilde (Byrde), (c) The Mayden's Song (Byrde), (d) Why aske you? (Anon.), (e) The Bells (Byrde), (f) The King's Hunt (Bull). Part III: Music by Lehár: Overture, Eva; Hab' ein blaues Himmelbett from Frasnata; Gern' hab' ich die Frau'n geküst from Paganini; Wieber-

MARCH 9th

THURSDAY

continued

Marsch; Maiden, my Maiden, from Frederica; You are my Heart's Delight, from The Land of Smiles. 8.40 (from Nürnberg). March Days—a Radio Sequence. 9.20, Time, Weather, News, and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1.083 metres; 60 kW. Relayed by Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—4.0 p.m., Relay of European Stations. 5.0, German Lesson. 5.30, Religious Address. 6.0, Announcements. 6.30, Pianoforte Recital by Mme. Lilli Kraus: Ballad in A Flat (Chopin); Prelude in A Minor (Debussy); Tarantella (Liszt). 7.30, Sacred Concert, relayed from the Fagerberg Church. Mme. Solveig Sandvold (Songs) and M. Reidar Hansen (Organ). 8.25, Talk on Poultry Keeping. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Relay of European Stations. 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

537.6 metres; 3 kW.—7.0 p.m., Dopulavoro Notes; Agricultural Report and Giornale Radio. 7.20, Popular Music on Gramophone Records; In an interval at 7.30, Time and Announcements. 7.45, Concert of Operetta Music: Selection from (a) The Dollar Princess (Fall), (b) Boccaccio (Suppé). 8.30, Un caprice: One-act Comedy (de Miss-et), arranged for Radio by Eruzo Ferreri. 9.0, (approx.), Concert of Operetta Music (cont.); Selection from Frasnquita (Lohar); Selection from Acqua cheta (Pietri). 9.55, News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 9.25 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Le Journal Parlé. 7.20, Weather Report. 7.30, Gramophone Concert: Selection from The Barber of Seville (Rossini); Aria from The Thieving Magpie (Rossini); Viennese Potpourri (Komzák); Im Prater blühen wieder die Bäume (Stolz); La fleur que nous aimons (Crémieux-Gaël); Tales from the Vienna Woods (Joh. Strauss); Selection from Schön ist die Welt (Lehár); Glow-worm Idyll (Siede); Parade of the Marionettes (Kuhn); Pinsonnette et Pinsonnet (Saint Servain); Echoes du valloin (Saint-Servain); Le Loup (Progin); Le rallye Bonnelles (Progin); Les Echoes de Villefontaine (Vivey); Les echoes champêtres (Vivey); The Gladiators' Farewell (Blankenburg); March, Old Comrades (Teike). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Programme for Children. 7.30, Gramophone Concert of Light Music. 8.0, Agricultural Talk. 8.5, Talk by the Vicomte Henry de France. 8.15, Interval. 8.30, Dramatic Programme. 10.30 (approx.), Close Down.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont.). 7.45, Escapes (Hert), on Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Protestant Address. 12.30 p.m., Concert: Part I: For Young People: Le Roman d'Arlequin (Massenet); Two Songs (Dalerose) on Gramophone Records; Pussy Dance (Delmas); The Sewing Machine (Colantoni); Two Songs (Patroni-Casadesus) for Children's Choir and Soloist, on Gramophone Records. Part II: Operetta and Film Music: Selection from Sidonie Panache (Stulz); Two Airs (Romans and Gregson); Two Melodies from White Horse Inn (Stolz-Bonatzky) on Gramophone Records; Selection from Yes (Yvain). In the interval at 1.0 p.m., Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 5.45, Agricultural Notes. 6.0, Address relayed from the Reformed Church, Passy. 7.0, A Dialogue. 7.20, Orchestral Concert: Pavane from Proserpine (Saint-Saëns); Divertissement and Musette (Samazeuilh); Esquisses chorégraphiques (Marchal). 7.45, Review of the German Press. 8.0, Madame Sans Gêne—Comedy (Sardou). In the intervals at 8.30, News and Weather, and at 8.40, Review by Dominique Bonnaud. 9.15, Press Review and News. 9.30, Gramophone Records: Arabesque (Debussy); La Source (Hasselmanns); Aria from The Fair Maid of Perth (Bizet); Two Arias from The Pearl Fishers (Bizet); The Two Grenadiers (Schumann); The Trout Quintet (Schubert).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XX on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Ethel Miller Exley (Pianist). 9.30, Weather Report. 9.32, Market Reports. 9.45, Pianoforte Interlude. 9.53, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Programme to be announced. 10.15 to 11.15, New York Relay. 10.15, The Adventures of Dr. Doolittle. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Our Daily Food—George Rector's Cooking School. 11.15, Time Signal. 11.16, Weather

Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45, Today's News by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m. (Friday), Programme to be announced. 12.30, The Fireflies. 12.45, The Townshead Murder Mystery. 1.0 to 3.30, New York Relay. 1.0, Captain Diamond's Adventures. 1.30, Time Signal and Rin Tin Tin Thrillers. 1.45, Thurston the Magician. 2.0, Death Valley Days. 2.30, Len Joy's Dancing Strings. 3.0, Wilfred Glenn (Basso). 3.15, Vic and Sade. 3.30, The 1932 Income Tax by Robert L. Wickline. 3.45, Bradley Kincaid, from New York. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News Flashes. 4.20, Bertha Schmidt (Soprano). 4.30, Josef Lheytme (Pianist), from New York. 5.0, KDKA Artist Bulletin. 5.2, Smith Ballou and his Orchestra. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Brno. 4.10, Talk on Economics. 4.20, See Brno. 4.50, Variety Music on Gramophone Records. 5.5, Talk on Poultrykeeping. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Review of New Books and Agricultural Report. 6.0, Chimes. 6.1, News Bulletin. 6.10, English Conversation. 6.25, Talk on Music. 6.40, See Morávska-Ostrava. 7.30, See Brno. In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.1, News Bulletin. 9.15, See Bratislava. 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.0 p.m. (from Geneva), Sports Talk. 5.20 (from Geneva), Esperanto Talk. 5.35 (from Lausanne), Italian Lesson. 6.0 (from Lausanne), Weather, Announcements, and Answers to Correspondence. 6.30 (from Lausanne), Theatre Notes. 7.0 (from Lausanne), Concert by a Mixed Choir. Soloist: Mlle. Piccard (Mezzo-soprano). 7.25 (from Lausanne), Humorous Programme. 7.35, Choral Concert. 8.0, Concert by the Station Orchestra. 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva), Talk: The Work of the League of Nations. 9.30 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes and News. 9.30, Reading. 10.0, Concert by the Station Quartet, followed by Arias and Popular Music on Gramophone Records.

RIGA

525 metres; 15 kW.—6.10 p.m., Weather Forecast. 6.15, Tenor Recital of Leonidis Wigner's Songs. 7.20, Concert of Lehár Operetta Music. Conductor: Prof. Medins; Selection from The Merry Widow; Waltz from The Count of Luxembourg; Operetta Potpourri. 8.0, Weather and News. 8.15, Songs and Duets (Lehár). 8.35, Lehár Concert (cont.); Prelude to Eva; Selection from Paganini; Waltz from Gipsy Love; Selection from The Czarevitch (Lehár). 9.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 2RO, 25.4 metres.—7.0 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 p.m., Humorous Item. 12.5 to 1.15 p.m., Concert from Turin. In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30 to 5.15, Orchestral Concert. Uno strano modello (Escobar); Waltz (Grok); Selection from Il vassallo (Smareglia); Pianoforte Solo, Butterflies (Olsen); Turkish March (Beethoven); Pianoforte Solo, Tarantella (Martucci); Oriental Cradle Song (Takaos); Song (Heymann). 6.10 (Naples), Shipping and Sports Notes. 6.15, Agricultural and Dopulavoro Notes. 6.20, Giornale Radio. 7.0, Time and Announcements. 7.2, Talk. 7.15, Gramophone Records of Light Music. 7.30, Sports Notes and Tourist Report. 7.45, Symphony Concert, conducted by Aleco Toni. In the intervals: Talk on Literature and Art and Theatre Notes. 9.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—12 Midnight, Mr. Twister, from New York. 12.15 a.m. (Friday), Stock Reports. 12.30 to 3.0, New York Relay. 12.30, Van and Don—Comedy Team. 12.45, The

Goldbergs—Comedy Sketch. 1.0, Fleischmann Hour; Vallee's Orchestra. 2.0, Capt. Henry's Show Boat. 3.0, Lucky Strike Hour, from New York, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; BASLE, 244.1 metres; and BERNE, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Popular Music on Gramophone Records. 12.35 to 12.45 p.m., Weather and Exchange. 2.30 (from Basle), Programme for Women. 3.0, Concert by the Radio Orchestra. 4.0, Variety Music on Gramophone Records. 4.30 to 4.35, Weather. 5.30 (from Basle), Talk: Giacomo Casanova. 6.0, Time, Weather and Traffic Report. 6.15 (from Basle), Italian Conversation Lesson. 7.0 (from Basle), Wind Instrument Concert by the Mulhouse Chamber Music Society. 8.30, Weather and News. 8.40 (from Basle), Old Swiss Songs to the Spinnet; Harth Vischer van Gausbeck (Tenor) and Martha Hamu-Stoecklin (Spinnet). 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.5 p.m., Divine Service from Malmö, 231 metres. 4.30, Programme for Children. 4.45, Variety Music on Gramophone Records. 5.45, Elementary English Lesson from Jonköping, 201.3 metres. 6.15, Weather and News. 6.30, Choral Concert, conducted by Gabriel Graener. 7.0, Talk by the Prime Minister: The Tax on Inherited Property. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 p.m., Gramophone Records (Beethoven): (a) Symphony No. 3 in E flat, (b) Quartet in G. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Gramophone Concert of Light Music. 2.0, Programme for Children. 3.0 to 4.15, Interval. 4.15, French Education Lesson. 4.30, Programme for Children, relayed from Bordeaux-Lafayette. 6.0, Talk in German: How Unity was achieved in France. 6.15, Talk for Women. 6.30, Orchestral Concert, conducted by M. Rokkam; March from Gasparone (Müllacker); Waltz, Un doux poème (Waldteufel); Intermezzo, In the Shadows (Fück); Overture, Norma (Bellini); Selection from Mignon (Thomas); Andante for Cello and Pianoforte (Montenildard); Salut d'amour (Elgar); Selection from White Horse Inn (Bonatzky). 7.30, Time and News. 7.45, Light Music on Gramophone Records. 8.20, Lottery Results. 8.30, Orchestral Concert, conducted by Maurice de Villers; Soloists: Mlle. Kaufmann (Harp) and M. Caron (Oboe); Second Symphony (Beethoven); Oboe Solo, Concerto Grosso No. 10 (Handel); Orchestral Suite from Pelléas et Mélisande (Fauré); Pieces for Harp (Fauré); Elegy for Cello and Orchestra (Fauré); Orchestral Suite, Dolly (Fauré). 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—12.15 p.m., Time, News, Weather and Programme Announcements. 12.30, Concert from Langenberg. 1.0, Concert arranged by the Post Office. 1.30, Spanish Lesson. 2.0, English Lesson for Beginners. 2.30, Programme for Children. 3.30 to 4.0, Interval. 4.0, See Langenberg. 5.5, Time, Weather and Agricultural Notes. 5.15, Psychological Talk: Are there too many Human Beings? 5.40 (from Mannheim), Talk: Power Works on the Rhine. 6.5, Time and News. 6.15, Talk: The First Ascent of the Bietschhorn in the Bernese Alps. 6.35, See Frankfurt. 7.0, Concert of Old Dances and Marches by the Stuttgart Philharmonic Orchestra, conducted by Emil Kahn. 7.30, See Berlin (Witzleben). 8.30, Symphony in C (the Jupiter) (Mozart), by the Stuttgart Philharmonic Orchestra. 9.0, Time, News, Weather and Programme Announcements.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Operetta Music: Selection from La Vie Parisienne (Offenbach). Entr'acte from Brunnel (Hahn); Selection from The Bavarese (Kalmán). 6.30, Programme for Children. 7.0, Music of the Argentine. 7.15, Racing Results, Market Prices and News. 7.25, Local News Bulletin. 7.30, Chansonnettes. 7.45, Nocturne, from La Navarraise (Massenet); Melody (Pilevost); Ständchen (Schubert). 8.0, Opera Music: Airs from: (a) Werther (Massenet). (b) Rigoletto (Verdi). (c) L'Attaque du Moulin (Bruneau). 8.15, Symphony Concert: Overture, Light Cavalry (Suppé); La Poupée d'Arlequin (Darcy); In the Blue Hawaiian Waters (Ketelbey); Valse lumineuse (Ganne); Adagietto from the Fifth Symphony (Mahler). 8.45, Extracts from Il est charmant (Moretti). 9.15, Music

by a Viennese Orchestra. 9.45, Concert. Part I—Opera Music: Cavatina from Der Frischhütz (Weber); Air from La Favorita (Donizetti); Romance from Tannhäuser (Wagner). Part II—Popular Music. 10.15, North African News. 10.30, Concert for Students in Morocco: Le Rouet d'Emphele (Léont-Saëns); Song from Les Cloches de Corneville (Planquette); Violin Solo: Tambourin chinois (Kreiser); Les larmes de la vic (Dequin); Selection from Rigoletto (Verdi); Accordion Solo: Donna Clara (Pettersburgski). 11.0, Operetta Music. 11.15, Hunting-horn Melodies. 11.30 to 12 Midnight, Programme in English by the I.B.C. II. K. H. check announcing. 11.30, Dance Music and Vocal Refrains: You've got me in the palm of your hand; Sheltered by the Stars; I'll always be true; Sweethearts for ever; Three's a Crowd; Life's Desire; One Hour with you; We'll always be Sweethearts. 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Friday), Musical Programme. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.10 to 6.0, See Turin. 6.0, Variety Music on Gramophone Records. 6.21 till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—4.10 to 5.0 p.m., Orchestral Concert: Selection from Izeyl (d'Albert); Carnival (Lindner); Russian Fantasia: Hullo Moscow (Grothe); Prelude (Bachmaninov). 5.35, Giornale Radio; Dopulavoro and Agricultural Notes. 6.0, Songs and Light Music on Gramophone Records. 6.20, Giornale Radio. 6.30, Time, Announcements and Gramophone Records of Variety Music. 7.0, Giornale Radio, Weather and Gramophone Records (cont.). 7.25, Reading from and Commentary on the Fourteenth Canto of the Inferno. 8.0, Relay of an Opera; In the intervals: Talk; Literary Review and Giornale Radio.

VATICAN CITY

19.81 metres (Morning) and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in French. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.1 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—2.35 p.m., Brahms Concert by a Vocal Quartet. Zoé Fraschel for mecher (Soprano), Isolde Riehl (Contralto), Lambert Haselbrunner (Tenor), and Eleonor von John (Bass). An die Heimat; Sehnsucht; Nächstens; Gang zum Lichten; Der Abend; O schöne Nacht; Ich bin glücklich; Ich strahl so hell und klar; Rote Rosenknospen; Brennnessel steht am Wege; Liele Schwalbe; Kleine Schwalbe. 3.0, Programme for Children. 3.25, Talk: Humanity and the Care of the Sick. 3.45, Report in Esperanto on Austria. 4.0, Gramophone Concert. Overture, The Barber of Seville (Rossini); Symphony in D—the Clock (Händel); Symphony No. 35—the Laffer (Mozart). 5.10, Talk for Women: The Centenary of the Death of Rahel Levin Varnhagen. 5.35, Talk for Workers. 6.0, Theatre Notes. 6.5, Talk: Do you know...? 6.25, Time, Weather and Programme Announcements. 6.35, Talk: Travel Impressions of India. 7.5, See Munich. 8.40, News, Weather and Announcements. 8.55, Snow Report. 9.10, Variety Concert, relayed from the Oase Restaurant.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Popular Music on Gramophone Records. 11.30, Weather Forecast. 11.35, Nineteenth Concert for Schools by the Warsaw Philharmonic Orchestra, conducted by B. Węstfal. Soloist: Mne. Mokrzycka (Soprano). Overture, Rosamund (Schubert); Scherzo from A Midsummer Night's Dream (Mendelssohn); March from Athalie (Mendelssohn). Songs: (a) Ständchen (Schubert), (b) Heidenheim (Schubert), (c) Der arme Peter (Schumann), (d) The Swan (Grieg), (e) Easter (Grieg), (f) Three Songs from the Peer Gynt Suite (Grieg); Prayer and Temple Dance from Olay Trygvason (Grieg). 1.0 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Light Music on Gramophone Records. 2.35, Talk for Women. 2.50, Light Music on Gramophone Records. 3.25, French Lesson. 3.40, Talk: Protective Colouring in the Animal Kingdom. 4.0, Sonata in F Minor, Op. 57 (Beethoven) on Gramophone Records. In the interval, Announcements. 4.40, Topical Talk. 4.55, Programme Announcements. 5.0, Talk on Polish Literature. 5.20, Current Events. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Report. 6.30, Reading. 6.45, Radio Journal. 7.0, Concert of Ukrainian Music by the Lysenko National Choir. In the interval, Sports Notes and Radio Journal. 7.55, Concert of Light Music by the Station Orchestra, conducted by S. Nawrot. 10.0, Aviation Weather Report and Police Notes. 10.5, Dance Music.

ZÜRICH.—See Schweizerischer Landessender.

ATHLONE

413 metres; 60 kW., and **CORK**, 224.4 metres. —1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Talk on Gardening. 7.45, Talk. 8.0, Percy Pitt Memorial Concert, relayed from London. 9.0, Mezzo-soprano Solos by Pearl Maconkey. 9.15, Reading of Uster Poems. 9.35, Violin and Pianoforte Duets by William and Gerrard Shanahan. 10.0, The Station Orchestra. 10.30, Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA; Call **EAJ1**; 348.8 metres; 8 kW.—6.0 p.m., Trio Concert: Norwegian Dance No. 2 (Grieg); Selection from Phryné (Saint-Saëns); Ochsenn-Mennett (Haydn); Autumn Song (Elgar); Andante from the Cossation in G (Mozart); Selection from The Valkyries (Wagner). 7.0, Request Gramophone Records. 7.30, Exchange Quotations. 8.0, Light Music on Gramophone Records, and News Bulletin. 9.0, Chimes from the Cathedral, Weather, Messages to Seamen, and Market Prices. 9.10, Concert by the Station Orchestra. 10.0, Vicente Diez de Tejada reads from his own Works. 10.15, Concert by the Vilafra Orchestra, relayed from the Café Español. 11.0 (in an interval), News Bulletin. 12 Midnight (approx.), Close Down.

BARI

270 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Talk and Dopolavoro Announcements. 7.20, Giornale Radio and News Bulletin. 7.30, Time Signal and Announcements. 7.35 (approx.), Concert of Opera Music: Overture, Salvatore Rossa (Gomez); Soprano Aria from Dolores (Anteri-Manzocchi); Selection from Faust (Gounod); Baritone Aria from Ernani (Verdi); Soprano Solo: Song from Fedora (Giordano); Selection from La nave rossa (Seppilli); Overture, Le donne curiose; Baritone Aria from Maria di Rohan (Donizetti); Soprano Solo: Air from Dejanice (Catalani); Intermezzo from Act II of Il voto (Giordano); Baritone Solo: Serenade from The Damnation of Faust (Berlioz); Soprano Solo: Song from Andrea (Chenier (Giordano); Triumphant March from Aida (Verdi). In the interval: Sports Talk. 9.30, Concert relayed from the Grand Hotel, Moderno. 9.55, News Bulletin.

BASLE.—See *Schweizerischer Landessender*.

BELGRADE

430.4 metres; 2.8 kW.—4.0 p.m., Talk. 5.10, Time Signal and Programme Announcements. 5.15, Relay from a School. 6.20, Talk for Sokols. 7.0, Beethoven Music: Trio in B for Clarinet; Cello and Pianoforte; Pianoforte Concerto No. 2 with Orchestral Accompaniment. 8.0, Recital of Yugoslav Songs. 8.30, Violin Recital by Andrija Hanzer. 9.0, News. 9.5, Cigány Music, relayed from the Ratnicki Dom Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert relayed from Berlin (Witzleben). 2.0, Talk for Girls. 2.30, Weather and Exchange. 2.45, Topical Review. 3.0, Talk: The Private School from a Legal Standpoint. 3.30, See Leipzig. 4.10, Topical Talk. 4.30, Talk: The Germanic Man and his God. 5.0, Harp Recital by Max Saal; Courante (J. S. Bach); Gigue (J. S. Bach); Bourrée (Bach-Saint-Saëns); Minuet (Rameau); Fantasia in C Minor, Op. 35 (Spohr); Die Moldau (Smetana-Trücek). 5.30, Talk for Workers. 5.55, Weather and Announcements. 6.0, Talk: The Political Struggle against the War Guilt Question. 6.30, A Poem. 6.35, Concert of Light Music from the Traube Weinrestaurant. 7.0, See Leipzig. 8.20, Part Relay of a Choral Concert from Stadthalle, Königsberg; The Königsberg Opera House Orchestra, conducted by Bruno Vondenhoff, the Choir of the Academy of Music; Soloists, Adelheid Arnholt (Soprano), Enid Szanthe (Contralto), Charles Kullmann (Tenor), and Prof. Albert Fischer (Bass); Coronation Mass for Solo Quartet, Choir, and Orchestra (Mozart); Cantata, Nun ist das Heil und die Kraft—für Double Choir and Orchestra (Bach). 9.5, Weather, News and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN; 419.5 metres; 1.5 kW.—5.55 p.m., The Witzleben Station informs its Listeners . . . 6.0, Topical Talk. 6.15, Orchestral Concert relayed from the Eden Pavillon. 6.35, Talk: The Towns and their Significance in National Politics. 7.0, Choral Concert conducted by Walter Sieber; Der Schmitter Tod (arr. Hausegger); Songs (Mendelssohn): (a) Frühlingsahnung, (b) Die Nachtigall; Songs (Brahms): (a) In stiller Nacht, (b) Es geht ein Wehen; Songs (Schumann): (a) Sommerlied, (b) Im Walde. 7.25, Announcements. 7.30, See Breslau. 8.30, Wind Instrument Concert conducted by Hans Alibout. 9.30, Weather, News and Sports Notes. 9.40 (approx.), Three Dance

FRIDAY

MARCH THE TENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Light classical concert. Mr. S. B. P. Mais: "S.O.S." "Serenade," orchestral programme.
LONDON REGIONAL Percy Pitt Memorial Concert. "The Fall of the House of Usher," a play, after E. A. Poe, by P. Creswell and B. Burnham.
MIDLAND REGIONAL Choral programme. Light music.
NORTH REGIONAL Orchestral concert from Birkenhead. Leeds Philharmonic concert.
WEST REGIONAL Concert from the Town Hall, Pontypridd.
SCOTTISH REGIONAL "Scottish Road Songs, a singing pilgrimage in Albyn," by A. M. Dunnett.

ABROAD

BRUSSELS (No. 1) 8 p.m. Military Marches and Songs of the Time of the Consulate and First Empire.
BRUSSELS (No. 2) 9 p.m. String quartet concert (Haydn, Grieg, and Beethoven).
COPENHAGEN HAMBURG 9.20 p.m. Viennese music, by the Station Orchestra.
HEILSBURG 7 p.m. Brahms Concert, by the Hamburg Teachers' Choir and Philharmonic Orchestra.
LEIPZIG 7.10 p.m. The Resurrection Cantata (Otto Besch), from the Town Hall, Königsberg, with the Opera House Orchestra and Music Academy Choir.
PARIS (Poste Parisien) 6.35 p.m. A French Horn Quartet.
ROME 8.30 p.m. Charles Lecocq Concert, by the Station Symphony Orchestra.
 9 p.m. Operatic Variety Concert.

Hands on Gramophone Records—Paul Godwin, Oscar Joost and Hans Schindler. 11.0 (approx.), Close Down.

BERNE.—See *Schweizerischer Landessender*.

BEROMUNSTER. — See *Schweizerischer Landessender*.

BODEN.—See *Stockholm*.

BODO.—See *Oslo*.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News Bulletin. 7.40, Educational Talk. 7.55, Lottery Results. 8.0, Spanish Lesson. 8.15, News Bulletin and Weather Forecast. 8.30, Concert by a Symphony Orchestra and Soloists.

BRATISLAVA

279 metres; 14 kW.—5.25 p.m., Popular Music on Gramophone Records. 5.30, Sports Talk. 5.45, Slovak Spelling Lesson. 6.0 till Close Down, See Prague. 9.15 (approx.), Close Down.

BREMEN.—See *Hamburg*.

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ**, 263 metres.—12.10 p.m., Gramophone Concert: 12.45, Time, Weather, News and Exchange. 1.5, Gramophone Concert: Waltz, O sole mio (di Capua); Carceleras (Chapí); Serenade (Tosti); Über Nacht (Walt); Contralto Songs: (a) Dans la fumée (Bos), (b) Parlez moi d'amour (Léonard); Serenade. Revue (Toselli); Serenade (Toselli); Russian Folk Song; The Red Sarafan; Die Turfeltaube (Kondor); Hungarian Song (Kondor); Mickey Mouse on his Travels. 1.45, Post Office Programme with Gramophone Records. 2.10, Agricultural Prices. 2.40, Programme for Young People. 3.10, Orchestral Concert. Conductor: Franz Marszalek. Soloist: Alfred Stoelck (Tenor). Overture, The Naiads (Bennett); Songs (Quilter): (a) Come away Death, (b) O Mistress mine, (c) Blow, blow thou Winter Wind, (d) Night Song; Three Irish Pictures (Ansell); Songs (Quilter): (a) Love's Philosophy, (b) To the Daisy, (c) I sigh no more, (d) There was a Lover and his Lass; Finale from Masquerade (Sullivan). 4.0, Reading of Unpublished Works by Young Authors. 4.30, Agricultural Prices, followed by Discussion on the Youth Movement by Young People. 5.0, Programme to be announced. 5.30, Talk: The Advisability or otherwise of taking up Voluntary Work on leaving School. 6.0, Orchestral Concert: Caprice Italien (Tchaikovsky); Selection from Prince Methusalem (Joh. Strauss); Overture, Der Waffenschmied (Lortzing); Gallop, Bahn frei! (E. Strauss). In an interval at 6.30, Weather for Farmers and Market Prices. 6.45, Talk by Kurt G. Sell: What People are talking about in America, re-

layed from America. 7.0, Military Band Concert in Aid of the Winter Relief Fund, relayed from the Konzerthaus. Classical Music. 7.30, Künersdorf—Radio Play (Wolfgang Goetz). 8.20, Announcements. 8.30, See Leipzig. 9.10, Military Band Concert (cont'd.). Part II—Marches, followed by Grand Tattoo. 9.35, Time, Weather, News, Sports Notes and Programme Announcements. 9.50, Talk: Winter Pastimes for Young People in the Country. 10.5, Concert from Langenberg. 11.0 (approx.), Close Down.

BRNO

342 metres; 35 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by B. Bakala: March (Pucini); Song (Papoušek); Sonečská (Chvála); Kamarinskaja (Glinka); In the Steppes of Central Asia (Borodin); Waltz from Eugene Onegin (Tchaikovsky). 3.55, Theatre Notes. 4.5, See Prague. 5.5, See Prague. 5.5, Talk: Creative Art. 5.15, Talk for Workers. 5.25, German Transmission: News, Sports Notes and a Talk. 6.0, See Prague. 8.0, Talk. 8.10, Concert by the Station Orchestra, conducted by B. Bakala. Soloist: F. Schäfer (Pianoforte). Overture, Op. 38 (Kalivoda); Pianoforte Concerto (Hummel); Orchestral Suite (Vaaura). 9.0, See Prague. 9.15 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R.; 509 metres; 15 kW.—12 Noon, Concert by the Little Radio Orchestra, conducted by M. Leemans: March (Souza); Selection from The Merry Peasant (Fall); Flute Solo: Mazurka (Doppler); Four Pieces for Orchestra (d'Ambrosio); Pianoforte Solo: Mazurka (de Boeck); Extracts from the Little Suite for Strings (Dancan); Waltz from Les Moulins qui chantent (Van Oost). 1.0 p.m., Le Journal Parlé. 1.10, Selection from Don Pasquale—Opera (Donizetti), on Gramophone Records. 2.0, Educational Programme. 5.0, Concert by the Radio Orchestra, conducted by M. Franz André: Selection from La Bohème (Puccini); Pizzicato (Delibes); Fantasia for two Pianofortes (Younans); Slav Idyll (Aekerman); Extracts from Roma (Bizet); Cello Solo: Berceuse (Renard); Aphrodite (Jongen); Waltz (Berger). 6.0, Talk: The Americans and the Belgians. 6.15, Songs of Auvergne on Gramophone Records. 6.30, Concert by the Little Radio Orchestra, conducted by M. Leemans: Recuerdos de viaje (Albeniz); Cello Solo: Spanish Serenade (Glazunov); Spanish Dance (Falla); Fantasia on Spanish Airs (Broustet); Pianoforte Solo: Cadiz (Albeniz); Spanish Dance Melodies (Laparra); Le Feria (Lacôme). 7.15, Talk: The Part played by Social Work in the Campaign against Cancer. 7.30, Literary Review. 8.0, Programme of Military Marches and Popular Songs of the Time of the Consulate and the First Empire, with Commentary. 8.45, Two

Talks for Ex-Servicemen. 9.0, Programme of Marches and Songs (cont'd.). 10.0, Le Journal Parlé. 10.10, Overture, Benvenuto Cellini (Berlioz), on Gramophone Records. 10.25, Gramophone Concert: Nights in the Gardens of Spain (Falla); Lament (Faure); Largo from the Sonata for Cello (Chopin); Clair de lune (Faure); Andaluza (Falla); Ronde villageoise (Chabrier).

BRUSSELS (No. 2)

N.I.R.—338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Extracts from Tannhäuser (Wagner), on Gramophone Records. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, La belle Hélène (Offenbach); Beghine in chiesa (Signorini); Minuet (Boccherini); Selection from Les Noeës de Jeannette (Massé); Flute Solo: Les échos des bois (Dammare); Waltz (Novino); Selection from Frederica (Lehar). 2.0, Educational Programme. 5.0, Concert by Mickey's Club Jazz Attraction. 6.15, Talk. 6.30, See Brussels No. 1. 7.15, Tonsaint Van Boulaere reads from his own Works. 7.30, Wireless Notes. 8.0, Don Juan—Play (Avermaete), with Music by Van der Eecken. 9.0, Quartet Concert: Quartet Op. 70, No. 4 (Haydn); Quartet in F (Grieg); Quartet Op. 59, No. 3 (Beethoven). 10.0, Le Journal Parlé. 10.10, Gramophone Concert: Slow Foxtrot, By my side (Dick); Foxtrot, Walkin' my Baby back home (Turk); Waltz, Delta (Bransen); Jolly Good Company (Wallace); Waltz, Girl of a Million Dreams (Gilbert); Foxtrot, Got the Bench, got the Park (Sherman); Waltz, Would you take me back again (de Rose); Foxtrot, Joey the Clown (Myers); Waltz, Pomme (Waldfuehl); Lady, play your mandoline; One night alone with you (Jeffreys); Valse vanité (Wiedloft); Tango, Aromas de los Andes (Porsche); Foxtrot, Just one more chance (Johnston); Waltz, Soirée d'été (Waldfuehl); Rumba (Gilbert). 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert by the Radio Orchestra: March, Eppler (Brandner); Waltz, Die Schönbrunner (Lammer); Overture, Flotte Bursche (Suppe); Selection from The Queen of Spades (Tchaikovsky); Selection from Fédora (Giordano). 5.0, News and Time Signal. 5.10, Talk. 5.25, Concert (cont'd.): Slav Dances Nos. 5 and 10 (Dvorák); Träumerei (Schumann); Selection from The Gipsy Baron (Strauss); 6.0, Talk on Romania; Her Foreign Trade. 6.40, Talk. 7.0, Symphony Concert. 9.0, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—4.0 p.m., Concert by the Budapest Concert Orchestra, conducted by Otto Berg: Selection from (a) The Caliph of Bagdad (Boieldieu), (b) La Bohème (Leonecavallo), (c) Un Bal costumé (Rubinstein); Hungarian Dance (Vászy); Gold and Silver (Lehar); Selection from Die Fledermaus (Joh. Strauss). 5.10, Shortland Lesson. 5.30, Ernst Lanyi Memorial Programme, Introductory Talk and Song Recital. 6.0, Talk: The Development of the Balkan Problem since the Berlin Congress. 6.30, Relay from the Royal Hungarian Opera House. In the interval, News. After the Programme, Concert by a Cigány Band. 10.30, Dance Music. 11.0 (approx.), Close Down.

CASSEL.—See *Frankfurt*.

COPENHAGEN

281 metres; 0.75 kW., and **KALUNDBORG**, 1,153 metres; 7.5 kW.—11.15 a.m., Broadcast for Schools: Scenes from Modern German Drama. 11.45 to 2.0 p.m., Interval. 2.0, Concert by the Station Orchestra, conducted by Lanny Gröndahl: Overture, Gillette de Narbonne (Andran); Selection from Glutnarte (Wetterberg-Reesen); Finale from A Life for the Czar (Glinka); Waltz, Herzeikrisen (Fährbach); Serenade for Flute and French Horn (Titl); Reading; Overture, Les Cloches de Corneville (Planquette); Waltz, Hortensia (Lange); Romance (Debussy); Waltz (Kuhlau-Nielsen); Catalan Rhapsody (Alibout); March from Die Keusche Barbara (Nedbal). 4.0, Programme for Children. 4.40, Exchange and Fish Market Prices. 4.50, Talk on Danish Literature, Johan Ludvig Heiberg's Vaudevilles. 5.20, German Lesson. 5.50, Weather Forecast. 6.0, News. 6.15, Time Signal. 6.30, Talk: National Economy. 7.0, Chimes from the Town Hall. 7.5, Programme by Per Knutzen. 7.10, Choral and Organ Recital of Sacred Music, relayed from the Castle Church, Christiansborg. 7.50, A Radio Play. 8.30, Saxophone and Marimba Recital. 8.50, Songs from Danish Vaudevilles by Immanuel Frankén. 9.5, News. 9.20, Viennese Music by the Station Orchestra, conducted by Fritz Müller: Overture, Rosamunde (Schubert); Viennese Dances (Beethoven); Military March No. 3 in E Flat (Schubert); Kaiserwalzer (Joh. Strauss); Overture, Der Waldmeister (Joh. Strauss). 10.5, Dance Music from the National Scala. In the interval at 11.0, Time and Chimes from the Town Hall. 11.30 (approx.), Close Down.

CORK.—See *Athlone*.

DANZIG.—See *Heilsberg*.

DRESDEN.—See *Leipzig*.

FECAMP

225.9 metres; 10 kW.—12 Noon, Gramophone Concert of Popular Music. 12.30 p.m., News. 12.45, Concert of Variety Music. 6.0 to 7.0, Programme in English by the I.B.C. Announcers: C. Danvers Walker, R. Chene, and B. McNabb. 6.0, Concert for Torquay Listeners. Quartet: Andante Cantabile; O Mistress Mine; Glorious Devon; Quartet: (a) Molly on the Shore, (b) Siciliana; Red Devon by the Sea; Young Tom o' Devon; Quartet: Cherry Ripe. 6.30, Concert for Weymouth Listeners. Xylophone Solos: Handsome Gigolo (Bramer); Looping the Loop (Gaston); Here comes Emily Brown (Conrad); Selection from The Love Parade; Alice in Wonderland; Marionette (Gaston); Puttin' on the Ritz. 7.0, News and Popular Music on Gramophone Records. 7.15, Agricultural Report. 7.30, Radio Gazette. 8.0, Answers to Correspondents and News. 8.30, Concert, relayed from La Havre. 10.0 till Close Down. Programme in English by the I.B.C. Concert. Love is like that; I owe you; Great Day; They all fall in Love; Swingin' in a Hammock; Falling in Love Again; Adeline; Absence makes the Heart grow fonder; Don't tell her what happened to me; A Californian Serenade; I believe in you; Over the Hills and far away; If you haven't got love; Maudie; My Future just passed; Good-night. 11.0, Symphony Orchestra. Overture, Semiramide (Rossini); Waltz, Splürendklänge (Strauss); Morning, from the Peer Gynt Suite (Grieg); Weaner Mädl'n (Ziehrer); Rakoczy March (Berlioz); Classical Selection (arr. Erwing). 11.30, Vocal Concert. Trio, Mia Bella Rosa; Duets: (a) Leave the Pretty Girls alone, (b) Till To-morrow; Trio, Will you forget? Duets: (a) Way down in Georgia, (b) You'll always be the Same, (c) In an old World Garden; Trio, A Night of Happiness. 12 Midnight, A Musical Trip round the United Kingdom; The Barrers in the Walworth Road; Down in a Sussex Farnyard; Green Hills of Somerset; Devonshire Cream and Cider (Sanderson); The Floral Dance; Welsh Medley; Cymru Anwyll; A Lancashire Rumble; A Border Ballad; The Bonnie Banks o' Loch Lomond; Bagpipe Solo: Highland Reel; D'yo ken John Peel; On Ika Moor bakt' aht; Down Vauxhall Way; Home, sweet Home. 1.0 a.m. (Saturday), Variety Concert: Music Hall Favourites; You can't beat the Old Fashioned Razor; The Gondolier; Showboat Blues; Drawing on a Slate; I want to get thin; Just a crazy Song; You Rascal, you. 1.30, Songs: Hollywood Nights; I'd rather be a Beggar with you; Reach out for a Rainbow; Talkie Gems; Just you, just me; I'm a Hundred Per Cent. in Love with you; Love me. 2.0, Variety Concert: Love is the sweetest Thing; Good Morning, Mr. Sun; I'll do my best to make you happy; Smile and sing your Cares away; The Voice in the old Village Choir; The turning of the Tide; Where the Blue of the Night; Day by Day; An Evening in Carolina; Now that you're gone; By the Sycamore Tree; Blues in my Heart; Now's the Time to fall in Love; Back again to happy-go-lucky Days; Only me knows why; Hot Coffee. 2.57, I.B.C. Good-Night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259 metres; 17 kW.; and CASSEL, 245.0 metres; and TRIER, 259.3 metres.—5.25p.m., Talk: The Political Reorganisation of Switzerland. 5.50, See Stuttgart. 6.15, Time, Programme Announcements, Weather and Exchange. 6.0, Reminiscences of Richard Wagner—an Interview with Ludwig Strecker, the Senior Partner of Wagner's Publishers, by Hans Rosshand. 7.19 to 9.10, See Stuttgart. 9.10, Time, News, Weather and Sports Notes. 9.45, Concert by the Darmstadt Chamber Orchestra, conducted by Hans Simon. Soloist: Hans André. Fourth Symphony in A (Frederick the Great); Concerto for Viola da Gamba (Graun-Hans André); Sinfonia da Camera (Richter); Symphony No. 3 (C. P. E. Bach). 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hannover, 566 metres; and Kiel, 232.2 metres.—6.5 p.m., Talk: Dwellings for Single Women. 6.25, Weather Report. 6.30, Jakob Wassermann Programme on the occasion of the Novelist's Sixtieth Birthday; Talk, and Readings from his Works. 7.0, Brahms Concert, relayed from the Musikhalle. The Hamburg Teachers' Choir and the Philharmonic Orchestra, conducted by Eugen Papst. Soloists: Edith Niemeyer and Karl Erb (Songs). Introductory Talk. Nänie for

MARCH 10th

FRIDAY

continued

Choir and Orchestra: Rhapsody, Schicksalslied, for Choir and Orchestra; Rinaldo—Cantata, for Choir, Tenor, and Orchestra. In the interval, News. 8.45, Time and News. 8.55, Topical Talk. 9.10, Concert, relayed from the Alsterpavillon. 10.20, Ice Report. 10.25, Concert, relayed from the Atlantic, Bremen.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—12.5 p.m., Light Music on Gramophone Records. In the interval at 12.20, News. 1.30, Programme with Gramophone Records. 2.0, Agricultural Prices and Exchange Rates. 2.30, Programme for Children. 3.0, Talk for Women. 3.30, See Leipzig. 4.30, Alfred Picaver (on Gramophone Records): Songs from: (a) Manon (Massenet), (b) Fédora (Giordano), (c) The Force of Destiny (Verdi), (d) The Girl of the Golden West (Puccini). 4.45 (from Danzig), Talk: Hunting-grounds in Danzig now and in the past. 5.15, Agricultural Prices. 5.20, Ice Report. 5.30, Sonata in B Flat for Piano (Schubert), by Alfred Schroeder. 6.5, Talk on Agnes Miegel. 6.30 (from Danzig), French Conversation. 7.0, Weather and News. 7.10, The Resurrection Cantata (Otto Besch), relayed from the Town Hall, Königsberg. The Königsberg Opera House Orchestra, conducted by Bruno Vondenhof, the Choir of the Academy of Music, and Soloists: Adelheid Armhold (Soprano) and Prof. Albert Fischer (Baritone). 7.50 (from Danzig), The German Chancellor Hardenberg. 8.50, Piano-forte Trio, Op. 20 (Paul Griener), by the Ninko Trio. 9.15, Weather, News and Sports Notes.

HILVERSUM

Announced HILVERSUM, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Catholic Radio Society (K.R.O.). 11.55 a.m., Concert by the K.R.O. Sextet: Gramophone Records in the interval. 1.25 to 1.40, Interval. 1.40, Light Music on Gramophone Records. 2.40, Organ Recital by M. F. Haak, with Songs by Mile. J. Boelen (Contralto); Wedding March (Widor); Songs: (a) Ich dich zufrieden und sei stille (Bach), (b) Kommt, Seelen dieser Tag (Bach), (c) Jesus, unser Trost und Leben (Bach), (d) Gebet (Hiller); Andante, Cantabile (Beethoven); Gothic Suite (Bislinnann); Three Songs (Cornelius); (e) Vater Unser, der du bist im Himmel, (f) Gebetlied werde dein Name, (g) Zu uns komme Dein Reich; Fantasia (Haak). 3.40, Trio Concert. H. van Born (Violin), S. Brill (Cello), and C. van Boven (Piano-forte); Trio, Op. 1, No. 1 (César Franck). Trio in D Minor, Op. 9 (Mendelssohn). 4.40, Agricultural Talk. 5.10, Concert by the K.R.O. Boys, conducted by P. Luntenhouwer. Soloist: J. Mossel (Songs). 5.55, Rhetoric Lesson. 6.25, Concert by the K.R.O. Boys (contd.). 6.50, Light Music on Gramophone Records. 7.10, Police Notes. 7.25, Talk. 7.40, Concert by the K.R.O. Boys (contd.). 8.10, News. 8.15, Agricultural Talk. 8.40, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen. Soloist: Mile. Nadia de Cléry (Songs). Overture, Iphigenia in Aulis (Glück); Songs: (a) Caro mio ben (Giordano), (b) Chanson triste (Dupare), (c) Ständchen (Strauss); Selection from Tristan and Isolde (Wagner); Tristan's Vision and Death from Tristan and Isolde (Wagner). 9.25, Song Recital by Mile. Nadia de Cléry. 9.45, Concert by the K.R.O. Orchestra (contd.); Persian March (S.R.O.); Operetta Overture (Lincke); Waltz from Der arme Jonathan (Müllbeker); Selection from La Traviata (Verdi); Meditation (Bach-Gounod); Selection from The Bird Fancier (Zeller); Gramophone Records: Unter nemem Regime (Erl); Waltz, España (Waldteufel); From the Rhine to the Danube (Rhode). 11.10, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.41, Concert by the Wireless Orchestra, conducted by Nio Treep, with Gramophone Interludes. 1.40 p.m., Talk. 2.0, Light Music on Gramophone Records. 2.10, Concert by the Wireless Chamber Orchestra, conducted by Nio Gerlach; Persian March (Joh. Strauss); Carnival Overture (Suppé); Cradle Song and Old Minuet (Szabadi); Selection from The Queen of Sheba (Gounod); Gramophone Records: Waltz from Weiner Blut (Joh. Strauss); Ninn (Tosti); Cabaletta (Lack); Selection from Die geschiedene Frau (Fall); Paraphrase on Hungarian Folk Songs (Padouk). 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Concert by the Little V.A.R.A. Orchestra, conducted by P. Duchant. 4.30, Programme for Children. 5.10, Concert by the V.A.R.A. Orchestra, conducted by P. Duchant. 5.55, Organ Recital by Johan Jong, with Songs by L. Fuld. 6.40, Talk. 7.0, Concert by De Fliedruiters; When Sally left the Alley (Rose-Mann); Let's all sing like the Birdies sing (Evans); Sweet Muchacha (Ager);

Halewijn (Verhaar); So marschieren die Bayern (Kreisler); Ein stilles Glück (Kreisler); Ich wußte gern einmal verlobt (Kreisler); Schöne Isabella von Kastilien (Boetz); After-to-night we say Good-bye (Towers); Wir tanzen Weitschlager (Borchert); Melody (Colson); Tempo Tempo (Schöntemeyer). 7.40 to 10.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 7.40, Religious Address. 8.10, Wagner Music on Gramophone Records. In the interval at 8.40, Talk. 9.40, News Bulletin. 9.55, Talk on Wagner. 10.25, Gramophone Records. 10.40, V.A.R.A. Programme; Gramophone Records of Light Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.15 p.m., Announcements and Gramophone Records. 6.25, Sports Notes. 6.30, See Warsaw. 10.0, The Letter Box in French.

KAUNAS

1,935 metres; 7 kW.—6.30 p.m., Concert of Light Music. 7.10, Medical Talk: Nervous Disorders. 7.30, Variety Programme. 7.50, Talk in Hebrew. 8.10, Concert.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres, 40 kW.; and HELSINKI, 368.1 metres.—5.40 p.m., Talk. 6.5 (from Helsinki), Symphony Concert by the Municipal Orchestra, conducted by Georg Heberg, relayed from the University. Soloist: Wolfgang Schneiderhan (Violin). Brandenburg Concerto (Bach); Overture, Coriolanus (Beethoven); Violin Concerto in A Minor (Glazunov); Symphony No. 3 in C, Op. 21 (Borresen). 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert conducted by Eysoldt. In an interval at 1.0 (approx.), Announcements. 1.30, Sponsored Programme, with Gramophone Records. 2.30, Economic Notes and Time Signal. 2.50, Programme for Children. 3.20, Programme for Young People. 4.0, See Munich. 5.20, English Conversation. 5.45, Weather, Time, Economic Notes, and Sports Forecast. 6.0, Masters of Travel Description: Edwin Erich Dwinger: A Journey to Greece. 6.20, Talk: A Hundred Years of Prison Welfare Work in Wuppertal. 6.55, Announcements. 7.0, Orchestral Concert of Viennese Music, conducted by Kühn. Overture, Wiener Geschichten (Helmberger); Waltz, Alt-Wien (Kremsner); Suite of Schubert Dances (Kühn); Waltz (Bittner); Lively Variations on a Waltz by Johan Strauss (Zador); Overture, Wiener Frauen (Lehár); Waltz, Wiener Luft (Ziehrer); Eysler Potpourri (Hrudy); Waltz, Neu Wien (Joh. Strauss); Polka, 's gibt nur a Kaiserstadl (Joh. Strauss); Oesterreichischer Befliermarsch (Joh. Strauss). 9.5, Announcements, Educational Notes, and Sports Notes. 9.20, Songs and Recitations. 9.50, Serenade conducted by Wolf. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 129 kW.; and DRESDEN, 319 metres.—11.5 a.m., Orchestral Concert, conducted by Wilhelm Schmidt. In the interval at 12 Noon, News, Weather, Snow Report and Time. After the concert, Exchange Quotations. 1.30 p.m., Art and Film Report. 2.15, Talk for the Country Woman. 2.35, Economic Notes. 3.0 to 3.15, The Gardening Calendar for March. 3.30, Orchestral Concert, conducted by Count von Kalkreuth; Overture, Inventuti et patrie (Kaun); Selection from The Merry Wives of Windsor (Nicola); Waltz, Paysage d'automne (Waldteufel); Festlicher Marsch (von Vignau); Melodies (Hohle); (a) Forest Calm, and (b) Elf Dance; Selection from The Merry Peasant (Fall). 4.30, Book Review. 5.25, English Lesson. 5.50, Programme to be announced. 6.0, Artist's travel round the World—a Radio Sequence (Wilfried Böpel). 6.35, Concert by a French Horn Quartet; Wohlaufl, noch getrunken (Schumann); Auf zur frühlichen Jagd (Pfeiffer); Der Wildschütz (Pfeckl); Ein Vögelin sang im Lindenbaum (Eberle); Gute Nacht (Möhring). 7.0, Der Dresdner Zwinger—Radio Sequence (Herbert Roth), with Music by the Dresden Mozart Society's Orchestra, conducted by Erich Schneider. 8.15, Talk on Economics. 8.30, Concert by the Dresden Philharmonic Orchestra, conducted by Heinrich Svoboda; Symphonic Overture, Op. 13 (Kornauth); Concerto (Fink); Five Orchestral Pieces (Kaufmann). 9.30, News Bulletin. 9.35 (approx.), Gramophone Concert: Leichte's Blut (Jos. Strauss); Song, Spiel ich die Unschuld vom Lande from Die Fledermaus (Joh. Strauss); Corinthian Song Variations (Strobl); Serenade from The Goldsmith of

Toledo (Offenbach); Gondola Song from Eine Nacht in Venedig (Joh. Strauss); Old Vienna (Schubert-Friedmann); Country Suite (Scassola); Potpourri of Soldier Songs, Was unsere Soldaten sangen; Selection from Rigoletto (Verdi); Three Old Songs; Funkegger (Noeck); March Potpourri (Zimmer). 10.30 (approx.), Close Down.

LINZ.—See Vienna.

LWOW

381 metres; 16 kW.—6.0 p.m., Talk. 6.15, Miscellaneous Items. 6.30 to 10.0, See Warsaw. 10.0 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.10 p.m., Radio Gazette for Lyons and the South East. 8.30, Programme arranged by Les Amis de Guignol, relayed from the Salle Molière, with Introductory Talk. After the Programme, News Bulletin.

MADRID

ARANJUEZ (EAQ); 30.43 metres; 20 kW.—10.30, Variety Concert. 10.45, Dramatic Programme. 11.0, Variety Concert (contd.). 11.35, Answers to Correspondence. 11.40, Spanish-American Talk. 11.45, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations and Programme of Musical Novelties. In the interval: Medical Talk. After the Programme: Variety Items by Ramon Gomez de la Serna. 8.15, News Bulletin and Political Review. 8.30 to 9.30, Interval. 9.30, Chimes, Time Signal and Political Review. 9.45 (approx.), D. Pedro A. De Alarcon Memorial Programme for the Centenary of his Birth. 11.45, News Bulletin and Programme Announcements for Listeners Abroad. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—5.5 p.m., Talk. 5.15 till Close Down, See Prague. 9.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—4.30 p.m., Wagner Concert. 5.30, Concert of Soviet Music. 8.0, Review of the Week and Answers to Correspondents in English.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—4.0 p.m. (from Nürnberg), concert by the Nürnberg Concert Society's Orchestra, conducted by Philipp Weimer; Overture, Die Felsenmühle (Reissiger); La lettre de Manon (Gillet); Percussive (Culotta); Happy Heart (Culotta); Fantasia on Themes by Weber (Schreiner); Romance, Die Nacht (Rulinstein); Schattenspiels (Fueck); Oriental Suite (Popy). 5.15, Talk on Occupations: The Apprentice in the Textile Industry. 5.35, Talk: German Ideas of Government. 5.55, Time, Weather, Agricultural Notes and Snow Report. 6.5, Winter Sports Notes. 6.25, Concert by the Garmisch-Weilheim Teachers' Choral Society, relayed from the Turnhalle; Murnau: Three Medieval Melodies. (a) Schenkhubachs Reiterlied (Kufel), (b) Twentieth Century Mimmelied (Pilland), (c) Landesknechtsteden (Zengerle); Soviet Stern (Engelberg); Unterm Machandelbaum; Ein Tag im goldenen Licht (Strasser); Heimat (Trunk); Wegwarte (Kaun). 7.0, Concert of Light Music by the Symphony Orchestra of the Palatinate and Saar Districts, conducted by Ernst Boche. 8.0, Topical Talk. 8.10, Twenty Three from U.S.A.—An Extract from History (Hellmuth Unger). 9.20, Time, Weather, News and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—4.30 p.m., Programme for Schools. 5.0, French Lesson. 5.30, Song Recital by M. A. Hauge (Baritone). 6.0, Announcements, Weather and News. 6.30, English Lesson. 7.0, Time Signal. 7.1, Concert by the Philharmonic Orchestra, conducted by M. Odd (Grüner Hegge); Symphony in D Minor (Sinding); Norwegian Rhapsody, No. 1 (Halvorsen); Exotic Suite (Aif Hurum); Carnaval de Paris (Svendsen). 8.30, Foreign Agricultural Report, Weather and News. 9.0, Topical Talk. 9.15, Reading. 9.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

537.6 metres; 3 kW.—7.0 p.m., Dopplavoro Notes, Tourist Report, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 7.20, Popular Music on

Gramophone Records. In an interval at 7.30, Time and Announcements. 7.45, Manon—Opera in Five Acts (Massenet). In the intervals, Talk and Literary Notes. After the Opera, News.

PARIS

EIFFEL TOWER; Call FLE; 1,445.7 metres; 18 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Le Journal Parle. 7.20, Weather Report. 7.30, Concert by the Radio Orchestra, conducted by Edouard Flament; Prelude to Pénélope (Fauré); Sicilian Rhapsody (Silver); Pavane from Le Maschere (Mascagni); Fête bretonne (Lazzari); Pagode au crépuscule (Flament); Overture, Hansel and Gretel (Humperdinck). 8.15, Musical and Literary Programme for Young People. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN; 328.2 metres; 60 kW.—6.45 p.m., Le Journal Parle. 7.0, Gramophone Concert of Variety Music. 8.15, Interval. 8.30, Charles Lecocq Concert, by the Station Symphony Orchestra; Selection from (a) Le cœur et la main, (b) La petite mariée. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd.). 7.45, Gramophone Records; Gopak (Mussorgsky); Humorous Scenes (Leonard); Habanera (Sarasate). 8.0, Press Review and Weather. 12 Noon, Jewish Address. 12.30 p.m., Concert by the Kretzky Orchestra; Symphony (Mozart); Turkish March from The Ruins of Athens (Beethoven); Overture, To the Story of the Lovely Melusina (Mendelssohn); Andante from a Quartet (Schumann); Waltz in A (Chopin); Mazurka (Chopin); Nocturne (Boellmann); Gottlie Minuet (Boellmann); Marche joyeuse (Chabrier); Dolly (Fauré). In the interval at 1.0, Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 4.30, Advanced English Lesson. 4.50 to 6.10, Interval. 6.10, Agricultural Talk. 6.30, Concert by the Kretzky Orchestra; Mouvement d'eau (Migot); Sketches (Gaubert). 6.50, Talk on Social Insurance. 7.0, Talk: Wagner and Baudelaire. 7.20, Concert (cont'd.): Love Song (Ludwig); Jean qui pleure, Jean qui rit (Gillib); Mandoline Serenade (Eilenberg); On the Banks of the Douro (Marie); Eternelle Ivresse (Ganne); Mascarade (Lacôme). 7.45, Commercial Prices and News. 8.0, Reading. 8.30, News and Weather. 8.40, Gastronomic Review. 8.45, Orchestral Concert, conducted by E. Bigot. Soloists: J. Quesnel (Violin). Overture, Polyeucte (Dukas); Le Chevalier à la Tulipe noire; Spanish Rhapsody for Violin and Orchestra (Lalo); Symphony No. 2 (Kaband); España (Chabrier). In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts, from New York. 9.5, Business News. 9.15, S.A.I. Musicale (Carnegie Tech Chapter). 9.30, Weather Report. 9.32, Market Reports. 9.45, Johnny Muskrat. 9.50, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Muskingum College Music Clubs. 10.30 to 11.15, New York Relay. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Our Daily Food—George Rector and Judge Gordon. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45 to 3.30 a.m. (Saturday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Hilda Burke (Soprano). 12.30, Five Star Theatre—Charlie Chan. 1.0, Nestlé's Programme. 1.30, Time Signal and Adventure in Health. 1.45, Howard Thurston, The Magician. 2.0, The First Nighter. 2.30, Armour Programme. 3.0, Alice Joy with Rollickers. 3.15, Vic and Sade. 3.30, Bridge School of the Air, by E. Hall Downes. 3.45, Bradley Kincaid. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News Flashes. 4.20, Smith Ballou and his Orchestra. 4.30, Henry Halstead and his Californians. 4.58, KDKA Artist Bulletin. 5.0, Cotton Club Orchestra, from New York. 5.30, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Brno. 3.55, Talk: Town Planning. 4.5, Concert by the Prague Quartet; Pianoforte Quartet No. 2 in E Flat (Mozart); String Quartet in G. Op. 106 (Dvorák). 5.5, Agricultural Report. 5.15, Talk for Workers; Karl Marx and President Masaryk. 5.25, News in German. 5.30, German Transmission; Two Talks: (a) On Peace, (b) On Creative Art. 6.0, Chimes. 6.1 News Bulletin. 6.10, Talk: Betrothals and Weddings in the Arabian Desert. 6.25, Talk on the following Transmission. 6.30, Hugo Wolf Song Recital by Jaromira Tomaskova-Novakova. 6.55, Talk

MARCH 10th

FRIDAY

continued

by Prof. Jirak: Forms of Orchestral Music, with Illustrations by the Station Orchestra. 7.30, Concert by the Station Orchestra, conducted by Otakar Jeremias. Soloist: Ada Nordenova (Soprano). 8.0, Time Signal. 8.1, Concert by the Prague Teachers' Choral Society, conducted by Method Dolezil. 9.0, Time Signal. 9.1, News Bulletin. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.0 p.m. (from Geneva), Programme for Children. 5.15 (from Geneva), Discussion with Young People. 5.30 (from Lausanne), Educational Talk. 6.0 (from Geneva), Weather Forecast, News and Announcements. 6.30 (from Lausanne), Lesson for Printers. 7.0 (from Geneva), Humorous Pianoforte Recital. 7.15 (from Geneva), Three Radio Sketches. 8.0 (from Geneva), Cabaret Programme. 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva), Talk: The Work of the League of Nations. 9.30 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes and News. 9.30, By the Fireside.

RIGA

525 metres; 15 kW.—3.50 p.m., Concert. 4.50, Talk: The History of Industrial Development. 5.20, Song Recital. 5.40, Latvian Lesson. 6.10, Weather Forecast. 6.15, Symphony Concert by the Radio Orchestra, conducted by Prof. Medins. First Symphony (Tchaikovsky); Concerto in B Flat, No. 1, for Violin (Vivaldi-Frenkel); Suite, Breve (Aubert). In the interval at 7.0, News, and at 8.0, Weather and News. 8.30, Dance Music. 9.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 190, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 280, 25.4 metres.—7.0 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Concert from Turin. In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.0, Pianoforte Recital by Claudio Arrau, from the Santa Cecilia Academy. 6.0 (Naples), Shipping and Sports Notes. 6.30, Agricultural and Dopolavoro Notes. 6.20, Giornale Radio and Light Music on Gramophone Records. 7.0, Time and Announcements. 7.5, Report of the International Institute of Agriculture (in Italian, English, French, German, and Spanish). 7.30, Talk on Sport, Sports Notes, and Tourist Report. 7.45, Concert. Soloists: Alfredo Serricelli (Tenor), Bianca Bianchi (Soprano), and G. Castello (Baritone); Quintet for Pianoforte, two Violins, Viola, and Cello (Brahms); Modern Italian Lyrics for Tenor; Dance of the Sylphs, Minuet, and Hungarian March from The Damnation of Faust (Berlioz). 8.30, A chi reporterà?—Comedy in One Act (Eugenio Chechi). 9.0 (approx.), Variety Concert. Third Act of Werther (Massenet); Prologue to I Pagliacci (Leoncavallo); Overture, The Merry Wives of Windsor (Nielsch). 9.55, News Bulletin

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—7.30 p.m. to 12 Midnight, New York Relay. 7.30, Three Shades of Blue—Male Trio. 7.45, Muted Strings. 8.0, Sonata Recital. 8.15, Famous Loves. 12 Midnight, New Kenmore Orchestra. 12.15 a.m. (Saturday), Stock Reports. 12.30 to 1.30, New York Relay. 12.30, Van and Don—Comedy Team. 12.45, The Goldbergs—Comedy Team. 1.0, Cities Service Concert. 1.30, WGY Farm Programme. 2.0, K7—Secret Service Spy Story, from New York. 2.30, Pond's Programme, and Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; BASEL, 244.1 metres; and BERNE, 245.9 metres.—9.20 a.m. (from Basle), Die Föhre—Monologue (Hauemann). 9.50 to 11.28, Interval. 11.28, Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40, Concert by the Little Radio Orchestra. 12.35 to 12.45 p.m., Weather and Exchange. 2.30 (from Basle), Light Music by the Radio Quintet. 3.30 (from Basle), Programme for Children. 4.0, Variety Music on Gramophone Records. 4.30 to 4.35, Weather. 5.30 (from Berne), Reading: The Schoolmaster of Schwarzenburg (Bürki). 6.0, Time, Weather, Market Prices, Tourist Report and Sports Notes. 6.20 from Berne, Folk Music. 6.45, Der Amerikaner—Peasant Comedy in Five Scenes (Küchler-Ming). 8.45, Weather

and News. 8.55, Concert by the Radio Orchestra. 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—12 Noon, Broadcast for Schools. 4.5 p.m., Programme for Children. 4.25, Song Recital by Walborg Beer. 4.45, Reading. 5.15, Variety Music on Gramophone Records. 6.30, Talk: Swedish Chimes in Tower and Bellry, relayed from Uppsala, 453.2 metres. 7.0, Pianoforte Sonata in F Minor, Op. 5 (Brahms) by Astrid Berwald. 7.30, Social Talk. 8.0, Military Band Concert conducted by Per Grundström; Coronation March from The Prophet (Meyerbeer); Overture; Pique Dame (Suppe); Waltz, Frühlingsstimmen (Joh. Strauss); Two Finnish Songs (Märkarto); Symphonic Poem: Kors-holm (Järnefeldt). 9.0, Chamber Music. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert: Le camp de Wallenstein (d'Indy); Sinfonia breve (Inghelbrecht); Suite Carnavalesque (Thomé); Overture, Tutti in Maschera (Pedrotti); Impressions de Damas (Kongell). 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Light Music on Gramophone Records. 2.0 to 4.45, Interval. 4.45, Literary Talk in French. 5.0, Concert of Jazz Music, conducted by M. Roskam; One-step, Lamour (Verdun-Oberfeld); Foxtrot, When the Morning rolls around (Woods-Campbell-Connelly); Linger a little longer (Woods-Campbell-Connelly); Waltz, sag' mir Darling (Reisfeld-Freyberg-Marbot); Foxtrot, The old Kitchen Kettle (Woods-Campbell-Connelly); We're a Couple of Soldiers, my Baby and Me (Woods); Wer weiss warum? (Lesso-Valerio); Foxtrot, When we're alone (Jason-Burton); Foxtrot (Goering-Bernie); Waltz from Fran Luna (Lineke); Wouldn't it be wonderful? (Clarke-Akt); Foxtrot, Stay way from my Arms (Kaper-Jurmann-Perry-Connelly); Tango, Le true du Brésilien (Mireille); Foxtrot, Let's try again (Newman and Jones); Waltz, L'heure d'amour (Cuvillier); Foxtrot, Ein nettes kleines Fräulein (Sachs-Schwarz); One-step, Pamploña (Cochlyn). 6.0, Concert of Chamber Music by the Station Trio, relayed from Lille, 265.4 metres. 7.0, Topical Talk in German. 7.15, Vocational Talk. 7.30, Time and News. 7.45, Lottery Results. 8.0, Fortunio—Opera in Four Acts (Messager). 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—12.15 p.m., Time, News, Weather, Snow Report, and Programme Announcements. 12.30, 'Soldiers' Songs on Gramophone Records. 1.0, Concert arranged by the Post Office. 1.30, Advanced English Lesson. 2.0 to 4.0, Interval. 4.0, See Munich. 5.15, Time, Weather and Agricultural Notes. 5.25, Talk: Johann Gutenberg and his Bible. 5.50, Medical Talk. 6.15, Time and News. 6.20 (from Mannheim), Talk by Paul Teichner: A Proposal for a Sunday Rumble. 6.30, March, a Literary and Musical Programme by Emma Mayer (Contra), Martin Lang, Walter Schwarz, and Ernst Stockinger (Recitation). 7.10, Concert of Eighteenth Century Music by Baden and Württemberg Composers, conducted by Emil Philharmonie Orchestra, conducted by Emil Kuhn; Trio in C Minor (Stamitz); Symphony in E (Holtzbaue); Quartet in C (Richter); Old Württemberg Regimental Marches (arr. Karl Haas). 8.20, Sources of Industry—III Cotton—a Radio Sequence. 9.10, Time, News, Weather, Snow Report, and Programme Announcements and Sports Results. 9.45, Orchestral Concert, relayed from Darmstadt. Soloist, Hans André (Cello); Fourth Symphony in A (Frederick the Great); Concerto for Gamba (Graun); Sinfonia da Camera (Richter); Symphony No. 3 (C. P. E. Bach). 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Leonora Overture (Beethoven) by a Symphony Orchestra. 6.30, Programme of Tangos. 6.45, Tourist Talk. 7.0, Songs from Sound Films. 7.15, Racing Results, Market Prices and News. 7.25, Local News Bulletin. 7.30, Popular Music. 7.45, Operetta Music: Airs from: (a) Les Noces de Jeannette (Massé), (b) Les Saltimbanques (Ganne), (c) Le Roi Pansole (Hommegeger). 8.0, Orchestral Music. 8.15, Opera Music: Selection from (a) Lohengrin (Wagner), (b) Faust (Gounod), (c) Sigurd (Reyer). 8.30, Chansonnets. 8.45, Debussy Concert: Selection from L'Enfant prodigue; Prelude, a l'après-midi d'un Faune; Forgotten Melodies; Three Nocturnes; Three Songs. 9.30, Accordion Music. 9.45, Concert by a Viennese Orchestra. 10.15, North African News. 10.30, Concert for Listeners in Morocco; Selection from Zampa (Hérold); Tomber amoureux (Boyer); Violin Solo, Piece (Ries); Melody from La Mascotte

(Andran); Melody (Sponz); Waltz (Peyronnin). 11.0, Choral Music. 11.15, Opera Music: Ballet Music from Lakmé (Delibes); Overture, Mirella (Gounod). 11.30 to 12 Midnight, Programme in English by the I.B.C., Mr. H. K. Hitechoek announcing. 11.30, Waltzes, Waltz Potpourri; Tales from the Vienna Woods (Joh. Strauss); Wine, Woman and Song (Joh. Strauss); Selection from a Waltz Dream (O. Strauss); Frühlingsstimmen; The Blue Danube; Wiener Blut; Anelife Waltz Favorites. 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Saturday), Musical Programme. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—3.0 to 6.0 p.m., See Turin. 6.0, Variety Music on Gramophone Records. 6.20, See Turin. 6.35, Orchestral Music from the Café Dante. 7.0, till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres Genoa, 312.8 metres; and Florence, 500.8 metres.—3.0 p.m., See Rome. 5.35, Giornale Radio, Agricultural and Dopolavoro Notes. 6.0, Gramophone Records of Variety Music. 6.20, Giornale Radio. 6.30, Time, Announcements, Report of the Royal Geographical Society and Light Music on Gramophone Records. 7.30, Talk on Sport, followed by Gramophone Records (cont'd.). 8.0, Symphony Concert, conducted by Willy Ferrero; The Seventh Symphony in A (Beethoven); Two Preludes (Rossellini); Fêtes (Debussy); Bolero (Ravel); The Ride of the Valkyries (Wagner). Talk in the interval. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in German. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 331.2 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres, and Salzburg, 218.5 metres. 4.0 p.m., Concert: Gertrude Hauk (Soprano), Fanny Brandl (Violin), and Herta Reiss (Pianoforte). Part I—Songs: Zwischen dir und mir (Mauy); Kennst du das auch (Mauy); Arabian Love Song (Senn); Dämmerung (Senn); Wenn wir fremd uns werden (Skocic); Es singen die Weiden (Skocic); Geli' nicht, Geliebte (Pamer); Welteneinsamkeit (Pamer); Tanzlied (Rausch); Wann bricht ein mein reifer Tag (Rausch). Part II—Chamber Music: Sonata, Op. 18, for Violin and Pianoforte (Beethoven). 5.0, Tourist Report. 5.15, Skiing Report. 5.30, Sports Notes. 5.40, Programme to be announced. 5.55, Talk: How the Cosmic Ultra Ray was discovered. 6.20, Time, Weather and Programme Announcements. 6.30 (from Linz), Choral Concert by the German Folk Song Society and Soloists. 7.15, Curt Eilwiespöck reads from his own Works. Introductory Talk by Erwin Weill. 7.45, Concert of Italian Music by the Vienna Symphony Orchestra, conducted by Cesare Nordio; Suite (Corelli); Sonata in D for Flute, String Orchestra and Harpsichord (Searlatti); Nocturne and Gigue (Martucci); Songs from Le Poème de Bruges (Nordio): (a) Le lac d'amour, (b) Le beffroi; Comedy Overture (Bisont). 9.0, News, Weather and Snow Report. 9.15, Traffic Report. 9.25, Dance Music by the Fred Clement Band, relayed from the Graben Café.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Popular Music on Gramophone Records. 12.20 p.m., Weather Report. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Aviation Notes and Anti-Gas Drill. 2.30, Talk on Maritime and Colonial Affairs. 2.35, Review of Periodicals. 2.50, Light Music on Gramophone Records. 2.50, Educational Talk: Medieval Towns. 3.40, Talk, relayed from Cracow (312.8 metres). 4.0, Concert by a Police Band, conducted by A. Sielski; Overture, (Eilenberg); Minuet (Paderewski); Selection from Il Trovatore (Verdi); Dervishes' Chorus (Sebek); Japanese Festival (Yoshitomo); Air from Tannhäuser (Wagner). In the interval, Announcements. 4.55, Programme Announcements. 5.0, Talk on Polish Literature. 5.20, News. 5.25, Light Music, relayed from the Café Italia. 5.50, Skiing Notes, relayed from Cracow. 6.0, Miscellaneous Items. 6.20, Polish and Foreign Agricultural Reports, relayed from Wilno (563 metres). 6.30, Talk. 6.45, Radio Journal. 7.0, Talk on Music. 7.15, Symphony Concert by the Warsaw Philharmonic Orchestra, conducted by G. Fitelberg. Soloist, Henry Szeryng (Violin). Symphonic Variations on Chopin's Prelude in A (Noskowski); Spanish Symphony for Violin and Orchestra (Lalo); Dance Suite (Sternicka-Niekrasz); Violin Solos: (a) Prayer (Handel-Flesch), (b) Prelude and Allegro (Pugnani-Kreisler), (c) Waltz (Chopin-Huberman). In an interval: Literary Talk, 9.40, Sports Notes. 9.45, Radio Journal. 9.55, Aviation Weather Report and Police Notes. ZURICH.—See Schweizerischer Landessender.

ATHLONE

413 metres; 60 kW.; and **CORK**, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 2.45 to 4.0, Running Commentary on the International Rugby Match—Ireland v. Wales—relayed from Ravenhill Park, Belfast. 6.15, Gramophone Concert of Variety Music. 7.20, News. 7.30, Time Signal. 7.31, Talk on Allotments. 7.45, Gaelic Talk. 8.0, Concert by the Station Orchestra. 8.30, Tenor Solos by William Fortune. 8.50, Pianoforte Recital by Madame Grossi. 9.5, Folk Songs by Mme. Erni Ritter. 9.20, The Station Orchestra. 9.40, Fay Sargent—Songs and Stories. 10.0, Uilleann Pipe Solos by Leo Rowsome. 10.15, The Station Orchestra. 10.30, Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Programme for Children. 7.0, Request Gramophone Records. 7.30, Exchange Quotations and Catalan Grammar Lesson. 8.0, Light Music on Gramophone Records and News. 9.0, Chimes from the Cathedral. Weather Forecast and Market Prices. 9.5, Concert by the Station Orchestra: March, Fest und treu (Rust); Waltz, Galanterie (Leopold); Talaverana (Dafiez-Fandino-Moras); Oriental Scene (Armandou). 9.30, Programme from Madrid (EAJ7). 11.0 (in an interval), News Bulletin.

BARI

270 metres; 20 kW.—7.0 p.m., Agricultural Notes; Tourist Talk; Dopolavoro Announcements and Sports Notes. 7.20, Giornale Radio and News Bulletin. 7.30, Time Signal and Announcements. 7.35 (approx.), Concert of Operetta Music and Songs; In the interval: Theatre Notes. 9.30, Popular Music on Gramophone Records. 9.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

BEOGRAD, 430.4 metres; 2.8 kW.—4.0 p.m., Popular Music on Gramophone Records. 5.55, Times and Programme Announcements. 6.0, Recital of Yugoslav Songs by Bozidar Motrović. 6.40, Orchestral Concert. Overture, The Water Carrier (Chopin); Potpourri, Von Wien durch die Welt (Heubly); Spanish Waltz, La gran via (Lincke). 7.30, Programme relayed from Zagreb (307 metres). 9.0 (approx.), News, followed by Cigany Music, relayed from the Rudnickin Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert from Berlin (Witzleben). 2.0, Programme for Children. 2.30, Weather and Exchange. 2.45, Reading (Hermann Hesse). 3.0, Talk: Voluntary Work and Settlements. 3.30, See Hamburg. 4.10, Review of the Week. 5.0, Chamber Music—Trio, In A Minor, Op. 184, for Pianoforte, Oboe, and Horn (Carl Reinecke). 5.30, Talk: Biographical Sketches of the Great Discoverers, Inventors, and Explorers—I, Fraunhofer. 5.55, Weather and Announcements. 6.0, Talk: The Church and Industry. 6.30, A Poem. 6.35, Concert of Favourite Modern Melodies, by the Claus Bothé Orchestra. 8.0, See Munich. 9.20, Weather, News and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—3.0 p.m., Orchestral Concert, conducted by Bruno Seidler-Winkler: Overture, Undine (Lortzing); Ein Sonntag (Reim); Two Melodies for Strings, Op. 53 (Grieg); Märkische Suite, Op. 92 (Kau). 3.50, Third Act of The Mastersingers—Opera (Wagner), relayed from the Play House. 4.50, Sports Notes. 5.0, (Clothes make the Man—Radio Play after Gottfried Keller's Novel. 5.55, The Witzleben Station informs its Listeners... 6.0, Topical Talk. 6.15, Modern Occupants of Old Houses—Alfred Richard Meyer talks to the Tenants of Lessing's House, Kleist's House, Raabe's House and Kohlhaas' House. 6.45, Hermann Simon Song Recital by Lula Mysz-Gmeiner, with Flute, Clarinet and 'cello Accompaniment: Mide bin ich, geh zur Ruh; Wanderer; Trost der Nacht; Musikern Klang; Es tanzt ein Butzemann; Die fünf Hühnerchen; Kinderpredigt. 7.10, Announcements. 7.15, Talk: The Future Problems of Town and Country Parishes. 7.30, Variety Programme, conducted by Alfred Braun. 9.15, Weather, News and Sports Notes. 9.30 (approx.), Relay of the Adlerhorst Society's Ball from the Kroll-Festsaal. 10.30, Relay of the Hellas Rowing Club Ball from the Hotel Esplanade. 11.30 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., Exchange Quotations, Market Prices and Lottery Results. 7.35, English Lesson. 8.15, News Bulletin. 8.30, Relay from the Grand Theatre or Gramophone Concert.

SATURDAY

MARCH THE ELEVENTH

PRINCIPAL EVENTS OF THE DAY

AT HOME

NATIONAL

Running commentary on Rugby match: Ireland v. Wales, from Belfast. Music hall vaudeville programme.

LONDON REGIONAL

Musical comedy programme. Pianoforte recital of the music of Saint Saëns.

MIDLAND REGIONAL

Running commentary on Rugby match: Swinton v. Warrington. L. & N.E. Railway Music Society's concert, from Sheffield.

NORTH REGIONAL

Orchestral concert from National Museum of Wales.

WEST REGIONAL

Glasgow Caledonian Strathspey and Reel Society's concert.

SCOTTISH REGIONAL

Running commentary: Ireland v. Wales. "The Miracle Man," a play by Dr. F. Lyburn.

BELFAST

Running commentary: Ireland v. Wales. "The Miracle Man," a play by Dr. F. Lyburn.

ABROAD

COPENHAGEN

9.15 p.m. Concert of light music, by the Station Orchestra.

HEILSBURG

7.10 p.m. Johann Strauss' Operetta Music in chronological sequence.

LEIPZIG

6.30 p.m. Choral concert, conducted by Karl Gerstenhauer.

OSLO

7 p.m. "Springtime," a revue relayed from the Chat Noir.

RADIO PARIS

8.45 p.m. Schumann pianoforte recital, by Léon Kartun.

STRASBOURG

5 p.m. Pasdeloup Symphony Concert, from the Théâtre des Champs Elysées, Paris.

STUTTGART

7.30 p.m. Operetta concert.

WARSAW

9.5 p.m. Chopin recital.

BRATISLAVA

279 metres; 11 kW.—3.10 p.m., Concert of Popular Music by the Station Orchestra, conducted by J. Odcházal. 4.10, See Prague. 4.20, Light Music on Gramophone Records. 4.50, Rudolf Dilong reads from his own Works. 5.5, See Prague. 5.25, Gramophone Records of Variety Music. 5.45, Talk for the Housewife. 6.0, See Prague. 6.30, The Bird Fancier—Operetta in Three Acts (Zelky). 9.0, See Prague. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ**, 253 metres.—12.10 p.m., Gramophone Concert of Popular Music. 1.45, Post Office Programme with Gramophone Records. 2.10, Agricultural Prices. 2.40, Film Notes. 3.30, Orchestral Concert, conducted by Franz Marszałek: Suite, Beim Tanz der Nationen (Mannfred); The Dance of Pan (Juel-Frederiksen); Spanish Serenade (Welsch); Foxtrot Potpourri, Wir tanzen Weltsehlinger! (Berbert); March, Heldenhaft! (Wagner); Waltz, Geschichten aus dem Ennstal (Pacherweg); Turkish Suite (Gauwin). 4.30, Review of Books on International Politics. 4.50, Educational Talk. 5.20, Orchestral Concert, conducted by Franz Marszałek: Overture, Die Berliner in Wien (Marszałek); Selection from Countess Maritza (Kálmán); Original Tyrolean Ländler (Trojan); Waltz from Gai-Gri (Lincke); Potpourri, Servus Wien! (Dostal). 6.30, Weather for Farmers and Programme to be announced. 7.0, Concert by the Silesian Philharmonic Orchestra. In an interval at 8.0, Announcements. 9.0, Time, Weather, News, Sports Notes and Programme Announcements. 9.30 to 11.0, Concerts from Berlin (Witzleben). 11.0 (approx.), Close Down.

BRNO

342 metres; 35 kW.—5.0 p.m., Theatre and Film Review. 5.15, See Prague. 5.25, German Transmission: News and Talk on German Composers. 6.0, See Prague. 6.30, See Bratislava. 9.0, See Prague. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

N.I.R., 509 metres; 15 kW.—12 Noon, Concert, relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert: Peer Gynt Suite (Grieg); Nana (Fallá); El Pano Moruno (Fallá); Qui donc comuando from Henry VIII (Saint-Saëns); La Prière des yeux clos (Bacy); Selection from Le Jongleur de Notre Dame (Massenet); The Toreador's Song from Carmen (Bizet); Leyiz m'plorer (Van Damme); Selection from Die Fledermaus (Joh. Strauss). 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot: March (Souza); Christiné Potpourri (Sala-

bert); Waltz (Berger); Fanciful Etchings (Kotelyby); Serenade (Thill); Selection from I Pagliacci (Leoncavallo); Melody for Violin (De Taxy). 6.0, Talk: The Survival of the Fittest. 6.15, Mozart Song Recital by Mlle. Fioriaval: Two Songs from Figaro; Constance's Song from Il Seraglio; Song from The Magic Flute. 6.30, Prelude, Choral and Fugue for Pianoforte (C. Franck), by Mlle. Rita Neuma. 6.45, Entr'acte—Sketch (André Blandin). 7.0, Gramophone Records: Prelude to Le Déluge (Saint-Saëns); Si je le savais (Tchaikovsky); Spanish Dance from La Vida Breve (Fallá); Bonda Dance from Grandados. 7.15, Talk: Political Parties in France and Spain. 7.30, Review of International Events. 8.0, Le Joy de Jardini—Operetta in One Act (Derache). 8.35, Concert by the Symphony Orchestra, conducted by M. Meulenaers: Selection from Cendrillon et le Chèvre-pied (Pierné). 8.45, Readings by Sacha Guitry on Gramophone Records. 9.0, Concert (contd.): Caprice rhapsodique (Dupuis); La Girlande des dunes (Vreulx); For Voice and Pianoforte; Wallonia (Guillaume); Selection from Le Petit Elfe Fernand (El. Schmitt). 10.0, Le Journal Parlé. 10.10, Light Music on Gramophone Records. 10.30, Orchestral Concert, relayed from the Memline Hall, Antwerp.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Gramophone Concert: March (Ivanov-Pollitov); Valse de Concert, Op. 47 (Ghazunov); Variations, from Mozart to Hindemith (Lederer); Selection from Rigoleto (Verdi); Rondino (Beethoven-Kreisler); 'cello Solos: Apres un rêve (Fauré); Selection from Der Freischütz (Weber); Melody for Clarinet (Rabaud); Norwegian Dances (Grieg); Selection from The Mastersingers (Wagner). 1.0 p.m., Le Journal Parlé. 1.10, Concert relayed from the Grand Hotel, Antwerp. 5.0, Concert by the Symphony Orchestra, conducted by M. Meulenaers. Overture, Rienzi (Wagner); Les Préludes (Liszt); Suite, The Flute of Sans-Souci (Graener); Melody from The Snow Maiden (Rimsky-Korsakov). 6.0, Gramophone Records: March (Daudenard); Schön Rosmarin (Kreisler); Bulgarian Rhapsody, Vardar (Vladigerov). 6.15, Book Review. 6.30, Gramophone Records: Overture, Leonora, No. 3 (Beethoven); Concerto No. 5 in A Minor (Vieuxtemps); Valse triste (Sibelius); March, Entry of the Royals (Halsvorsen). 7.15, Talk: Flemish Folklore. 7.30, Agricultural and Horticultural Review. 8.0, Swan—Opera (Schoemaker), relayed from the Royal Flemish Opera House, Antwerp. In the intervals at 8.45, Recitations, and at 10.0, Le Journal Parlé and Gramophone Records: Canzonetta (Mendelssohn); Allegretto from the Quartet in E Flat Minor (Tchaikovsky). 10.50, Humorous Songs by Frans Lamoen. 11.5, Light Music on Gramophone Records. 12 Midnight (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—5.25 p.m., Concert by the Sibiceno Orchestra. 6.0, Talk: The National Bank of Romania. 6.40, Light Music on Gramophone Records. 7.0, Song Recital by Mme. Evantia Costinesco. 7.20, Concert by the Radio Orchestra: Roman Potpourri (Dinicu); Dobanwilen (Cranovici). 7.50, Talk. 8.5, Concert by a Balalaika Orchestra, conducted by M. Reabecic; Waltz (Rieder); Mazurka (Levanevsky); Potpourri of Romanian Melodies: Accordion Solo (Lincke); Russian Romance (Sarov); Murela (Mozart); Romance (Stefanescu); Romanian Dance. 8.45, News.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on 540 metres from 7.20 till Close Down.—4.30 p.m., Concert by the Alexander Bura Cigany Band and Lajos Rados (Tarogato). 5.30, Talk for Workers. 6.0, Choral Concert. 6.40, The Letter Box. 7.20, Concert of Operetta Music: Selection from (a) Gasparone (Müllcker), (b) Der arme Jonathan (Müllcker), and (c) Die Försterchristl (Jarno); Waltz from Der kleine König (Kálmán); Goldblümchen (Huszka); Selection from The Chocolate Soldier (O. Strauss); Lied (Buttykay); Selection from (a) Paganini (Lehár) and (b) The Land of Smiles (Lehár); Two Songs from Janos Vitez (Kacsogh); Potpourri, Alexandra (Szirmai). 8.45, News. 9.0, Light Music on Gramophone Records. 10.50, Concert by a Cigany Band, relayed from the Café Enke.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG**, 1,153 metres; 7.5 kW.—11.0 a.m., Time and Chimes from the Town Hall. 1.5, String Ensemble Concert, conducted by A. Bendix, relayed from the Wivex Restaurant. 1.0 to 1.30 p.m., Interval. 1.30, Gramophone Concert: Tancredi Pasero: Song from Ernani (Verdi); Maria Ivogün: Two German Folk Songs: (a) Gsätzli, (b) Maria auf dem Berge; Yehudi Menuhin: Campanella (Paganini); Einar Larson, Helga Grönn and Choir: Selection from Värmländingene (Gullgren); Sven-Olof Sandberg: Song from Hungarian Nights (Brodzky); George Buck: Happy is the Corpse that the Sun shines on (Clifford-Cliff); Singing Babies: Ich lieb dich, I love you, je t'aime, from Baby (Lew Haines). 2.0, Programme for Children. 2.20, Concert by Mogens Hansens' Instrumental Ensemble. Soloist: Willy Loudrup Jensen (Songs). Overture, Nebuchadnezzar (Verdi); Selection from The Three Musketeers (Frim); Waltz (Smetana); Entr'acte Gavotte (Gillet); Melody from The Seasons (Tchaikovsky); Chanson triste (Tchaikovsky); Russian Dance (Tchaikovsky); Songs; Overture, La petite Bohème (Hirschmann); Boreuse de Jocelyn (Godard); Waltz from Klein Idas Blumen (Kloman); Polonaise from Et Hungarian Comedy Overture (Eiler-Béla). 4.40, Exchange and Fish Market Prices. 4.50, Talk on a Political Meeting in 1820. 5.20, French Lesson for Beginners. 5.50, Weather Forecast. 6.0, News. 6.15, Time Signal. 6.30, Talk: The Modern Girl and her Home. 7.0, Chimes from the Town Hall. 7.5, Lange-Müller Concert by the Station Orchestra, conducted by Laury Gröndahl: Prelude to Renaissance; Selection from Once upon a Time. 7.30, Talk: Danish Activities. 8.0, Song Recital by Ely Fischer Kjøluf. 8.15, Operetta Music by the Station Orchestra, conducted by Laury Gröndahl: Overture, La Princesse de Trébizonde (Offenbach); Selection from Les Cloches de Corneville (Planquette); March from Der arme Jonathan (Müllcker). 8.40, Reading. 9.0, News. 9.15, Concert by the Station Orchestra, conducted by Laury Gröndahl: Overture, La Sonnambula (Bellini); Waltz, Trifolien Joh. Jos. and Ed. Strauss); Two Airs from Naïla (Delibes); Pizzicato from Sylvia (Delibes); Hungarian Autumn Festival (Góhany); Two Airs from Gretka Green (Góhany); Selection from The Seasons (Tchaikovsky); Husarenritt (Spindler). 10.0, Dance Music from the Lorry Establishment. In the interval at 11.0, Time and Chimes from the Town Hall. 11.15 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FEPCAMP

225.9 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Variety Concert. 5.0 to 7.0, Programme in English by the I.B.C.C. Danvers Walker, R. Clene and E. McNabb announcing. 6.0, Concert for Folkstone Listeners: The Cuckoo Waltz (Jonassen); The Devil Dance (Petersen); The Black Forest Chiming Clock (Doppler); The Wedding of the Birds (Petersen); Crazy Pirouette (Frisk); Gold Fishes (Kroeger); The Dance of the Raindrops (Reeves); The Clock is playing (Blauw); 6.30, Concert for Isle of Thanet Listeners: Violin Solos: Sleigh Bells (Lindeman); Hungarian Dance, No. 5 in G Minor (Brahms); Moment Musical (Schubert); The Lark (Tchaikovsky); Fairy on the Clock (Myers); Serenade to Nicolette; Melody (Gluck); La Capricieuse (Bgar); The Capricious Music Box (Eresco). 7.0, Local News and Popular Music on Gramophone

MARCH 11th

SATURDAY

continued

Records. 7.30, Radio Gazette. 8.0, The Listeners' Half Hour and News Bulletin. 8.45, Violin and Pianoforte Recital. 10.0, Café Concert. 11.0 till Close Down, Programme in English by the I.B.C. 11.0, International Broadcasting Club Concert of Request Items: Let's put out the lights and go to sleep; Just like in a Story Book; The Voice in the old Village Choir; With me Gloves in me hand; I'm in the Market for you; Let's all dance the Polka; On a Dreamy afternoon; Baby's Birthday Party. 12 Midnight, Variety Music: Four Little Blackberries; Songs made famous by Vesta Victoria; All the Girls are lovely; Bow Belles; Mrs. Orsfield at home; I've had a good Day; Boys of the Loch; Teetotallers; Please Percy; Songs made famous by Mark Sheridan. 12.30 a.m. (Sunday), Songs: After the Ball; Handsome Gigolo; Let me sing and I'm happy; Rollin' down the River; Vips-soddy-say; Violet Eyes and Cherry Lips; To my Mammy; Dancing with Tears in my Eyes. 1.0, Pianoforte Solos; Tunes of Melodies; I found you; Puttin' on the Ritz; Let love take care of you; Duet; When the Circus comes to Town; Selection from The Cat and the Fiddle; One Night alone with you; Popular Selection. 1.30, Vocal Trios; You'll never realise; To-day's a Sunny Day; Without a Song; Great Day; Painting the Clouds with Sunshine; Louise; Tiptoe through the Tulips. 2.0, I'll follow you; Isn't it Romantic; A Million Dreams; Mimi; I don't want to go to bed; Dreaming; What would happen to me?; Wanderer; The London Fire Brigade; Open up dem Peary Gates; A Bedtime Story; Saffin on the Robert E. Lee; Rork your cares away; Sweet Maechela; Night-fall; Let's all sing like the Birds; Sing. 2.57, I.B.C. Good-night Melody. 3.0 (approx.). Close Down.

FLensburg. See Hamburg. FLORENCE. See Turin.

FRANKFURT

259 metres; 17 kW.; and CASSEL, 245.9 metres; and TRIER, 259.3 metres.—2.30 p.m., Programme for Children. 3.50, Exchange Quotations. 4.0 See Munich. 5.15, Exchange Quotations. 5.25, Are you going to fly in this weather? a Discussion between Dr. Orlovus, H. Brauer and Dr. Schmidt-Reps. 5.50, Diagonie; Self-Government in Agriculture. 6.15, Time, Programme Announcements, Weather and Exchange. 6.40, See Stuttgart. 9.0, Time, News, Weather and Sports Report. 9.45, Serenade from Munich. 11.0 (approx.). Close Down.

FREDRIKSSTAD. See Oslo.

FREIBURG. See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG. See Stockholm.

GRAZ. See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 15 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—3.30 p.m., Orchestral Concert, conducted by Jose Eibenschütz; Overture, Mignon (Thomas); Swedish Folk Song (Sandby); Folk Music from The Old (Mascetti); Norwegian Dances Nos. 1 and 4 (Grieg); Selection from The Land of Smiles (Lohar); Waltz, Roses from the South (John Strauss). 4.30, Radio Report on Shipping. 4.55, Talk: The True Sea Story of the Week. 5.10, Talk for Country Women. 5.20 (from Kiel), Concert of Sacred Music by the Angar Children's Choir. Solists: Luise Dünigen (Organ), Ferdinand Böhm and Max Schulz (Violins), and Richard Maatz (Flute). 6.0, Talk: Germany's Trade with Australia. 6.25, Weather. 6.30, Zither Concert, conducted by Albert Richter; Concert Overture No. 3 (Kollmanek); Minuet from the Sonata in A Minor (Kollmanek); Intermezzo, Am Märchenstrahlen (Kollmanek); Two Pieces (Pugh); (a) Liebesgruss, (b) Mädchen; Gavotte. Frühlingstraum (Schneider). 7.0, Variety Programme. 9.0, Time, Weather, Announcements, Sports Notes and Police Report. 9.30, Topical Talk. 9.40, Dance Music. 10.20, Ice Report. 10.25, Dance Music, relayed from London. 11.30 (approx.). Close Down.

HANOVER. See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—12.5 p.m., Gramophone Concert. Vier Schlager auf einer Platte (Walter); Potpourri, Was jeder kennt (Dostal); Vier Schlager auf einer Platte (Walter); Die Schönbrunner (Lammer); The Angel's Serenade (Braga); Mia Bella (Sommerfeld); Fieber Berg und Tal (Sommerfeld); Selection from Coppélia (Delibes); Schenk mir doch ein kleines bisschen Liebe (Lincke); Ach Herr Schmidt (Carlos); Vier Schlager auf einer Platte (Walter); Zeig mir den Weg ins Paradies (Domina Caros); La bella Tangelita (Abraham-Grünwald); Es ist doch so schön im Abend (Abraham-Grünwald); Vier Schlager auf einer Platte (Joost); Maskenball im Gäuse-tal (May-Schwabach); Dream Sweetheart (Green);

Wach auf du neuer deutscher Geist (Ziegler-Falkenstein); Hindenburg-Marsch (Elsner). In the interval at 12.20 p.m., News. 1.30, Programme with Gramophone Records, arranged by the Post Office. 2.0, Agricultural Prices and Exchange Rates. 2.30 (from Danzig), Handwork for Children. 3.0, Concert, relayed from Berlin (Witzleben). In the interval at 3.50 (approx.). Book Review. 5.0, Programme Announcements. 5.10, Programme Announcements in Esperanto. 5.15, Agricultural Prices. 5.20, Ice Report. 5.30, World Market Prices. 5.45, Talk on Friedrich Wilhelm I and Friedrich II of Prussia. 6.16, Talk with Gramophone Records: Haydn's Spiecher. 7.0, Weather and News. 7.10, Johann Strauss' Operetta Music Chronological Sequence (arr. Kurt Lesing and Karl Hrubetz), by the Small Station Orchestra, conducted by Karl Hrubetz and Solists. 9.10, Weather, News and Sports Notes. 9.30 (approx.), Dance Music from Berlin (Witzleben). 11.30 (approx.). Close Down.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW., 17 kW., up to 4.40 p.m.—Programme of the Catholic Radio Society (K.B.O.).—11.55 a.m., Concert by the Con Brito Trio, serenade (Pierne); Simple ayeu (Thomé); Was die donau erzählt (Morena); Minnet (Bolzoni); Selection from Samson and Delilah (Saint-Saëns); Soirée intime (Lincke); Gramophone Records: Russian Potpourri (Urbach); Ave Maria (Schubert); Waltz (Durand); Finale. 12.25 p.m., Interval. 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, Concert by the K.B.O. Boys, conducted by P. Lutenhouwer, Soloist: J. Mossel (Songs); Heil Europa (Bloni); Wenn du bist (Stefan); Potpourri, Reife Früchte (Morena); Two Melodies (Abraham). 4.40, Recitations. 4.55, News in Esperanto. 5.10, Concert by the K.B.O. Boys (cont'd.). Immer so weiter (Bogmann); Lied von Wien (Katscher); Al mio villaggio lagun (Bochmann); Overture, Das blaue Bild (Lincke); In a Turkish Bazaar (Dreyer); English Waltz (Glan). 5.40, Recitations. 6.0, Press Review. 6.20, Concert (cont'd.). Alantis (Robrecht); Dreaming (Flanagan); Frohsinn auf den Bergen (Fetras); A Perfect Day (Bondi); Selection from Drei von der Kavallerie (Erwin); My Hiking Girl (Saroni). 6.50 Talk. 7.10, Police Notes. 7.25, Sports Notes. 7.40, Concert by the K.B.O. Orchestra, conducted by M. van 't Woud, Kling, Klang goldner Wein (Zimmer); Overture, The Thieving Magpie (Rossini); O Frühling wie bist du so schön (Lincke); Die Bajadere (Lincke); Notenergen (Urbach); Colombine (Dufort); Etepestete (Dufort); Selection from The Rose of Stamboul (Fall); In the interval, News. 8.40, Songs by Joe and Nelli. 9.0, Orchestral Concert (cont'd.). La lettre de Manon (Gillet); Gavotte (Gillet); Selection from Les cloches de Corneville (Planquette); Narcissus (Nevin); The Rosary (Nevin); Waltz, Estudiantina (Waldteufel); Selection from Coppélia (Delibes). 9.50, Songs by Joe and Nelli. 10.10, Orchestral Concert (cont'd.). Selection from Poldi (Nedbal); Wien heilt Wien (Schrammel). 10.40, News. 10.45, Variety Music on Gramophone Records. 11.40 (approx.). Close Down.

HORBY. See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.).—11.40, Concert, Comrades (Rosy); Künstlerleben (Strauss); Vezsó Szerelme (Gungl); Old Viennese Dances (Strauss); Dorner'scheins Heelzeitungs (Rhode); Hungarian Dance (Brahms). 12.10 p.m., Popular Music on Gramophone Records. 12.25, Organ Recital by C. Steyn. 12.55, Light Music on Gramophone Records. 1.10, Organ Recital (cont'd.). 1.40, Interval. 1.55, Popular Music on Gramophone Records. 2.30, Talk. 2.50, Talk on Music with Illustrations. 3.25, Concert by a Children's Choir and Solists: M. de Klijn (Violin), and M. C. Steyn (Pianoforte). 4.25, Organ Recital. 4.40, Choral Concert (cont'd.). 5.40, Provincial Programme, Songs and Address. 6.10, Organ Recital (cont'd.). 7.10, Talk. 7.40, S.O.S. Announcements. 7.45, Variety Concert; Song, Das ist die Sonne von Arkadien (Stolz); Chinatown (Gerrebos); Wenn wieder Frühling ist (Abraham); Wie ist es so schön doch am herrlichen Rhein (Hummel); Von Raschel von (Theard); Waldteufel Potpourri (Lehmann-Mulder); Mir gefällt jede Frau (Gross); Nur die Eine (Krauss); Mareh (Frank); Items by The Village Barber; Song; Dramatic Items; Orchestral Music; Address; selection from (a) Les Saltimbanques (Ganne), and (b) Les Dragons de Villars (Maillart); Waltz, Fortissimo (Kálmán); March from The Merry Widow (Lehar); Kusle of Spring (Studing); The Cheeko Waltz (Jonasson); Mareh Potpourri (Winter). In the intervals at 10.35, News; and at 10.50, Announcements and Football Results. 11.5, Popular Music on Gramophone Records. 11.40 (approx.). Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG. See Copenhagen.

KATOWICE

408 metres; 16 kW.—4.0 p.m., The Children's Letter Box. 4.25, Gramophone Records of Light Music. 4.40, See Warsaw. 6.0, Announcements and Gramophone Records. 6.10, Scientific Talk. 6.30, See Warsaw. 10.35, Dance Music.

KAUNAS

1,935 metres; 7 kW.—6.30 p.m., Concert. Overture to a Revue (Lincke); Waltz, Erinnerung (Baring); Intermezzo, Die Fahrt ins Glück (Jessef). 7.10, Talk on Social Etiquette. 7.30, Dance Music, followed by Sports Notes. 8.40, Musical Programme, Symphony in E Flat (Mozart); Overture, Oberon (Weber). 9.30 (approx.). Close Down.

KIEL. See Hamburg.

KLAGENFURT. See Vienna.

KOSICE. See Prague.

LAHTI

1,796 metres; 10 kW.; and HELSINKI, 368.1 metres.—5.50 p.m., Sports Talk. 6.15, Concert by the Station Choir. 6.35, Dramatic Programme. 6.50, Dance Music by the Amarillo Orchestra. 7.45, News in Finnish. 8.0, News in Swedish. 8.15, Dance Music by the Tampere Military Jazz Band and the Orpheon Orchestra. 10.0 (approx.). Close Down.

LANGENBERG

473 metres; 60 kW. 12 Noon, Concert, conducted by Wolf; Festival Overture (Lassen); Liszt's Song to the Lute (Korngold); Song from Die tote Stadt (Korngold); First Suite from L'Arlesienne (Bizet); Alomblatt und Träume (Wagner); Schubert Fantasia (Zimmer); Waltz, Seid unschuldigen, Millionen (Joh. Strauss); Selection from Das süsse Mädel (Reinhardt). In an interval at 1.0 p.m. (approx.), Announcements. 1.35, Variety Music on Gramophone Records. 2.30, Economic Notes and Time Signal. 2.50, Programme for Children. 3.10, Book Review. 3.30, English Reading. 4.0, A Musical Journey Orchestral Concert, conducted by Spitz; Solists: Arnesco (Tenor) and Wucke (Baritone). 5.20, Talk for Women. 5.45, Weather, Time, Economic Notes, and Sports News. 6.0, Talk: Italy and Yugoslavia. 6.20, The World on Gramophone Records: Songs and Dances of the Southern Slavs. 6.55, Announcements. 7.0, Masters of their Craft Gramophone Concert. 8.0, See Munich. 9.15, Announcements and Sports Notes. 9.30, Soloist Concert. 10.30, Serenade on Gramophone Records. 11.0 (approx.). Close Down.

LAUSANNE. See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319 metres. 12.15 p.m., Gramophone Concert: The Barber of Bagdad (Cornelius); Selection from Il Trovatore (Verdi); Overture, Susanna's Secret (Wolf Ferrari); Selection from Hansel and Gretel (Humperdinck); Overture, The Gipsy Baron (John Strauss); Hungarian Rhapsody No. 2 (Liszt); followed by Exchange Quotations. 1.0, Wireless Notes. 1.30, Programme for Children. 2.15, Chess Lesson. 2.45, Economic Notes. 3.0 to 3.15, Music Notes. 3.30, Concert relayed from Berlin (Witzleben). 5.0, Legal Talk for Women. 5.30, German for Germans. 5.50, Topical Talk. 6.0, Talk: Excavations in the Geiseltal. 6.30, Choral Concert, conducted by Karl Gierstmaier, Siehst du das Meer; Swedish Folk Song, Am Arenense (arr. Willy Herrmann); Eighteenth Century Folk Song, Die Gedanken sind frei (arr. Keldorfer); Folk Song, Ich spring in diesem Ringe (arr. Schreck); Heimweh (Hofmann); Liebesgedanken (Trunk); Ja, schön ist mein Schatz nicht (Schwartz); Mädel mit dem schwarzen Mieder (Schumacher); Allerlei und Allerhand (Hansen); Folk Song, Uebermuth (arr. Wohlgenuth). 7.0, Relay of a Variety Programme. 9.5, News, followed by Dance Music. 11.0 (approx.). Close Down.

LINZ. See Vienna.

LWOW

381 metres; 16 kW.—5.55 p.m., Talk. 6.10, Miscellaneous Items. 6.30 to 11.0, See Warsaw. 11.0 (approx.). Close Down.

LYONS

LA DOUA, 465.8 metres; 15 kW. 7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Concert by l'Harmonie du Rhone, relayed from the Salle Rameau. After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—6.0 p.m., Popular Concert. 7.15, Talk. 7.30, Dance Music. 8.0 to 10.30, Interval. 10.30, Pianoforte Recital, followed by Variety Music. 11.35, Talk. 11.46, Light Music. 12 Midnight (approx.). Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW. 7.0 p.m., Chinese, Exchange Quotations and Request Gramophone Records. 8.15,

News Bulletin. 8.30 to 9.0, Interval. 9.0, Lingaphone English Lesson. 9.30, Chinese; Time Signal and Transmission of a Musical Comedy. 11.45, News Bulletin. 12 Midnight, Chinese and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—5.25 p.m., Brass Band Concert by Unemployed Musicians. Conductor: V. Cerny. 6.0, See Prague. 6.30, See Bratislava. 9.0, See Prague. 9.15, Radio Film—Programme of Songs, Instrumental Solos and Music by the Station Orchestra, conducted by J. Plichta. 10.30 (approx.). Close Down.

MOSCOW

TRADE UNION, 1,304 metres; 100 kW.—4.40 p.m., Seventy-two Days. 5.30, Concert from the Conservatoire. 8.0, Talk in French: The Principles of School Education.

MOTALA.—See Stockholm.

MUHLACKER. See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres. 4.0 p.m., Orchestral Concert, conducted by Ernst Hugel; Overture, The Nuremberg Doll (Adam); Suite in Old Style (Schroder); Waltz, Flattergeister (Jos. Strauss); Intermezzo, Die Kästchen (Siede); Potpourri, Besuch bei Millöcker (Morena); Students' March (Siede). 5.0, Programme for Young People. 5.45, The Gregorian Chant Talk with Illustrations (H.). 6.20, Wireless Notes. 6.35, Technical Wireless Talk. 6.50, Variety Music on Gramophone Records. 8.0, Mozart and Salieri—Dramatic scenes, Op. 48 (Rimsky-Korsakov), by the Radio Orchestra, Choir and Solists. 9.20, Time, Weather, News and Sports Notes. 9.45, Serenade, conducted by Erich Kloss. 11.0 (approx.). Close Down.

NAPLES. See Rome.

NOTODDEN. See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres. 3.15 p.m., Concert by the Station Orchestra; March, Sambre et Meuse (Turlot); Overture, Marinarella (Facki); Waltz, The Blue Danube (Joh. Strauss); Potpourri, Vindobona (Leopold); Berceuse (Fjeldstad); Selection from Phi Phi (Christine); Serenade from Les Millions d'Arlequin (Drigo); Medley of Old Norwegian Military Marches. 4.15, Programme for Children. 5.15, Song and Hardanger Fiddle Recital of National Music. 5.45, Economic Notes. 6.0, Announcements, Weather and News. 6.30, Talk. 7.0, Spring-time Act I, a Revue relayed from the Chat Noir. 8.10, Topical Talk. 8.20, News and Weather Report. 8.40, Revue (cont'd.). Act II. 9.45, Dance Music on Gramophone Records. 11.0 (approx.). Close Down.

OSTERSUND. See Stockholm.

PALERMO

537.6 metres; 3 kW.—7.0 p.m., Dopolavoro Notes; Tourist Talk; Agricultural Notes and Giornale Radio. 7.20, Sports Notes. 7.30, Time and Announcements. 7.35, Popular Music on Gramophone Records. 7.45, Fredrican, Operetta in Three Acts (Lehar); In the intervals; Book Review and Amusement Guide; After the Operetta; News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and G-dot Signals).—5.45 p.m., Le Journal Parle. 7.20, Weather Report. 7.30, La famille Bonifant Comedy (Sardon). 9.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parle. 7.0, Answers to Correspondents. 7.5, Gramophone Concert of Popular Music. 8.0, Talk: The Event of the Week. 8.5, Theatre Review. 8.15, Interval. 8.30, Chamber Music. 9.0, Interval. 9.10, Dance Music by the Sonora Baul, conducted by Fred Hoffmann. 11.0, Dance Music on Gramophone Records. 12 Midnight (approx.). Close Down.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 76 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 9.0, Concert relayed from the Conservatoire. 12 Noon, Concert by the Radio Paris Orchestra; Rincos de Sevilla (Turina); Two Old Dutch Dances (Heykens); In a Turkish Bazaar (Dreyer); Yeain Potpourri; Suite exotique (Delmas-Popy); Greek Dance (Ganne); Persian Scenes (Rnst); Hawaiian Waltz (Hübner); The Consolation (Vladimir); Overture, Gipsy Love (Lehar). In the intervals, at 1.0 p.m., Exchange, News, and Weather, and at 1.30, Exchange. 3.0, Programme for Children. 3.45, Exchange and Market Prices. 3.50, Dance Music by the Radio Paris Or-

MARCH 11th

SATURDAY

continued

chestra. 6.30, Market Prices, Weather, and Exchange. 7.0, Science Talk. 7.20, Agricultural Talk. 7.45, Commercial Prices, News, and Review of the Latin Press. 8.0, Variety Programme. 8.30, News and Weather. 8.45, Schumann Pianoforte Recital by Léon Kartun; Carnaval, Arabesque, Novelette No. 2, 9.15, Press Review and News. 9.30, Gramophone Dance Music: Dimah; Tango d'amour; Tango, El Gaucho; Waltz, L'heure exquise; Fox-trot, Come with me; Onestep, On the Accordion; Waltz, Pluie d'or (Waldteufel); Slow Fox-trot; Waltz, Tesoro mio (Becceci); Melody; Tango, Plegaria; Slow Fox-trot, A Tear; Waltz, Fascination (Marchetti); Fox-trot, Sweetness; March, Sabline Belgique.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Dance Masters, from New York. 9.30, Concert Favorites, from New York. 10.0, Programme to be announced. 10.30, Weather Report. 10.32, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from New York. 11.0, Programme to be announced. 11.15, Time Signal. 11.16, Temperature Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Weather Report. 11.30, Programme to be announced. 11.45, 3000 Feet by Bill and Alex, of the Downtown Y.M.C.A. 11.59, Time Signal. 12 Midnight, Fields and Hall, from New York. 12.15 a.m. (Sunday), Atkinson String Ensemble. 12.30, Programme to be announced. 12.45 to 4.0, New York Relay. 12.45, Townshend Murder Mystery. 1.0, American Taxpayers' League. 1.15, The Boston Symphony Orchestra. 3.15, Salon Singers. 3.30, Cuckoos. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.22, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Messages to Dwellers of the Far North.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Bratislava. 4.10, Talk on Economics. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Variety Music on Gramophone Records. 5.5, Agricultural Talk. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Extracts from the Works of Contemporary German Dramatists. 6.0, Chimes. 6.1, News Bulletin. 6.10, Talk: The Czech Language. 6.30, See Bratislava. In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.1, News Bulletin. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.0 p.m. (from Geneva), Talk: The Scientific Possibilities of a Journey to Mars. 5.30 (from Lausanne), Book Review. 6.0 (from Lausanne), Weather Forecast, News, and Announcements. 6.30 (from Lausanne), Talk on Films. 7.0 (from Lausanne), Orchestral Concert, conducted by Léon Raiter. 7.30 (from Lausanne), La Dernière Nouvelle—Comedy in One Act (Langlois). 8.0 (from Geneva), Popular Concert. 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva), Talk: The Work of the League of Nations. 9.20 (from Geneva), Dance Music. 10.30 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes and News. 9.30, Reading. 10.0, Concert by the Station Quartet, followed by Choral Music on Gramophone Records. After the Programme, Dance Music. 1.0 a.m. (Sunday), (approx.), Close Down.

RIGA

525 metres; 15 kW.—4.30 p.m., Organ Recital: Prelude and Fugue in D (Bach); Largo (Pergolesi); Chanson triste (Nowojewsky); The Third Sonata (Mendelssohn); Choral. 5.0, French Lesson. 5.28, Weather Forecast. 5.30, Relay from the Arts Theatre. News in the intervals. In the interval at 8.0, Weather. 8.30, Dance Music. 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 441 metres; 50 kW. Relayed by Naples, 319 metres, and ZRO, 25.4 metres.—7.0 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Orchestral Concert: Manicotto (Vizevanti); Luisita (Barzizza); Italian Suite (Kostal); Bisanzio (Caraballa); Quaido (Maugeri); Selection from No. No, Nanelle (Youmans); O dolce valzer (Restano); Wed-

ding of the Butterflies (Barron); Waltz Serenade (Sadun); Fa la cortesia (Masccheroni). 3.45, Children's Radio Revue and Talk for Young People. 4.0, Exchange; Report of the Royal Geographical Society, and Giornale Radio. 4.15, Reading. 4.30 to 5.45, Orchestral Concert: Overture, The Thieving Magpie (Rossini); Bella d'oltre mare (Zanuso); Selection from Boris Godunov (Musorgsky); Melody (Caslar); Violin Solo: Polichinelle (Kreisler); La falena (Escobar); Ora sai cos'è l'amore (Varinskaja); Mago Carnevale (Marchionni). 6.0 (Naples), Shipping and Sports News. 6.10, Atmospheric Signals and Lesson in Morse. 6.20, Giornale Radio and Agricultural News. 7.0, Time and Announcements. 7.15, Pianoforte Recital by Cesarina Buonhera: Foglio d'album (Pizzetti); Ronda degli Arlecchini (Pizz-Mangialilli); Rimeore de la Caleta (Albéniz); La danza di ranocchietto verde (Santoliquido). 7.30, Sports Notes and Tourist Report. 7.45, Relay from a Theatre. In the intervals, Review of Books, Literary Review, and News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—12 Midnight, El Tango Romantico, from New York. 12.15 a.m. (Sunday), Municipal Series. 12.30, Hotel New Yorker Orchestra, from New York. 12.45, The World To-day, from New York. 1.0, Lady Fingers (Pianists). 1.15, Bernard Silberg (Cellist). 1.30 till Close Down, New York Relay. 1.30, The Economic World To-day. 2.0, Blue Danube. 2.30, Oldsmobile Programme—George Olsen's Orchestra. 3.0, Lucky Strike Hour and Programme Resume.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW. Basle, 244.1 metres; and Bern, 245.9 metres. 11.28 a.m., Time Signal from Nenchâtel Observatory. 11.30, Weather and News. 11.40, Popular Music on Gramophone Records. 12.35 p.m., Weather and Exchange. 12.45 from Zurich, Answers to Correspondence. 1.0 (from Zurich), Review of New Books. 1.30 (from Zurich), Songs by the Vienna Mandl Quartet. 2.0 (from Zurich), Talk on Hygiene. 2.30 (from Zurich), Mathematical Puzzle. 3.0 (from Zurich), Concert by Sigz's Accordion Sextet. 3.40 (from Zurich), Talk: Modern Road Making. 4.0, Popular Music on Gramophone Records. 4.30 to 4.35, Sports Notes. 5.30 (from Basle), Yvette Turner recites Negro Poetry. 6.0 (from Zurich), Chimes, Time, Weather and Market Prices. 6.15 (from Basle), Talk: Antieracy and World Trade. 6.45 (from Basle), Vocal and Instrumental Concert of Music of the Sixteenth, Seventeenth and Eighteenth Centuries; The Holles Madrigal Society of Stuttgart conducted by Huzo Holles; Soloists: Else Popp (Treble Viol), Adolf Hann (Harpisichord). 8.15 (from Basle), Hans Visserhor van Gaasbeek reads Sonnets of Michael Angelo. 8.30, Weather and news. 8.40 (from Basle), Concert by the Meister Accordion Club of Basle. 9.10, Dance Music and Cabaret Programme on Gramophone Records. 10.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,329.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—3.0 p.m., Concert of Light Music: Slovak March (Neruda); Overture, Athalia (Mendelssohn); Waltz, Späherklänge (Jos. Strauss); Piece (Wesslander); Melody (Atterberg); Waltz Intermezzo, Ein Badnachts-traum (Translatour); Tango, Wie schön beim Tanz deine Wangen glühn (Brosch); Selection from Where the Lark sings (Lohar). 4.5, Programme for Children. 4.20, Variety Music on Gramophone Records. 5.0, Talk from Malmö (231 metres). 5.15, Light Music. 6.15, Weather and News. 6.30, Old Time Dance Music from Falun (307 metres). 7.0, A Revue relayed from Göteborg. 8.15, Popular Programme. 9.0, Modern Dance Music. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Orchestral Concert, conducted by Maurice de Villiers; Ballet Music from Faust (Gounod); Overture, La Dame blanche (Boisbattin); Scherzo (Lalo); Selection from Othello (Verdi); Minuet in G (Mozzkowsky); Orchestral Suite from Der Rosenkavalier, (R. Strauss);

Hungarian March from The Damnation of Faust (Berlioz). 12.45 p.m., News. 1.0, Time and Exchange. 1.15, Gramophone Concert: Yankee Rose (Frank); Blue Skies (Berlin); Escamillo (Goldberg); Minuet (Feret); Les Zinganes (Scriabin); Zazoula (Scriabin); Gouttes d'eau (Petit); Melody (Koch); Stephanie Gavotte (Czibulka); Eloie d'amour (Deimel); Muchachada (Chirlandi); Arrabal (Mafia); Caucasian Melody (Scriabin); Koubaque (Rodiosoff); Melody (Brown). 2.0, Dance Music on Gramophone Records. 3.0 to 3.45, Interval. 3.45, Talk: The Lyrical Quality of Brahms's Music. 4.0, Light Music on Gramophone Records. 4.45, Legal Talk in German. 5.0, Pasteloid Symphony Concert, relayed from the Théâtre des Champs Elysées, Paris. 7.0, French Elocution Lesson. 7.15, Agricultural Talk in French. 7.30, Time and News. 7.45, Lottery Results. 8.0, Talk on the Abbé Prévost's Novel, Manon Lescaut, illustrated by Gramophone Records. 9.15, Il est charmant (Moretti)—Film Relay. 11.0, Jean Clergue Quintet Concert, relayed from Radio Coloniale (Paris) (25.63 metres). 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—1.0 p.m., Songs and Duets from Lohar's Operetta by Elisabeth Jentsch (Soprano) and Karl Jantz (Tenor). 1.30, Time, News, Weather, and Programme Announcement. 1.45, Concert by a Children's Choir, relayed from Mannheim: Songs (Hansmann). (a) Der Zirkus, (b) Klitsch, Klatsch, (c) Gute Nacht, (d) Kätzchen, (e) Katzenmusik, (d) Lustiger Rot; Songs (Hansmann). (a) Die Bremse, (b) Kaninchen, (c) Katzenmusik, (d) Lustiger Rot; Songs (Hansmann). (a) Die Ruthe, 2.30, See Frankfurt. 3.30, Concert by a Month Organ Orchestra: Königgrätzer Marsch (Piotke); Wiener Praterleben (Translatour); Mutter-segen (Oppladen); March, Frei wald (Latam); English Waltz, Sei mir Gegrüß (Grotho); Kolober Marsch. 4.0, See Munich. 5.0, Popular Music on Gramophone Records. 5.15, Time and Sports Notes. 5.25, Talk. 5.50, Talk: The Exchange of Pupils between German and Foreign Schools. 6.15, Time, News, Weather, and Snow Report. 6.40 (from Freiburg), Soldiers' Songs—Recital by Bruno Koroll. 7.30, Concert of Operetta Music by the Stuttgart Philharmonic Orchestra, conducted by Gustav Gülich, and the Station Choir: Soloists, Gerda Hansi, Hedwig Pieard, Maria Fiechtl, Emma Mayer, Hans Hanns, Walter Mauffer, and Hans Hofele; Overture, Pique Dame (Suppé); Dust and Ensemble from The Bird Faucier (Zeller); Three Songs from The Gipsy Baron (Joh. Strauss); March from Boccaccio (Suppé); Sextet from Wiener Blut (Joh. Strauss); Dunkelrote Rosen from Gasparone (Milibeker); Second Finale from Die Fledermaus (Joh. Strauss). 9.0, Time, News, Weather, Snow Report, and Programme Announcements. 9.20, Radio Report on the Greater Stuttgart Gymnastics and Sports Festival. 9.45, Serenade, relayed from Langenberg. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI; 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, operetta Music. 6.30, Songs from Sound Films. 6.45, Symphonic Poem, Mazeppa (Liszt). 7.0, Spanish Song Recital. 7.15, Racing Results, Market Prices, and News. 7.25, Local News Bulletin. 7.30, Concert by a Viennese Orchestra. 8.0, Concert. Part I: Opera Music: Recitative and Cavatina from Figaro (Mozart); Aria from Tosca (Puccini); Song from I Pagliacci (Leoncavallo). Part II: Persian March (Strauss); Ich liebe dich (Grieg); Melody (Schrammel). 8.30, Operetta Music: Airs from: (a) La Mosquito (Andran). (b) Miss Decima (Andran). (c) La Basoche (Messager). 8.45, Light Orchestral Music. 9.0, Concert. Part I: Extracts from Hérodias—Opera (Massenet). Part II: Symphony Music: Norwegian Rhapsody (Lalo); Selection from The Queen of Spades (Tchaikovsky); Berceuse from The Firebird (Stravinsky). 10.0, Sound Film Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco: Les Fleurs (Waldteufel); Air from Paganini (Lohar); Overture, Raymond (Thomas); Melody (Maraffotti); Marche joyeuse (Cuvellier). 11.0, Popular Concert. 11.30 to 12 Midnight, Programme in English, by the I.B.C. H. K. Hitchcock announcing. 11.30, Variety: The Scout; Laughing Clara; My Fiddle is my Sweetheart; Sandy the Tram Conductor; Blue Hawaii; Guilty; There's a good time coming; Let's all dance, the Polka. 11.57, I.B.C. Good night Melody. 12 Midnight, Variety and Announcements. 12.5 a.m. (Sunday), Musical Programme. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.10 to 6.0 p.m., See Turin. 6.0, Variety Music on Gramophone Records. 6.20 to 6.35, See Turin. 6.35, Pianoforte Recital of the Ultra-Modern Music of Erwin Schulhoff; Pianist, Lillian Caratian. 7.0 till Close Down, See Turin. TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 506.8 metres.—4.10 to 5.0 p.m., Dance Music from the Savoia, Turin. 5.35, Giornale Radio, Agricultural and Dopolavoro Notes. 6.0, Gramophone Records of Orchestral Music. 6.20, Giornale Radio. 6.30, Time, Announcements; Tourist Report and Light Music on Gramophone Records. 7.0, Giornale Radio; Weather and Gramophone Records (contd.). 7.30, Talk: Events and Problems. 7.45, Variety Programme; Review of New Books; in the interval, 9.0, Orchestral Concert. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and 50.75 metres (Evening); 10 kW.—16.0 to 10.15 p.m., Religious Announcements in Different Languages. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Kagenfurt, 453.2 metres; Linz, 245.9 metres, and Salzburg, 218.5 metres.—4.0 p.m., Concert of Light Music by the Fritz Reckterwald Orchestra and the Schmatzer Quartet. 5.35, Talk: Our Spring Flowers. 5.55, Topical Talk. 6.25, A Maxim. 6.30, Time, Weather, Sports Notes and Programme Announcements. 6.40, Song Recital by Anna Roselle; Nedda's Aria, Qual fiamma avea nel guardo from I Pagliacci (Leoncavallo); Songs (Marx); (a) Hat dich die Liebe herührt? (b) Japanische Regenlied; Recitative and Aria, Deh! vien! non tardar, from Figaro (Mozart); Manon's Aria, In quelle morbide, from Manon Lescaut (Puccini); Mattinata (Leoncavallo); Rondine alido (des Crescenzo); Torna amore (Buzzi-Pecora); Song, Ich bin verliebt, from Schlaraffenland (Lohar). 7.15, Die tolle Theres—Operetta in Two Acts on Motives from Joh. Strauss, Senior (Otto Römisch), in an interval at 8.15 (approx.), News, Weather and Announcements. 9.15, Dance Music by the Jean Litwins Syncopators and the Los Pampurus Tango Band, relayed from the Café de Paris.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.10 p.m., Weather Forecast. 12.15, Programme, relayed from Lwow (381 metres) 12.55 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Military Information. 2.35, Relay for Young People, relayed from Cracow (312.8 metres). 3.0, Light Music on Gramophone Records. 3.20, History Talk. 3.4, Financial Talk. 4.0, Programme for Invalids, relayed from Lwow. 4.30, Announcements. 4.40, Topical Talk. 4.55, Programme Announcements. 5.0, Talk on Polish Literature. 5.20, News. 5.25, Light Music, relayed from the Cristal Restaurant. 6.0, Miscellaneous Items. 6.20, Agricultural Report. 6.30, Topical Talk. 6.4, Radio Journal. 7.0, Light Orchestral Concert, conducted by S. Nawrot; Soloists: J. Fogg (Songs) and M. Orzechowski (Vibraphone). In the interval, Sports Notes and Radio Journal. 9.5, Chopin Recital: S. Zmigrod, Fedyezkowska (Soprano), M. Wilomirska (Pianoforte) and C. Wilkomirski (Violin); Songs; Concert Duet in E for Piano and Violin on Themes from Robert L. Diable. 9.40, Talk on Historic Slovak Castles. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music from the Budapest. In the interval at 10.30, News for Members of the Polish Polar Expedition.

WILNO

563 metres; 16 kW.—3.0 p.m., Educational Programme. 5.40, Lithuanian Review. 5.55, Miscellaneous Items. 6.0, Review. 6.10, Miscellaneous Items. 6.15, Talk. 6.30, See Warsaw. 7.0, Request Programme. 8.0, Concert of Light Music, relayed from Warsaw. 9.5, See Warsaw. 11.0 (approx.), Close Down.

ZAGREB

307 metres; 0.75 kW.—4.0 p.m., Concert by the Radio Orchestra. 7.10, Announcements. 7.30, Concert by the Kulac and Osijek Choral Societies, relayed from the Croatian Music Society's Hall. 9.30, News, Weather and Winter Sports Notes. 9.40, Dance Music by the Bingo Boys, from the Hotel Esplanade. 10.30 (approx.), Close Down. ZURICH.—See Schweizerischer Landesender.



The Trade Mark of Rectifier Perfection

This Trade-Mark on the rectifier in your A.C. Mains Receiver is a guarantee of your satisfaction. It tells you that the rectifier is a **Westinghouse Metal Rectifier**, and that it will deliver a constant and unceasing high tension supply for years without any replacement.

I enclose 3d. in stamps, for which please send me "The All-Metal Way" for 1933, telling me about reliable rectification.

NAME

ADDRESS

W.W.W.

WESTINGHOUSE METAL RECTIFIERS

THE WESTINGHOUSE BRAKE & SAXBY SIGNAL CO. LTD., 82, York Road, King's Cross, London, N.1.



"When will you buy a radiogram dad?"

"When I've saved enough for an R.G.D."

Eager son; cautious parent. To buy this or that because it looks good and costs little is to court disappointment. Better far to look ahead and visualise the future from a radio gramophone point of view.

Selectivity, without which "station separation" is impossible. Sensitivity, without which distant stations cannot be received. A high quality of reproduction, without which orchestral music will sound thin and unreal.

These and other factors are essential if complete satisfaction is to be assured.

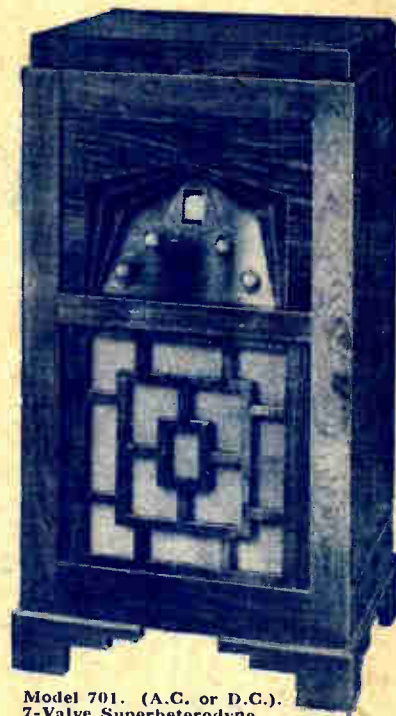
Compare the performance of an R.G.D. with any other similar instrument and you will readily appreciate why 'dad' is wisely waiting for his R.G.D.

Write for particulars.

RADIO GRAMPHONE DEVELOPMENT CO., LTD.,
 17-20, FREDERICK ST., BIRMINGHAM.

Manchester: 17, Bridge Street London: 40, Doughty Street, W.C.1.

R.G.D.
*the Halli Mark
 of Perfect Reproduction*



Model 701. (A.C. or D.C.).
 7-Valve Superheterodyne.

IN WALNUT 48 gns.

The Wireless World

4^D

THE PRACTICAL RADIO JOURNAL

with

Complete Foreign Programmes

Friday, March 10th, 1933.

1/6 buys a year's H.T.

Ekco
POWER SUPPLY UNITS

Write for full details to
E. K. COLE, L.I.D.,
Dept. W.2., Ekco Works,
Southend-on-Sea.

REGULARLY "SPECIFIED"!



RESISTORS



LYONS' "B.A.T." (Best-After-Test) FIXED RESISTANCES are obtainable promptly from all good dealers in over 200 stock values from 100 Ohms to 20 Megohms, and in nominal power ratings of 1/4, 1, 2, 3 and 5-Watts.

OUR NEW 48-PAGE ART. CATALOGUE contains full information. Moderately priced at 10½d. per Watt (1/2 or 10%), or hand-tested to -5% at 1/- per Watt. Guaranteed noiseless, permanent and indestructible. Will withstand severe overloads. RMA Colour-Coded. Standard Wire-ends, etc., etc.

In cases of difficulty, write:

CLAUDE LYONS, LIMITED,
76, OLDHALL STREET, LIVERPOOL.
40, BUCKINGHAM GATE, LONDON, S.W.1.

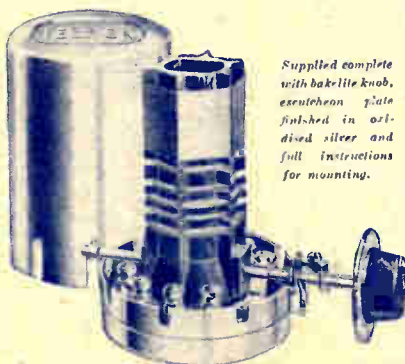


"BANTAM"	"CHALLENGER"	"VICTOR"
Permanent Magnet Moving Coil, with 3 ratio Ferranti Transformer	Permanent Magnet Moving Coil, with 3 ratio Ferranti Transformer	Permanent Magnet Moving Coil De Luxe, with 6 ratio Ferranti Transformer
27/6	35/-	70/-

Ask your Dealer to demonstrate.

REPRODUCERS & AMPLIFIERS LTD. WOLVERHAMPTON

TELSEN SCREENED TUNING COILS



SUITABLE as aerial coils, or as anode coils, following a S.G. valve, giving selectivity comparable with a well-designed hand-pass filter.

Single Screened 8/6
Coil
Twin Matched Coils 17/-
Triple Matched Coils 25/6



TELSEN RADIO COMPONENTS ARE 100% BRITISH

Announcement of the TELSEN ELECTRIC Co. Ltd., Aston, BIRMINGHAM

ATWATER KENT

Do you wish to
ROAM AROUND THE WORLD?

If so, this is your set.

One enthusiast from Watford was so charmed with his Atwater Kent Receiver (Model 137) that from 3 p.m. Saturday until 7 a.m. Sunday he "roamed around the world." Such distant stations as Bucharest, Rabat, Archangel, Reykjavik and twenty-one American Stations came through, all on loud speaker, at really good volume WITH NO FADING. He heard a band from San Francisco, The Lucky Strike programme, Paul Whiteman and his Orchestra, from New York, and many other world-famous broadcasts. "It is the most marvellous set I have ever tried," wrote this Atwater Kent owner.

In tone the Atwater Kent is as wonderful as in power. And the way "fading" and background noises are eliminated is a revelation.

Ask your dealer to arrange a demonstration for you. We will gladly co-operate with him. *Illustrated literature sent on request.*



ATWATER KENT MODEL 137.

7 Valve Super-het., 200 to 2,000 metres. Three-point tone switch. Large Mains energised M.C. Loud Speaker. AUTOMATIC VOLUME CONTROL (which definitely prevents fading). Gramophone pick-up switch.

G. A. BRITAIN LTD. Showrooms, 5, Hanover Square, London, W.1.

Telephone: Mayfair 3466, 7.

Telegrams: Atwakento, Wesdo, London.

Also Sole Distributors for Irish Free State.

Dublin Depot: 40, Dawson Street.

TABLE MODEL (as illustrated) ...	25 Gns.	RADIOGRAM ...	45 Gns.
CONSOLE	32 Gns.	RADIOGRAM, with Auto- matic Record Changer ...	52 Gns.

(These prices do not apply in I.F.S.)

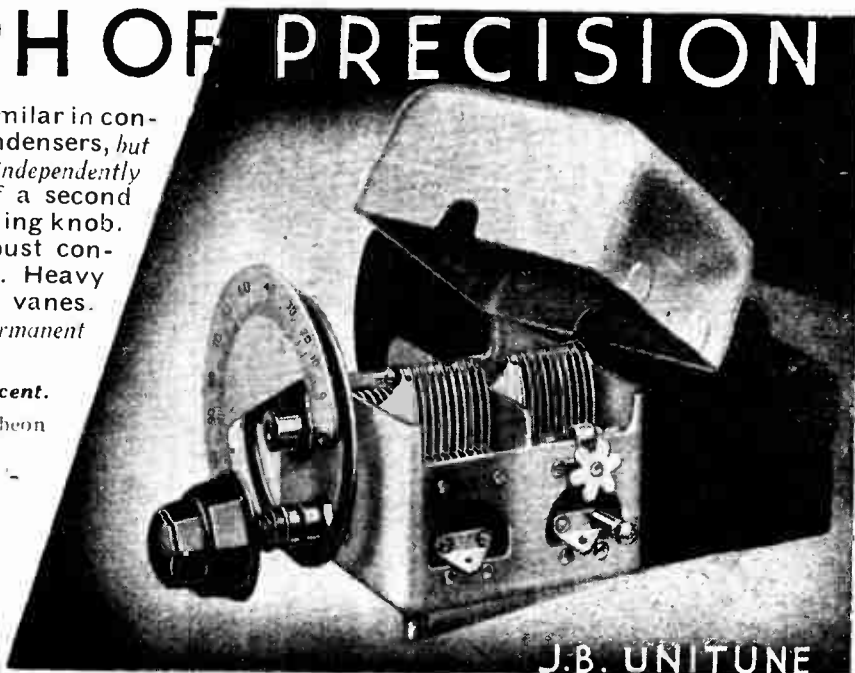
A TRIUMPH OF PRECISION

● Gives extremely fine tuning. Similar in construction to the "NUGANG" Condensers, but the trimmer of front section is operated independently from the receiver panel by means of a second knob concentric with the main tuning knob. Rigid one-piece chassis, very robust construction. Trimmer to each stage. Heavy gauge wide spaced aluminium vanes. Special bearings to rotor ensure permanent accuracy. Capacity .0005.

Matched to within 1/4 mmfd. plus 1/2 per cent.

Complete with disc drive and bakelite escutcheon plate.

2 gang - 18 6 3 gang - 27 -



J.B. UNITUNE

PRECISION INSTRUMENTS

Write for New Catalogue.

Advertisement of Jackson Bros. (London) Ltd., 72, St. Thomas' Street, London, S.E.1. Telephone: Hop 1837.

The Wireless World

PROGRAMMES from ABROAD

**BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH**

**TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS**

Metres.	Kc.	kW.	Station.	Tuning Positions.	Metres.	Kc.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)		453.2	662	10	Odessa, RV13 (Russia)	
1875	160	8.5	Hilversum (Holland)		447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Rjukan (0.15 kW.), Notodden (0.08 kW.) (Norway) (relays Oslo).	
1796	167	40	Lahti (Finland)		441.2	680	50	Rome, IRO. (S.-W. Station, 2RO on 25.4 m.)	
1725	174	75	Radio Paris, C.F.R.		435.4	689	55	Stockholm, SASA (Sweden)	
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (S.-W. Stn. DJA on 31.38 m.)		430	698	2.5	Belgrade (Yugoslavia)	
1554.4	193	30	Daventry National		424.3	707	2	Madrid, EAJ7 (Union Radio). (After 7.0 p.m.)	
1538	195	7	Ankara (Angora) (Turkey)		424.3	707	100	Moscow, Imini Stalina (Russia)	
1481	202.5	100	Moscow, RV1 (Old Komintern) (Russia)		419.5	715	1.5	Berlin, No. 1, Witzleben (Germany)	
1446	207.5	13	Eiffel Tower, P.L., Paris		416.4	720.5	5	Rabat (Morocco)	
1412	212.5	120	Warsaw 1 (Poland)		413	725	60	Athlone (Irish Free State)	
1380	217.5	100	Novosibirsk, RV6 (Russia)		408.7	734	16	Katowitz (Poland)	
1348	222.5	30	Motala (Sweden). (Relays Stockholm)		403.8	743	25	Sottens (Radio Suisse Romande) (Switzerland)	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)		398.9	752	25	Midland Regional	
1275	235	0.5	Tunis-Kasbah (Tunisia)		394.2	761	12	Bucharest (Roumania)	
1230	244	0.6	Boden (Sweden). (Relays Stockholm)		389.6	770	120	Leipzig (Germany)	
1200	250	5	Stamboul (Turkey)		389.6	770	10	Archangel, RV36 (Russia)	
1200	250	21	Reykjavik (Iceland)		385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
1170	256	25	Tashkent, RV11 (Russia)		381	788	16	Stalino, RV26 (Russia)	
1154	260	7.5	Kalundborg (Denmark). (Relays Copenhagen)		376.4	797	50	Lwow (Lemberg) (Poland)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)		372.2	806	1.5	Scottish Regional (Falkirk)	
1083	277	60	Oslo (Norway)		370.1	810.5	0.8	Hamburg (Germany)	
1071	280	35	Tiflis, RV7 (Russia)		368.1	815		Radio, L.L., Paris	
1035	290	36	Kiev, RV9 (Russia)					Seville, EAJ5 (Union Radio) (1.0 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Hel- sinki (10 kW.) (Finland) (relays Lahti); Khabarov, RV29 (10 kW.) (Russia).	
1000	300	100	Moscow (Russia)		395.8	821	0.7	Fredriksstad (Norway). (Relays Oslo)	
938	320	20	Khabarov, RV4 (Russia)		384.1	824	1	Bergen (Norway)	
857	350	100	Leningrad (Russia)		383.6	825	13	Algiers (Algeria)	
840	357	18.5	Budapest (Hungary)		380.6	832	60	Mühlacker (Stuttgart) (Germany)	
825	363.6	50	Sverdlovsk, RV5 (Russia)		355.9	843	50	London Regional (Brookmans Park)	
770	389	0.6	Ostersund (Sweden). (Relays Stockholm)		352.1	852	7	Graz (Austria). (Relays Vienna)	
760	395	1.3	Geneva (Switzerland). (Relays Sottens)		348.8	860	7.6	Barcelona, EAJ1 (Spain)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)		348.8	860	10	Leningrad, RV70 (Russia)	
690	434.6	1.5	Oulu (Uleaborg) (Finland)		345.2	869	11.5	Strasbourg, PTT (France)	
680	441.2	0.6	Lausanne (Switzerland). (Relays Sottens)		341.7	878	35	Brno (Brunn) (Czechoslovakia)	
574.7	522	0.7	Hamar (Norway). (Relays Oslo)		338.2	887	15	Brussels II, Velthem (Belgium). (In Flemish)	
574.7	522	2.5	Ljubljana (Yugoslavia)		335	896	5	Cadiz (Spain)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (Relay Stn.)		334.4	897	1.9	Poznan (Poland)	
568.1	528	2	Grenoble (France)		331.5	905	50	Milan (Italy). (Relays Turin)	
566	530	0.25	Hanover (Germany). (Relays Hamburg)		328.2	914	60	Poste Parisien (France)	
563	533	16	Wilno (Poland). (Relay Station)		325	923	60	Breslau (Germany)	
560	536	0.25	Augsburg (Germany). (Relays Munich)		321.9	932	10	Göteborg (Sweden). (Relays Stockholm)	
560	536	1.5	Kaiserslautern (Germany). (Relays Munich)		318.8	941	0.25	Dresden (Germany). (Relays Leipzig)	
558.6	537	1	Tampere (Finland). (Relays Helsinki)		318.8	941	1.5	Naples, INA (Italy). (Relays Rome)	
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)		315.8	950	1.6	Marseilles, PTT (France)	
542	554	10	Sundsvall (Sweden). (Relays Stockholm)		312.8	959	1.7	Cracow (Poland)	
537.6	558	3	Palermo (Italy)		312.8	959	10	Genoa, IGE (Italy). (Relays Turin)	
533	563	60	Munich (Germany)		309.9	968	1	Cardiff	
525	571	15	Riga (Latvia)		307	977	0.7	Radio Vitus (Paris). (S.-W. Stn. on 43.75 m.)	
517	580	15	Vienna (Rosenhügel) (Austria)		304	986	13	Bordeaux Lafayette, PTT (France)	
509	589	15	Brussels No. 1, Velthem (Belgium). (In French)		301.5	995	50	North National (Manchester)	
500.8	599	20	Florence, IFI (Italy). (Relays Turin)		298.8	1004	11	Tallinn (Esthonia)	
495.8	605	1.2	Trondheim (Norway)		296.1	1013	20	Huizen (Holland). (After 4.40 p.m.) .. (Exchanges wavelengths with Hilversum every three months.)	
488.6	614	120	Prague, No. 1 (Czechoslovakia)		293.5	1022	0.7	Limoges, PTT (France)	
480	625	50	North Regional (Manchester)		293.5	1022	2.8	Kosice (Czechoslovakia)	
472.4	635	60	Langenberg (Germany)		291	1031	10	Viipuri (Viborg) (Finland). (Relays Helsinki)	
467	642	0.4	Aalesund (Norway)		288.3	1040	50	Scottish National (Falkirk)	
465.8	644	1.5	Lyons la Doua, PTT (France)		288.3	1040	—	British Relays (Bournemouth, Plymouth)	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland).		286	1049	0.8	Montpellier (France)	
453.2	662		San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (relays Heilsberg); Klagenfurt (0.5 kW.) (Austria) (relays Vienna); Porsgrund (0.7 kW.) (relays Oslo), Tromsø (0.1 kW.), Bodø (0.5 kW.) (Norway); Upsala (0.15 kW.) (Sweden) (relays Stockholm).		285.1	1052	0.7	Lyons (Radio-Lyon) (France)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Table with columns: Metres, Kc., kW., Station, Tuning Positions. Lists various international broadcasting stations and their technical specifications.

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent G.M.T.)

Large table with columns: Metres, Kc., Call Sign, Station, Tuning Positions. Lists principal short-wave stations with call signs and transmission times.

FOREIGN SUNDAY PROGRAMMES

MARCH THE TWELFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Service from St. Martin's-in-the-Fields. Instrumental and vocal concert.
- LONDON REGIONAL** "Macbeth" (Shakespeare). Sunday orchestral concert.
- MIDLAND REGIONAL** Military Band concert.
- WEST REGIONAL** Carolare No. 10. Orchestral concert.

ABROAD

- BERLIN** 11 a.m. National Day of Remembrance.
- BRUSSELS (No. 2)** 8 p.m. Musical play: "The Vagabond King" (Friml), from the Royal Flemish Opera House, Antwerp.
- BUCHAREST** 7 p.m. Opera: "Samson and Delilah" (Saint-Saëns).
- LANGENBERG** 6.25 p.m. Programme for the National Day of Mourning.
- PALERMO** 7.45 p.m. Symphony concert, conducted by A. La R. Parodi.
- ROME, TURIN, MILAN and TRIESTE** 4 p.m. Symphony concert from the Augusteo, Rome, conducted by V. de Sabata.
- STRASBOURG** 4.30 p.m. Pachelbel symphony concert, from Paris.
- STUTTGART** 8.5 p.m. Mahler's Ninth Symphony, from Frankfurt.
- VIENNA** 6.40 p.m. Chopin pianoforte recital, by J. Isserlis.
- WARSAW** 7 p.m. Opera music by the Station Orchestra.

ATHLONE
413 metres; 60 kW.; and **CORK**, 224.4 metres. —8.30 p.m., Time Signal. 8.31, Concert by the Station Orchestra. 8.45, Contralto Solos by Betty Byrne. 8.55, The Station Orchestra. 9.15, Contralto Solos by Betty Byrne. 9.25, A Play by the Studio Players. 10.25, The Station Orchestra. 11.0, Time Signal, News, Weather Report, and Close Down.

BARCELONA
RADIO-BARCELONA, Call **EAJ1**, 348.8 metres; 8 kW.—11.0 a.m., Chimes from the Cathedral and Weather Forecast. 1.0 p.m., Light Music on Gramophone Records. 1.30 (in an interval), Theatre Notes. 2.0, Cinema Review and Sextet Concert. 3.0, Programme for Hospitals and Other Benevolent Institutions. 4.0 to 5.30, Interval. 5.30, Agricultural Talk in Catalan and Concert by the Station Orchestra. 6.30, An Opera relayed from the Gran Teatro del Liceo. 9.0, A Musical Comedy on Gramophone Records. 10.45, Chess Lesson. 11.0 (approx.), Close Down.

BARI
269.8 metres; 20 kW.—9.45 a.m., Agricultural Notes. 10.5, Sacred Music. 10.30, Bible Reading. 12 Noon, Giornale Radio. 12.19 to 1.15 p.m., Popular Music on Gramophone Records. In the intervals at 12.55, Weather, and 1.0, Time. 4.30 to 5.30, Variety Music on Gramophone Records. 7.0, Sports Notes and Giornale Radio. 7.30, Time and Announcements. 7.35 (approx.), Variety Concert. In the interval, News and Announcements. 9.30, Concert relayed from the Grand Hotel Moderno. 9.55, News.

BASLE.—See *Schweizerischer Landessender*.
BELGRADE
430.4 metres; 2.8 kW.—3.0 p.m., Orchestral Concert: Overture, Queen for a Day (Adam); Spanish Fantasia (Demersseman); Selection from Faust (Gounod); Scènes pittoresques (Massenet); Angelus (Mehel); Russian Mazurka, La czarine (Ganne). 5.55, Time and Programme Announcements. 6.0, Popular Music on Gramophone Records. 6.20, Recital of Arias from Opera. 7.0, Radio Play. 7.30, Concert by the Royal Guards Wind Instrument Orchestra. 9.0, News, followed by Dance Music.

BERLIN
KONIGS WUSTERHAUSEN, 1,635 metres; 30 kW.—10.30 a.m., See *Leipzig*. 11.0, National Day of Remembrance—Music by the Kosbeck Wind Instrument Association, conducted by Albert Rossow, the Frii Weg Drum Corps, conducted by Richard Zellner, and the Charlottenburg Teachers' Choral Society, conducted by Theodor Jakob; Army March (Julius Möllendorff); Folk Song, O Deutschland hoch in Ehren, Ave verum corpus (Albert Rossow); Folk Song, Reiters Morgenlied; Address by Dr. Schaack-Kottstanz; Drum Roll and First Verse of the Song, Ich hatt' einen Kameraden; Tattoo and Prayer, First Verse of Deutschland über alles. 11.55, Nauen, Time Signal. 12 Noon, See *Heilsberg*. 1.0 p.m., Talk for Parents: Our Orphans. 1.30, Programme for Children. 2.0, Variety Music on Gramophone Records. 2.30, Richard Euringer reads from his own Works. 3.0, Chamber Music. 3.30, See *Langenberg*. 4.30, Chamber Music—Eighteenth Century Songs to the Harpsichord. 5.15, Talk: Great Germans and their Trust in God. 5.45, Talk: The Masurian Winter Campaign, 1915. 6.5, Brahms Pianoforte Music—Recital by Margarethe Ansong; Rhapsody in B Minor; Intermezzo in E Flat; Rhapsody in G Minor. 6.30, Letters of Mothers to their Sons, and from Sons to their Mothers. 7.0, See *Breslau*. 8.0, Concert from *Leipzig*. 9.0, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Programme from *Berlin (Witzleben)*. 11.0 (approx.), Close Down.

BERLIN
WITZLEBEN, 419.5 metres; 1.5 kW.—10.30 a.m., See *Leipzig*. 11.0, See *Berlin (Königs Wusterhausen)*. 12 Noon, See *Hamburg*. 1.0 p.m., A Dialogue: Heredity and Education. 1.30 to 2.0, Letters of Students who Fall in the Great War. 2.30, Gramophone Concert of Classical Music. 3.20, Radio Report of Falcoury. 3.40, Concert by the Berlin Wireless Orchestra, conducted by Bruno Seidler-Winkler: Totenfier (Oskar Wappenschmitt); Suite (Siegfried Kuhn); Symphonie Poem, Les Préludes (Liszt). 4.30, Address: In Memory of the dead. 4.50, The Heritage—Voices between Life and Death. 6.0, Concert of Old Pomeranian Music relayed from the Municipal Theatre, Greifswald. 6.50, Sports Notes. 6.55, Announcement. 7.0, Requiem for Contralto, Mixed Choir and Orchestra (Regner), relayed from the Friedenskirche, Potsdam. 7.25, The First Day—A Wireless Poem (Hans Rehberg, Music by Hans Kammier). 8.55, Weather, News and Sports Notes. 9.5 (approx.), Concerto in C for Pianoforte and Orchestra, Op. 15 (Beethoven), by the Berlin Wireless Orchestra, conducted by Eugen

Jochim. 10.0, Choral and Orchestral Concert of Sacred Music, relayed from the Church of the Good Shepherd, Friedenau. In the intervals: Municipal Election Results. 11.0 (approx.), Close Down.

BERNE.—See *Schweizerischer Landessender*.
BERMUNSTER. — See *Schweizerischer Landessender*.
BODEN.—See *Stockholm*.
BODD.—See *Oslo*.

BRATISLAVA
279 metres; 14 kW.—10.0 a.m., Sonata in A flat, Op. 1 (Suehon), for Violin and Pianoforte. 10.30, See *Prague*. 11.5, See *Moravská-Ostrava*. 12.30 p.m., See *Prague*. 1.0, Agricultural Talk. 1.15 to 1.20, Hydrographical Report. 2.30, Programme relayed from *Zvolen*. 5.10, Concert of Light Music relayed from the Museum Café. 6.0, Programme relayed from *Zvolen*. 8.0, See *Prague*. 9.20, Cigány Music and Songs relayed from the Astoria Café. 10.0 (approx.), Close Down.

BREMEN.—See *Hamburg*.

BRESLAU
325 metres; 60 kW.; and **GLEIWITZ**, 253 metres.—9.0 a.m., Protestant Service. 10.0, Reading of Hölderlin's Poems. 10.30, See *Leipzig*. 11.0, See *Berlin (Königs Wusterhausen)*. 12 Noon, See *Heilsberg*. 1.0 p.m., Announcements. 1.10, Samoan Legends. 1.35, Talk: The Progress Made in the Care of War Cemeteries Abroad during the last few Years. 2.0, Talk: Mankind and the Earth. 3.0, Programme for Children. 3.30, String Quartet in C Sharp Minor, Op. 131 (Beethoven). 4.20, Reading of Letters sent from Deaconesse in the Missionary Field. 4.50, Concert by the German Choir and the Silesian Symphony Orchestra, conducted by Carl Schmidt-Belden: Concerto grosso in D Minor (Handel); Funeral March from the Symphony No. 3—the Eroica (Beethoven); Nänie, Op. 82 for Choir and Orchestra (Brahms). 5.50, Talk: German Stage Music and the Silesian Frontier Problem. 6.20, Weather for Farmers. 6.25, Beethoven Pianoforte Recital by Georg Böhm: Rondo in G, Op. 51 No. 2; Sonata in E Flat, Op. 81a. 7.0, Literary Programme for the National Day of Mourning. 8.0, Concert from *Leipzig*. 9.0, Time, Weather, News, Sports Notes and Programme Announcements. 9.30 (approx.), Close Down.

BRNO
342 metres; 35 kW.—3.0 p.m., Variety Programme. 4.30, Two Sketches. 5.0 to 5.45, German Transmission: 500 Years in Music—Programme by the Station Orchestra and Choir with Introductory Talk. 6.0, See

Moravská-Ostrava. 7.0, See *Prague*. 9.20, See *Bratislava*. 10.0 (approx.), Close Down.

BRUSSELS (No. 1)
1.1.N.R., 599 metres; 15 kW.—10.0 a.m., Gramophone Concert of Light Music. 11.0, Concert by the Small Station Orchestra, conducted by Leemans. Scènes populaires (Massenet); Liebestraum (Liszt); Bolero for Pianoforte (Chopin); Selection from Faust (Gounod); Serenade d'amour (Lohr); Pasodoble! Old Spain (Donon); Three Dances (German). 12 Noon, Concert relayed from the Grand Hotel, Antwerp. 12.30 p.m., Gramophone Concert of Popular Music. 1.0, Le Journal Parlé. 1.10, Concert by Mickey's Club Jazz Attraction. 1.30, Nareisse the Hairdresser—Sketch (Ray). 1.40, Concert (contd.). 5.0, Dance Music relayed from the Saint Saviour Palais de Danses. In the interval at 5.30 (approx.), Football Results. 6.15, Ernest Anagnos Song Recital by Mme. Philippart: Offrande; Fantaisie; Je voudrais te la dire; Dans un Parfum de Roses blanches; Ma Sœur la Pluie. 6.30, Programme for Children. 7.0, Organ Recital relayed from the Carmelite Church: Fantasia in G Minor (Bach); Air (Grieg); Allegro con fuoco (Bocck). 7.15, Religious Address. 7.30, Music Review. 8.0, Concert by the Radio Orchestra, conducted by Franz Andre: Jazz in the Zoo (Basilevsky); Selection from Cydalise et le Chevreuil (Pierné); Popular Songs: Marche joyeuse (Chabrier); A Sung Ballet, Salade (Milhaud). 8.45 (in an interval), Talk on the Belgian Author, Auguste Vermeylen, with Readings from his Works. 10.0, Le Journal Parlé. 10.10, Gramophone Concert of Popular Music. 11.0, Concert by the Penguin Club. 12 Midnight (approx.), Close Down.

BRUSSELS (No. 2)
N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—10.0 a.m., Concert by the Small Station Orchestra, conducted by P. Leemans. 11.0, Gramophone Concert: Overture, Benvenuto Cellini (Berlioz); Aux Coilles (Duparc); Le Camp de Wallenstein (Lully); Quartet in E Flat, Op. 74 (Beethoven). 12 Noon, Concert by Mickey's Club Jazz Attraction. 1.0 p.m., Le Journal Parlé. 1.10 to 5.0, Concert by André Fellemann, from the Grand Hotel, Antwerp. 5.0, Concert of New Sound Film Music, Jazz, and Popular Potpourris by the Radio Orchestra, conducted by Franz Andre. In the interval at 5.15 (approx.), Sports Results. 6.0, Light Music on Gramophone Records. 6.15, Recitations. 6.30, Gramophone Records: Overture, Figaro (Mozart); Selection from Daphnis et Chloé (Ravel). 6.50, Song Recital by Mme. Maria Nicolopoulou; Songs (Mendelssohn): (a) Das erste Veilchen, (b) Auf Flügeln des Gesanges, (c) Bei der Wiege, (d) Jagdlied; Songs (Brahms): (a) Sapphic Ode, (b) Wiegenlied, (c) Der Schmidt;

An die Musik (Schubert); Ständchen (R. Strauss); Bird Songs at Eventide (E. Coates). 7.15, Religious Talk. 7.30, Music Review. 8.0, The Vagabond King—Musical Play (Friml), relayed from the Royal Flemish Opera House, Antwerp. In the intervals, Recitations and Le Journal Parlé. 11.20, Light Music on Gramophone Records. 12 Midnight, Close Down.

BUCHAREST
394 metres; 12 kW.—9.15 a.m., Programme for Children. 9.30, Bible Reading. 9.45, Choral Concert of Sacred Music. 10.0, Concert by the Burada Orchestra. 1.0 p.m., Light Music on Gramophone Records. 1.45, News and Time Signal. 2.0, Light Music (contd.). 3.0, Programme for Peasants. 4.0, Concert of Light Music and Romanian Music by the Marco Orchestra. 5.0, News and Time Signal. 5.10, Talk. 5.25, Concert (contd.). 6.0, Talk on Romania: Her Co-operative Organisations. 6.40, Popular Music on Gramophone Records. 7.0, Samson and Delilah—Opera in Three Acts (Saint-Saëns). In the intervals, News.

BUDAPEST
550 metres; 18.5 kW. Also relayed on 840 metres from 6.45 to 11.0 p.m.—8.0 a.m., News and Beauty Hints. 9.0, Sacred Music and Address from the University Church. 10.15, Evangelical Service, followed by Time, Weather, and Tide Report, and Concert by the Opera House Orchestra, conducted by Ernst Dohnanyi: Overture, The Magic Flute (Mozart); Symphony No. 12 (Haydn); Möllinger Tänze (Beethoven); Suite (K. Strauss); Moments musicaux (Schubert-Dohnanyi). 1.0 p.m., Gramophone Records of Popular Music. 2.0, Agricultural Talk. 2.45, Two Talks for Schools. 3.30, News and Concert by the Jenő Pertis Cigány Band. 4.30, Humorous Talk. 5.0, Concert by the Budapest Concert Orchestra, conducted by E. Friell. 6.0, Reading (Franz Mora). 6.30, Sports and Racing Results. 6.45, An Operetta (Franz Rajna and Karl Zohor). 8.45, Time and Sports Notes. 9.0 (approx.), Concert by the Georg Guttenberg Jazz Band and the Julius Horváth Cigány Band with Hungarian Folk Songs by Paul Kalmár, relayed from the Café Ostend. 11.0 (approx.), Close Down.

CASSEL.—See *Frankfurt*.

COPENHAGEN
231 metres; 0.75 kW., and **KALUNDBORG**, 1,153 metres; 7.5 kW.—11.0 a.m., Time Signal and Chimes from the Town Hall. 11.1, Concert by Morgen Hansen's Instrumental Ensemble. 12 Noon, Talk in English: The Grand Tour of England—XIV. 12.20 p.m., Talk in German: Hermann Löns. 12.40, Talk in French: Shades of a glorious Past. 1.0, Programme to be announced. 2.0, Programme for Children. 2.25, Sixteenth Popular Concert by the Radio Orchestra. 4.0 (also relayed on *Skamleback*, 31.51 metres), Divine Service, relayed from the Castle Church, Christiansborg. 5.20, Talk: Peasants in Twentieth Century Poetry. 5.50, Weather. 6.0, News. 6.15, Time Signal. 6.16, Sports Notes. 6.30, Talk: Handwork Instruction in other lands. 7.0, Time Signal from the Town Hall. 7.1, Danish String Music by the Radio String Orchestra, conducted by Emil Reesen: Novelletten (Gade); suite in A Minor, Op. 1 (Nielsen). 7.35, A Radio Play (Mette Reetz). 8.10, Recital by Famous Singers of the Metropolitan Opera House, New York, on Gramophone Records. 8.30, Music for Oboe and Harpsichord by Svend Felumb and Folmer Jensen; Sonata in G minor for Oboe and Harpsichord (Telemann); Largo (Loeillet); Minuet (Rameau). 8.50, Reading. 9.5, News. 9.15, Orchestral Concert, conducted by Emil Reesen. 10.0, Dance Music by Teddy Petersen and his Orchestra, relayed from the Wivek Restaurant. 11.0, Time Signal and Chimes from the Town Hall.

CORK.—See *Athlons*.
DANZIG.—See *Heilsberg*.
DRESDEN.—See *Leipzig*.

FECAMP
225.9 metres; 10 kW.—12.0 Noon, Radio Gazette and News Bulletin. 12.30 p.m., Variety Concert. 4.0 to 8.0, Programme in English by the I.B.C., C. Danvers Walker, R. Chene, B. MacNabb announcing. 4.0, Programme for Children. 4.30, Children's Club Concert. 5.0, International Broadcasting Club Concert for Sheffield Listeners: Overture, William Tell (Rossini); Victoria March; Special Message from the Lord Mayor of Sheffield; Selection from Maritana (Wallace); Song by Scout Teddy James; Ave Maria; Violin Solo; Caprice Viennois (Kreislter); Song: The English Rose; Sheffield Orpheus Male Voice Choir: There is a Tavern in the Town; Song: The Lass with a delicate Air; Orchestra: Waltz from Bitter Sweet (Coward); Song: The Londonderry Air; Choir: The Lincolnshire Poacher; Military March (Schubert); Song: The Two Grenadiers (Schumann); March of the King's Own Yorkshire Regiment. 6.0, Orchestral Concert with Songs: Vienna, City of my Dreams (arr. Reeve); Drink, Drink,

MARCH 12th SUNDAY continued

Brothers, Drink (Bendix); The Laird o' ... 7.0 p.m., Military Band Concert: March, For ...

FRANKFURT

259.3 metres; 17 kW., and CASSEL, 245.9 metres, and TRIER, 259.3 metres.—10.30 a.m., See Leipzig. 11.0, See Berlin (Königs- ...

FREDEKSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres, and Kiel, 232.2 metres.—10.0 a.m. (from Bremen). Wagner Memorial Festival, arranged by the Bremen Branch of the Bayreuth Society. 11.0 a.m., See Berlin (Witzleben). 11.55, Time and Weather. 12 Noon (from Flensburg). Concert, conducted by Kurt Barth, relayed from the Deutsches Haus: Leonora Overture No. 2 (Beethoven); Extracts from the Third Suite in D (Bach); Nachklänge an Ossian (Gade); Maurerische Trauermusik in C Minor (Mozart); Overture, Alceste (Gluck). 1.0 p.m., Programme for Children. 1.45, Reading of a Modern Fairy Tale. 2.10, Talk, Graves in Flanders. 2.35, Orchestral Concert of Music by Composers killed in the War. Conductor: Gerhard Maus. Soloists: Maria Molt-Nienstedt (Pianoforte) and Paul Moth (Cello). 3.30 (from Kiel). Choral Concert in memory of the Fallen, relayed from Deutsches Haus. 4.0 (from Hanover). Concert in Memory of the Fallen, relayed from the Castle Church. The Hanover Choral Society and the Rust Quartet. Soloists: E. Gähler (Clarinet) and H. Holze (Organ). 4.55, Reading. 5.15, Requiem Concert (Hermann Erdlen) in Memory of the Fallen. The Chamber Orchestra and the Station Mixed Choir. Conductor: The Composer. Soloist: Helene Gühl (Contralto). 5.35, Reading. 6.0 (from Hanover). Organ Recital of Music by North German Composers, relayed from St. Mary's Church, Göttingen. 6.30, Talk: The Difficulty of developing Rowing as a Sport in Hamburg. 6.40, Sports Notes. 6.55, Weather. 7.0, See Leipzig. 7.50, Battalion Eighteen—Drama in Four Acts. (Hans Ehrke). 9.30, Time, Weather, Announcements, Sports Notes and Police Report.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—11.0 a.m., See Berlin (Witzleben). 12 Noon, Concert by the Königsberg Opera House Orchestra, conducted by Werner Richter-Reichhelm: Leonora Overture No. 3 (Beethoven); Maurerische Trauermusik (Mozart); The Unfinished Symphony (Mozart). 1.0 p.m., Talk on Chess. 1.30, Talk for Young People. 2.0 (from Danzig). War Letters of Students Killed in Action. 2.30, Concert by the Danzig Theatre Orchestra, conducted by Otto Selberg. Sports Notes in the intervals. 4.30, Talk: Graves in Flanders. 5.0, Reading from the Works of Hilde Brück. 5.30, The Art of Playing the Pianoforte—Talk with Illustrations. 6.0, Chamber Music by the Wind Instrument Ensemble of the Königsberg Opera House Orchestra; Soloist, Anita Oberländer (Soprano): Five Songs (Weber). (a) Ein Veilchen blüht im Tal, (b) Meine Farben. (c) Wiegenlied, (d) Das Mädchen an das erste Schneeglockchen, (e) Mein Schatzel ist hübsch; Second Lithuanian Suite for Wind Instrument Quintet, Op. 41 (Max Lauridschik); Two Songs (Spohr), (a) Erwartung, (b) Rose; Two Songs (Johann Rudolf Zumsteeg). (a) Der Baum der Liebe, (b) Liedlein. 7.0, Sports Notes. 7.10, Death of the Fatherland—Two Speeches from Ancient and Modern Times; J. Pericles Oration on the Fallen Athenians; H. Johann Ludwig Schumacher, Der heilige Tod. 7.40, Sacred Concert by the Wireless Choir and Orchestra, relayed from the Neurosengärtner Church, Königsberg; Overture in D, No. 3 (Händel, arr. Franz Willner); Choral Passion for Mixed A-Cappella Choir for Five Voices and Three Solo Voices (Hugo Distler); Den Gefallenen—for Four Voices—to Verse by Heyncke (K. W. Meyer); Organ Concerto in F, Op. 137 (Joseph Rheinberger); Conductor, Ludwig Leschetizky; Soloist, Organ Kröff (Organ). 9.10, News and Sports Notes, followed by Concert Relay.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.55 to 4.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.55, Sextet Concert, 1.40 p.m., Religious Address. 2.10, Orchestral Concert. Selection from The Queen of Sheba (Gounod); Overture, Nachklänge an Ossian (Gade); The Three Bears (Coates). 2.40, A Radio Play. 3.25, Concert (cont'd.). The Blue Pavilion (Armandola); Suite, Poppohuis (Englemann); La Gitana (Bucalosi); Gipsy Idyll (Piery). 4.40 to 7.25, Programme of the Christian Radio Society (N.C.R.V.). 4.40, Choral Concert, with Gramophone Records. 5.30, Divine Service, relayed from Breukelen, followed by Organ Recital by M. C. Verweys. 7.25 till Close Down, K.R.O. Programme. 7.25, Programme for Invalids. 7.50, Football Results. 7.55, Concert by the K.R.O. Boys and M. J. Mossel (Songs). Schöne Isabella (Bootz); Melody (Holmes); Wir tanzen Welt-chlager (Borchert); The Capricious Musical Box (Lander); Potpourri, Servus Wein (Dostal); Karolin (Weiss); Es war einmal ein Zigeuner (Enegg); Was kümmert mich die ganze Welt (Abraham); Wir sind ja so fidel (Stranisky). In the interval at 8.40, News. 8.55, Cello Recital by M. R. Lanes. Toccata (Frescobaldi-Casado); Adagio

(Bach); Rondo (Fozari); Allegro spirituoso (Senallie); Cortège (Bosmans); The Flight of the Bumble Bee (Rinsky-Korsakov). 9.15, Orchestral Concert. Soloist: M. R. Lanes (Cello). Overture, Prometheus (Beethoven); Symphony No. 101 in D Minor (Haydn); Concerto in B Minor, Op. 104 (Dvorak). 10.20, Epilogue by the Small Choir. 10.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 5.5 kW.—9.40 to 11.0 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 9.40, Orchestral Concert with M. G. Hesse (Cello). 10.20, Talk on the Cinema. 10.40, Concert (cont'd.). 11.20, Address. 11.40 to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.42, Choral and Orchestral Concert. 11.40, Time Signal. 11.42, Choral and Orchestral Concert. 1.40, Weekly Book Talk. 2.10, The Fate of the Rüdiger Expedition—Radio Play. 3.40, Popular Music on Gramophone Records. 4.25, Football Results. 4.40, V.A.R.A. Programme for Children. 5.40 to 7.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 5.40, Book Review. 6.25, Divine Service. 7.40 till Close Down. A.V.R.O. Programme. 7.40, Time, News, and Sports Results. 7.55, Concert by the Station Orchestra, conducted by Neco Treep. Soloist: Dusolina Giannini (Soprano). Overture, Le Roi d'Yvetot (Adam); Song from La Vestale (Spontini); Barcarolle from The Tales of Hoffmann (Offenbach); Song from Madame Butterfly (Puccini); Prelude (Rachmaninov); Three Italian Folk Songs: (a) In Mezzo al Mar, (b) Manella mia, (c) Cielito Lindo; French Military March (Saint-Saëns). 8.40, Clinge Doorendus in his Repertoire. 9.0, Concert by Kovacs Lajos and his Dance Band. In the intervals, Viennese Music by the Schrammel Quartet. 10.50, Light Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLACENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

473 metres; 60 kW.—11.0 a.m., See Berlin (Witzleben). 12 Noon, Chamber Music: Septet (Beethoven); Songs. 1.30 p.m., Short-hand Lesson. 1.50, Review of Books Old and New German Lyrics. 2.20, Reading (H. Cappellmann). 2.45, Talk on Literature. 3.5, Talk: On Foot through Cyprus. 3.30, Der deutsche Bettelmann—Radio Play (Ernst Wiechert). 4.30, Programme in Commemoration of those who fell in the Great War—Choral and Instrumental Music. 5.15, Talk: Towns of the Rhineland and Westphalia—Meschede. 5.45, Talk: Germans report from all parts of the World—Unemployed in New York. 6.10, Sports Notes. 6.25 to 9.15, National Day of Mourning—Programme by the Station Orchestra, conducted by Busch-kötter; The Fifth Symphony (Bruckner). 7.25, Programme from Berlin (Witzleben). 9.0, Programme by the Station Orchestra (cont'd.); Symphonic Prologue to a Tragedy (Reger). 9.30, News, Sports Notes, and Silent Night.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW., and JRESDEN, 319 metres.—10.30 a.m., Gotteszeit ist die allerbeste Zeit—Cantata (Bach), by the Municipal and Gewandhaus Orchestra, the Choir of St. Thomas and Soloists. 11.0, See Berlin (Königs Wusterhausen). 12 Noon, See Heilsberg. 1.0, Weather and Time. 1.5, Programme Announcements. 1.25, Agricultural Hints. 1.35, Esperanto Lesson. 2.0, String Quartet in B Flat, Op. 9 (Barg), by the Genzel Quartet. 2.40, Krümelchen—What the World looks like to an Eighteen Months Old Baby. 3.25, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen; Overture, Esther (Händel); Extracts Music No. 2 in B Flat from Rosamunde (Schubert); Funeral March (Gurlitt); Elgy (Siedl); Wiegenlied (Järnerell); Deutsches Waldlied (Niemann); Frieden (Ehrenberg). 4.25, Talk: The Crocus Blooms!—A Spring Excursion in the Erz Gebirge. 5.0, Songs of Composers killed in Action—Recital by Mara Duvès, with Introductory Talk. 5.40, Chaconne from the Sonata in D Minor for Violin (Bach), by Gustav Fritzsche. 6.0, Sports Report. 6.50, Topical Talk. 7.0, War Requiem (Hermann Ambrosius), for Choir, two Soloists, a Speaking Voice and Orchestra. 7.45, Concert by the Symphony Orchestra, conducted by Theodor Blumer; Heldenklänge (Göhler); Overture, Manfred (Schumann); Adagio from the Serenade in D (Brahms); Symphonic Adagio (Scharer); Variations and Rondo on an Old German Folk Song (Haas). 9.5, News, followed by

Orchestral Concert. In the intervals, Election Results from Berlin (Witzleben). LINZ.—See Vienna.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—10.30 p.m., Concert of Variety Music. 10.45, Humorous Talk. 11.0, Talk. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—8.0 to 9.0 a.m., Topical Review. 2.0 p.m., Chimes, Time Signal, Theatre Notes and Concert by the Artys Orchestra. 4.0 to 7.0, Interval. 7.0, Chimes and Dance Music relayed from the Ritz Hotel. 7.30 in an interval, Agricultural Talk. 8.30 to 9.30, Interval. 9.30, Chimes and Time Signal. 9.35 (approx.), Song Recital by Luis Nere (Soprano) and Franco Mar (Baritone), followed by an Interlude by Ramon Gomez de la Serna, Argentine Songs by Angel las Heras, and Flamenco Songs by Ricardo Fernandez El Dora, with Guitar Accompaniment. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—11.5 a.m., Concert by the Station Orchestra, conducted by B. Trvdy. 12.30 to 1.15 p.m., See Prague. 3.0, See Brno. 4.30, See Prague. 6.0, Military Band Concert. 7.0, See Prague. 9.2, See Bratislava. 10.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—10.30 a.m., See Leipzig. 11.0, Orchestral Concert, relayed from Marktredwitz. 12.5 p.m., Time, Weather and Programme Announcements. 12.15, Agricultural Talk. 12.35, A Dialogue about Gramophone Records, with Illustrations. 1.30, Chess Lesson. 2.15, Concert of Folk Music by a Schrammel Trio and Yode Yode. 2.50, Reading: A Winty World (A. Reitz). 3.5, Music for Children by Children. The Children's Symphony (Diabelli). 3.25, Orchestral Concert, conducted by Erich Kluss. In the interval, a Humorous Reading. 4.35, Talk: The History of Alchemy. 5.0, Provincial Programme, relayed from Marktredwitz. 6.5, (from Nürnberg). Brahms Song Recital by Elena Gerhardt (Soprano); Vor dem Fenster; Bei dir sind meine Gedanken; Mairnacht; Der Gang zum Lieblingen; Liebestreu; Therese; Verzaubert; Schön war ich dir weiltet; Blinde Kuh; Immer leiser wird mein Schlummer; Auf dem Schiffe; Manderl; Von ewiger Liebe. 6.40, Weather and Sports Notes. 6.50, The Miniature Zoo—a Radio Sequence with Songs and Music; (Alois Johannes Lippl and Hermann Weininger). 7.40, A Dialogue on the Life of Friedrich Heibel. 8.0, Concert by the Station Orchestra, conducted by Karl List; Soloist: Helmut Baentsch (Pianoforte); Overture, Russian and Ludmilla (Glinka); Rondo (Pringsheim); Concerto for Pianoforte and Orchestra (Scriabin); Poetische Spaziergänge (Brands-Buys); Postum Intonazzo (Nick); Symphonic Poem, Viola (Saudberger). 9.20, Time, Weather, News and Sports Notes. 9.45, Serenade from Langenberg. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—9.15 a.m., Skiing Report. 9.20, Divine Service, relayed from Bodø (453.2 metres). 4.0, Orchestral Concert, relayed from Trondheim (495.8 metres). 5.0, Song Recital, relayed from Trondheim. 5.30, Talk on Bizet's Arlesienne, with Gramophone Illustrations. 6.0, Parliamentary Notes. 6.15, Weather and News. 6.30, Violin Recital by Leif Halvorsen. 7.0, Recitations. 7.30, Sacred Concert, relayed from the Cathedral Stavanger (240.6 metres). 8.40, Weather and News. 9.0, Topical Talk. 9.15, Concert by the Station Orchestra, conducted by Hugo Kramm. Symphonic Poem, Die Molau (Smetana); Valse triste (Sibelius); Minuet (Kristoffersen); Andante cantabile (Chajkovsky); Spanish Dance, No. 8 (Saraate); Potpourri (Morena). 10.15, Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

537.6 metres; 3 kW.—9.25 a.m., Bible Reading. 9.40, Sacred Music. 10.5, Agricultural Talk. 11.45, Giornale Radio. 12 Noon to 1.0 p.m., Concert by the Sunny Hand Quartet. In an interval at 12.30, Time, Announce-

MARCH 12th

SUNDAY

continued

Notes and News. 7.45, La donna perduta—Opera in Three Acts (Pietro). In the intervals: Talk: The Sala Dante in Rome, and Talk on Science. News after the Operetta.

SALZBURG.—See Vienna.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.—BASLE, 244.1 metres, and BERNE, 245.9 metres. 9.0 a.m. (from Berne), Protestant Address. 9.45 (from Berne), French Music of the Sixteenth and Seventeenth Centuries, by Carl Kriener (Violin), Hans Leonhardt (Cello), and A. Heinichen (Harp). 10.20 (from Berne), French Songs on Gramophone Records. 10.40 (from Berne), Reading (Helmuth Schilling). 11.0 (from Zurich), Concert by the Radio Orchestra. 11.28, Time Signal and Weather Forecast. 11.30, News Bulletin. 11.40 (from Zurich), Concert by the Radio Orchestra (cont.). 12.30 p.m. (from Berne), Barrel Organ Concert. Yodelling in the interval. 1.0 (from Berne), Talk for Women. 1.30 to 2.30, Interval. 2.30 (from Berne), Concert of Waltzes and Marches by the Berne Mandoline Orchestra. 3.5 (from Berne), Guitar Recital by Fritz Wörtsching. 3.35 (from Berne), Old Songs by the Berne Male Voice Choir, conducted by Ernst Tanner. Soloist: Felix Lüffel. 4.20 to 5.30, Interval. 5.30 (from Berne), Literary Talk in French: The Novel from 1880-1910—Bourget and Loti. 6.0, Time Signal, Weather Forecast and Sports Notes. 6.5 (from Berne), Allegro con spirito and Allegro from the Brandenburg Concerto No. 3 (Bach), on Gramophone Records. 6.15 (from Berne), Stefan Zweig reads from his own Works. 6.45 (from Berne), Violin Duets by Hungarian Composers, played by Emmy Barn and Walter Kägi. 7.15 (from Zurich), Concert by the Radio Orchestra. 7.55 (from Berne), Folk Music by the Berne Yodelling Club and the Echo vom Thunersee Orchestra. 8.30, Weather Forecast and News Bulletin. 8.40 (from Basle), Sports Bulletin. 8.50 (from Basle), Relay from the Municipal Casino. 10.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres, 55 kW. Relayed by Boden, 1,223.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—10.9 a.m., Divine Service. 11.45, Weather. 11.50 to 2.0 p.m., Interval. 2.0, Song and Piano Recital by Märta Lundell and Brita Hjort, relayed from Malmö, 231 metres. 2.40, Talk in French. 3.0, Pro-

ments and Weather. 4.30 to 5.30, Popular Music on Gramophone Records. 7.0, Dopolavoro Notes and Giornale Radio. 7.20, Sports Notes. 7.30, Time and Announcements. 7.45, Symphony Concert, conducted by A. La Rosa Parodi. In the interval, Talk: G. Cepparelli, Painter and Poet. After the Concert, Songs. 9.55, News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,660 metres) at 9.25 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals). 12.30 p.m., Concert from Paris (Ecole Supérieure) (447.1 metres). 1.0 to 2.0 p.m., Concert by the Rex Orchestra. 5.45, Le Journal Parlé. 6.45, Programme for Children. 7.20, Weather Report. 7.30, Gramophone Concert: Part I—Mozart Programme; Selection from Don Giovanni, Figaro, The Magic Flute, and Così fan tutte; Part II—Selection from The Merry Widow (Lehar); Czardas (Grossmann); Waltz, Frühlingsstimmen (Joh. Strauss); Melodious Memories (Finck); Quadrille from La Mascotte (Audran). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—9.45 a.m., Bible Reading. 10.0, News. 10.5, Sponsored Concert. 11.5, Film Stars—Sponsored Programme. 11.40, Sponsored Gramophone Concert. 12.15 p.m., Sound Film Music. 1.30, Sponsored Concert. 2.0 to 6.45, Interval. 7.0, Sports Notes. 7.15, Popular Music on Gramophone Records. 7.30, Talk: Catholics and the Radio. 8.0, Sponsored Concert. 8.30, Light Music on Gramophone Records. 8.45, Interval. 9.0, Dramatic Programme. 9.50, Interval. 9.45, Concert of Light Music by the Station Symphony Orchestra. 10.45, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—7.45 a.m., Light Music on Gramophone Records. 8.0, Press Review and Weather. 8.30, Physical Culture. 10.0, Elementary Book-keeping Lesson. 10.20, Advanced Book-keeping Lesson. 10.40, Spanish Lesson. 11.30 to 12 noon, Programme in English by the I.B.C.; Gramophone Concert. T. St. A. Ronald announcing: Unforgotten Melodies, Part I, by Mellow and Rich; Sandy in Hospital, or Down with the Flu, by Sandy Powell; Sue, Sue, by G. H. Elliott; Barcarolle from The Tales of Hoffmann (Offenbach), with Gemma Bird singing by a famous Choir of Varieties; The Coldder, by the Four Smith Brothers; In the Shadows, by Lozall's Picture House Organ, played by Frank Herman;

Hilly Billy Song Favourites, Part 1, by Monte Hunter; Popular Tunes from the latest Talkies, by Neil Fox's Film Fans. 12 noon, Religious Address by the Reverend Father Llaude. 12.20 p.m., Sacred Music: Andantino (Vienna); Fantasia No. 3 (Tournemire). 12.30, Bilboquet. 12.45, Press Review, News and Weather. 1.0, Orchestral Concert. 1.30 to 5.0, Programme in English by the I.B.C. 1.50, Concert on Gramophone Records. 3.0, Orchestral Concert: March, Maree; Liebestraum (Liszt); Selection from "The Country Girl" (Monckton); Waltz, Vienna City of my Dreams (Szeizinsky); Selection from "The Arcadians" (Monckton); Selection from "Rose Marie" (Prind). 3.30, Dance Music. 5.0, Tea-Time Variety Hour, Mr. S. H. C. Williams announcing. 5.0, Second Lenten Sermon by the Reverend Father Pinard de la Boudlaye, relayed from Notre Dame, Paris. 6.30, Variety Concert. 7.0 to 8.0, Programme in English by the I.B.C. Film Fans Hour, Mr. S. H. C. Williams announcing. 8.30, News, Sports Notes and Weather. 8.45, Radio Paris Circus. 9.15, Press Review and News. 9.30, Music Hall Programme: Soloist, Monique Berger (Songs); Carnival Overture (Dvorák); Songs: Muet Henri (Ganne); Ballet Music from Is (Bonincenti); Piece (Kálmán); Ballet de cour (Pierrot).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Carnegie Tech. Women's Glee Club. 9.30, Vesper Services from Shadyside Presbyterian Church. 10.30, Pages of Romance, from New York. 11.0, Sealed Power, from New York. 11.30, Time Signal. 11.31, Weather Report. 11.32, Teaberry Sport Review. 11.37, Press-News Reeler. 11.42, Strange Facts. 11.44, Temperature Report. 11.45, Programme to be announced. 12.0 Midnight, Time Signal and KDKA Orchestra. 12.30 to 2.45 a.m. (Monday), New York Relay. 12.30, Great Moments in History. 1.9, L'heure exquise. 1.50, Mexican Symphony Matimba Orchestra. 2.0, Twenty Thousand Years in Sing Sing. 2.30, Walter Winchell. 2.45, Mary Steele. 3.0, D. W. Griffith's Hollywood. 3.15, Real Silk. 3.45, The Westinghouse Glee Club. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News. 4.20, Alexander Roy (Tenor). 4.30, Jesse Crawford

(Organist), from New York. 5.0, Time Signal and Good-night.

PORSGHUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—9.0 a.m., Opening of the Slovak Exhibition in Prague. 10.9, See Bratislava. 10.30, Alois Jiracek Programme. 11.0, Chimes. 11.5, See Moravská-Ostrava. 12.30 p.m., Talk: From Sumava to the Tetra Mountains. 1.0, Agricultural Report. 1.15, Talk on Social Hygiene. 1.25 to 3.0, Interval. 3.0, See Brno. 4.30, Talk: In the Remote Regions of Persia. 4.45, Variety Music on Gramophone Records. 5.0, German Transfusion: Talk with Music Illustrations: 100 Years of Balls and Dances followed by News. 6.0, Chimes. 6.1, See Moravská-Ostrava. 7.0, Popular Concert. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Jeremiás; Soloist: Kitty Cervinkova (Violin); Concerto in a Minor for Violin and Orchestra, Op. 53 (Dvorák); Legend of Happiness, Op. 83 (Foerster). 9.0, Time Signal. 9.1, News Bulletin. 9.20, See Bratislava. 10.0 (approx.), Close Down.

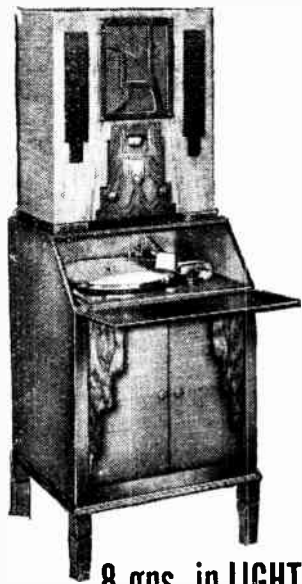
RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres, and GENEVA, 760 metres.—6.0 p.m. (from Lausanne), Saxophone and Piano Recital. 6.40, Sports Notes, News and Announcements. 7.0 (from Geneva), Reading. 7.15 (from Geneva), Concert of Chamber Music by the Station Quartet. 8.0 (from Geneva), L'Amour Médécin (Comedy (Moliere), with Music by Lully. 9.0, News Bulletin and Weather Forecast. 9.15 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0, 441 metres; 50 kW. Relayed by Naples, 319 metres; and ZRO, 25.4 metres.—9.10 a.m., News, Sports Notes and Amusement Guide. 9.30, Agricultural Report. 9.45, Bible Reading. 10.0 to 11.0, and 11.30 to 1.30 p.m., See Turin. In the interval at 12 Noon, Time and Announcements. 2.45 (Naples), Shipping and Sports Notes. 3.0, Football Report. 3.15, Orchestral Concert with Songs. Sports Notes in the Interval. 4.0, Symphony Concert, conducted by Victor de Sabata, relayed from the Augusto. 6.30, Sports Notes, Football Report, Dopolavoro



your present set

plus APOLLO Playing Desk

equals a fine Radio-Gram

8 gns. in LIGHT, MEDIUM or DARK WALNUT

TO MATCH VARIOUS SETS

Size of top, 18 x 11 1/2 in.

As illustrated, with Collaro Induction motor, and pickup, automatic current stop, volume control, Record cupboard—8 gns. or 12 payments of 15/6. Cabinet only, without motor or pickup, £3.15.0. Also supplied fitted with GARRARD AUTOMATIC RECORD CHANGER and volume control complete, £15 5.0. Table Models: Electric, £5.17.6; Spring, £4.4.0.

APOLLO PLAYING DESKS

Ask your Radio Shop, or write to—

APOLLO GRAMOPHONE CO., LTD., 4-5, Bunhill Row, London, E.C.1.

EVEN IN AMERICA WITH ITS MULTI-VALVE SUPER SELECTIVE SETS A PIX IS NEEDED

Read this Letter—

Hotel Grand, New York City.
... Please send me another "PIX" as I find by test that they are all that you claim for them and then some more.
I have tried it out on one of the new 8 tube D.C. sets... excellent clarity and volume. W. H. L.

NO MORE DUAL PROGRAMMES. Fix a PIX in your aerial and separate programmes. A PIX can be fitted to any set, crystal battery or all vacuum will not out the local and bring in foreign station clearly.

This is only one of the many letters received from America. Thousands are being sold there weekly because they find a PIX improved the selectivity of even the finest sets.

The selectivity of your set can be improved by fixing a PIX in the aerial lead-in. Even if a pre-set aerial condenser is fitted inside your set, a PIX will give better and sharper tuning.

THE BRITISH PIX COMPANY LTD. (Dept. 461), 118 2B, Southwark St., LONDON, S.E.1.

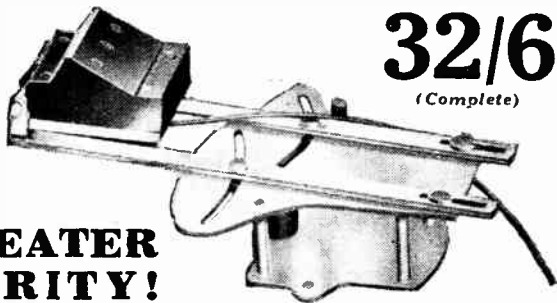
PIX

OVER 1 MILLION USERS

2/ CLIP GO.



SIMPSONS 100% STRAIGHT TRACK ARM & PICK-UP



32/6

(Complete)

GREATER PURITY! LESS WEAR AND TEAR!

This wonderful pick-up and arm is designed and constructed to give 100 per cent. *perfect tracking*, thus eliminating *needle scratch* and reducing *record wear*.

With the aid of this pick-up and arm you can enjoy gramophone reproduction at its best, tone is rich and pure and your records take on a new life when played through this instrument.

You can fit it yourself with ease to your present gramophone if you follow the simple instructions enclosed. Priced as low as 32s. 6d. complete it is a definite value for money product, and can be obtained from all good retailers. Fill in coupon below for **Free booklet describing this pick-up and arm together with graph of its performance.**

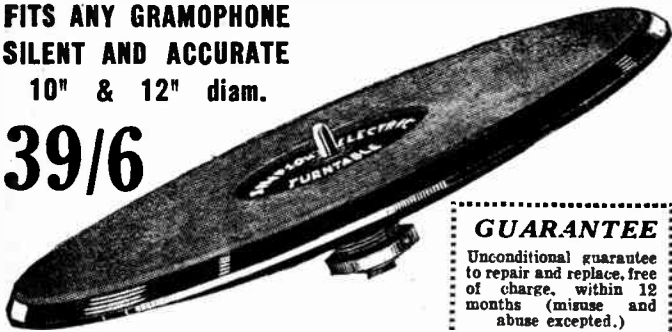
GUARANTEE

Unconditional guarantee to repair or replace, free of charge, within 12 months (misuse and abuse excepted.)

SIMPSONS SYNCHRONOUS MOTOR & TURNTABLE

FITS ANY GRAMPHONE SILENT AND ACCURATE 10" & 12" diam.

39/6



GUARANTEE

Unconditional guarantee to repair and replace, free of charge, within 12 months (misuse and abuse excepted.)

The Simpson Electric Turntable is not more than 2 1/2" deep, weighs only 8lbs., is fitted in a few moments by the most inexperienced, and when started with a flick of the finger will run at 78 revolutions per minute (correct speed) without noise, vibration, or the slightest variation in speed. Costs only 1d. per week to run. There are no mechanical noises and there is definitely nothing to go wrong. Critical people will appreciate the advantages that the Simpson Motor has to offer. Priced at 39s. 6d., it is manufactured in two sizes, viz.: 10" and 12" diameter, and finished in Bronze or Nickel it is covered with an excellent quality brown felt.

Fill in the coupon below for your Free copy of a booklet describing this amazing gramophone motor.

FREE SIMPSONS ELECTRICALS LTD. Grange Road, Leyton, London, E.10

To interested readers of "The Wireless World" we shall be pleased to send our illustrated Folder (containing all technical details) on receipt of completed coupon.

NAME.....
ADDRESS.....

MARCH 12th

SUNDAY

continued

gramme from Children, relayed from Malmö. 3.30, Popular Music on Gramophone Records. 4.30, Talk. 5.0, Evensong. 6.30, Pianoforte Recital by Hedvig Stein. 7.0, A Play (Josef Kjellberg). 7.40, Orchestral Concert. Soloist: Juan Manén (Violin). Serenade (Miaskovsky); Concerto No. 3 in B Minor for Violin and Orchestra (Saint-Saëns); Nocturne (Lauré); Overture, Die Dame Kobold (Weingartner). 9.0, Concert of Light Music. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—9.30 a.m., Orchestral Concert of Light Music, conducted by Maurice de Villers. 10.45, Protestant Address in German. 11.30, Catholic Service in French. 12 Noon, Mozart Concert on Gramophone Records; Overture, The Magic Flute; Jupiter Symphony; Overture, Idomeneo; German Dances. 12.45 p.m., News. 1.0, Time. 1.1, Gramophone Concert of Variety Music. 2.0, Agricultural Talk in French. 2.30, Concert, relayed from Paris. 4.30, Paderewski Symphony Concert, relayed from the Théâtre des Champs-Élysées, Paris. 6.45, Medical Talk in German. 7.0, Sports Notes. 7.15, Popular Music on Gramophone Records. 7.30, Time, News, and Sports Notes. 7.45, Music by André Messier on Gramophone Records. 8.20, Lottery Results. 8.30, Alsatian Programme, Part I.—Concert of Alsatian Music by René Monodé, Part II.—Byrn Hierotsvermidler (At the Marriage Broker's) — One-act Comedy (Charles Grunler). 10.30, Dance Music on Gramophone Records. 11.0, Quintet Concert, conducted by Jean Clergue, relayed from Radio Coloniale (Paris). 25.63 metres: Manfred (Schumann); Pensee d'automne (Massenet); Romance (Aubert); Ballet Music from Les deux pigeons (Messager); Une nuit à Lisbonne (Saint-Saëns); Hommage à Rameau (Debussy); Spring Song (Mendelssohn); Yes (Maurice Yvain). 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—10.30 a.m., Remembrance Day Programme, relayed from the Festhalle, Karlsruhe. 11.30, Remembrance Day Music on Gramophone Records. 12.30 p.m. (from Mannheim), Talk: Are Hand-made Goods too expensive? 1.0, Violin and Pianoforte Recital by Hermann Hüll and Dagmar Benzinger, Sonata in A Minor, Op. 105 (Schumann); Sonata No. 2 in C Minor, Op. 30 (Beethoven). 1.45, Remembrance Day Music on Gramophone Records. 2.30, See Frankfurt. 3.30, Chamber Music, relayed from a Private House. Introductory Talk; Music for Flute, Clarinet, Violin and Pianoforte (Reinstein); Divertimento for Violin, Viola and Cello (Vieux); Ein kurioser Kaffeeklatsch, for Pianoforte, Violin, Viola and Flute (Weisz). 4.30, Remembrance Day Programme—Literature and Music. 4.50, Brahms Concert for the Centenary of his Birth. Trio in B, Op. 5, for Violin, Cello and Pianoforte; Four songs by Hermann Bieth (Bass); String Quartet in C Minor, Op. 51, No. 1. 6.0, Sports Notes. 6.20, Programme in Memory of the Fallen, Funeral March from The Twilight of the Gods (Wagner); Recitations: (a) Wir Toten (Meyer), (b) Extracts from The Persians (Aeschylus), (c) Requiem (Höbhel); Rodolinda's Aria from Rodolinda (Händel); Recitation, Nun hast du mir den ersten Schmerz getan (H. v. Chamisso); Recitation, Das Vermächtnis der Toten (Dwinger); Totenmensch from Saul (Händel); Recitation, Der Frieden (Höbhel); Recitation, Kein selbster Tod ist in der Welt (Vogel); Wir treten zum Beten. 7.0, Organ and Violin Recital, relayed from St. Mark's Church. 8.5, See Frankfurt. 9.35, Time, News, Weather, Programme Announcements and Sports Notes. 10.5, Talk on Anselm Feuerbach and Hans von Marées. 10.20 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIC DU MIDI, 385 metres; 8 kW. — 6.0 p.m., News Bulletin. 6.15, Light Music. 6.30 to 7.0, Programme in English by the I.B.C.—Concert of Dance Music: Can't we meet again? What more can I ask? When anybody plays or sings; Every Woman thinks she wants to wander; Wah-dedah; Sweet Rhythm; I'm playing with Fire; Here it is Monday, and I've still got a Dollar; Ain't I the lucky one? Underneath the Harlem Moon. 7.0, Orchestral Music. 7.15, Racing Results, Market Prices and News. 7.25, Local News. 7.30, Popular Melodies. 7.45, Opera Music. 8.0, Music by a Viennese orchestra. 8.30, Opera Music. 8.45, Light Music. 9.0, Operetta Music. 9.15, Symphonic Poem, Les Préludes (Liszt). 9.30, Popular Songs. 9.45, Accordion Solo. 10.0, Military Music. 10.15, North African News. 10.30 to 11.30, Programme in English by the I.B.C.—10.30, Military Band; Selection from San Toy; El Abanico; Blaze away; Piccolo Solo, La Grive; Light of Foot; Selection, The Thistle. 11.0, Vocal Concert; Orchestral Selection; Vienna, Vienna; Little Grey Home

in the West (Löhr); Take a Pair of Sparkling Eyes (Sullivan); Indian Love Lyrics (Woodforde-Finden); Roses of Picardy (Haydn Wood); O Sole mio (di Capua); Orchestral Selection, Ancliffe Waltz Favourites. 11.30, Humorous Sketches. 11.45, Hawaiian Guitar Music. 12 Midnight, Weather and Announcements. 12.5 a.m. (Monday), Organ Recital. 12.15, Instrumental Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—8.40 a.m., See Turin. 8.55, Mass from the Cathedral of San Giusto. 10.0 to 10.20, Agricultural Talk. 1.0 (ill) Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—8.40 a.m., Giornale Radio, 8.55 to 9.40, Interval. 9.40, Agricultural Talk. 10.0, Mass from the Church of the Annunciation, Florence. 11.0 to 11.15, Bible Reading. 11.30, Orchestral Concert, conducted by Ugo Tansini. In the interval at 12.0 Noon, Time and Announcements. 12.30 p.m., Orchestral Concert. 2.30, Orchestral Concert, Overture, Zaida (Mozart); Dance (Van Westerhout); La Grenata (Tosti); Selection from La Wally (Catalani); Idyll (Strauss); Fantasia in re (Cortopassi); Sports Notes in the intervals. 3.40, Light Music on Gramophone Records, and Sports Notes. 4.0, See Rome. After the Concert, Giornale Radio, and Sports Notes. 6.0, Dopolarvo No'es. 6.5, Light Music on Gramophone Records. 6.30, Time, Announcements and Gramophone Records (contd.) 7.0, Giornale Radio, Sports Notes and Variety Music on Gramophone Records. 7.45, L'amore tra i pampini (Love among the Vine Leaves) Operetta in Three Acts (de Michel). In the intervals, Talk, Theatre Notes and Giornale Radio.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—10.30 a.m., Relay of the Ski-Jumping Championship from the Lichtenstein Ski-Jump on Mt. Semmering. 10.45, From Strauss to Lanner—Concert by the Vienna Symphony Orchestra, conducted by Martin Sporr. In the interval at 1.40 (approx.), Report on the Close of the Ski-Jumping Championship from Mt. Semmering. 12.30 p.m., Popular Music on Gramophone Records. 1.0 to 2.0, Interval. 2.0, Time and Programme Announcements. 2.5, Book Review. 2.30, String Quartet in E Flat (Bittner). 3.10, Radio Reports: Mt. Semmering To-day, followed by Dance Music from the Hotel Panhaus, Semmering. 4.0, Concert by the Vienna Chamber Orchestra. 5.30, Talk: The Romantic Society on the Lower Danube. 6.0, Karl L. Kossak-Raytenau reads from his own works, with Introductory Talk. 6.30, Time, Sports Notes, and Programme Announcements. 6.40, Chopin Pianoforte Recital by Julius Isserlis: Sonata in E Minor, Op. 38; Waltz in A Flat; Nocturne in F Sharp; Six Etudes from Op. 10 and Op. 25. 7.20, Berry! discontinues Payment—Radio Play (Franz Carl Seltz). 8.35, News Bulletin. 8.50, Orchestral Concert, conducted by Hans Winklör.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Weather forecast. 11.15, Grieg Concert by the Warsaw Philharmonic Orchestra, conducted by J. Oziminski, and the Lutnia Warszawska Mixed Choir, conducted by P. Marszynski; Soloists: J. Paszkowska (Contralto), E. Szabrowska (Mezzo-soprano), and T. Luczaj (Baritone); Suite from Sigurd Jorsalfar; First and Second Suites from Peer Gynt; Scenes from Olaf Trygvason; for Soloists; Mixed Choir and Orchestra. In the interval, Talk on Health Insurance. 1.0 p.m., Agricultural Talk. 1.20, Musical Programme. 1.40, Agricultural Talk. 2.0, Musical Programme (contd.). 3.0, Programme for Young People. 3.25, Light Music on Gramophone Records. 3.45, Talk. 4.0, Cello and Pianoforte Recital. In the interval, Announcements. 4.55, Programme Announcements. 5.0, Concert of Light Music. In the interval, News. 6.0, Miscellaneous Items. 6.25, Reading, relayed from Lwów, 381 metres. 7.0, Concert of Opera Music by the Station Orchestra, conducted by Oziminski. In the interval, Sports Notes. 8.40, Violin Recital by S. Frenkel; Concerto in B Flat, Op. 4 No. 1, for Violin with String Accompaniment (Vivaldi-Frenkel); Melody (Niek-Frenkel); Minuet (Paderewski-Frenkel); Chanson Louis XIII and Pavane (Göppner-Kreiser); Canzonetta (d'Ambrosio); Perpetuum mobile (Ries). 9.0, Dance Music. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music (contd.). 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

MONDAY

MARCH THE THIRTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON REGIONAL
MIDLAND REGIONAL
NORTH REGIONAL
WEST REGIONAL
BELFAST

Chamber concert. Argentine feature programme. Variety programme. Orchestral music of F. H. Cowen.
 Choral concert from Bromsgrove.

Folk Songs of the North.

Orchestral concert from the National Museum of Wales.
 Light orchestral music. Military Band.

ABROAD

ATHLONE BERO-MUNSTER
BRUSSELS (No. 1)
BRUSSELS (No. 2)
COPENHAGEN
HILVERSUM RADIO PARIS
ROME
SOTTENS
STRASBOURG WARSAW

8 p.m. The Sligo Musical Society.
 7.45 p.m. Wagner concert from Zurich.
 8 p.m. The Symphony Orchestra, conducted by J. Kumps.
 8 p.m. Acts 1 and 2 of "Ondergang," opera by A. Menckmans.
 7.30 p.m. Operetta: "The Gipsy Baron," by J. Strauss.
 7.45 p.m. Concert, with songs by Franz Baumann.
 8 p.m. Opéra Comique: "La Dame Blanche," by Boieldieu.
 4.30 p.m. Concert from the Royal Philharmonic Academy.
 7.30 p.m. Symphony concert conducted by E. Ansermet.
 8.30 p.m. Song recital by Lotte Lehmann.
 7 p.m. Operetta: "Das Vielweibchen," by Hellmesberger.

finished Symphony (Schubert); Romance in F (Rubinstein-d'Indy); Meditation from Thaïs (Massenet-Marsick); Nocturne and Scherzo (Mendelssohn); Two Sketches (Soudant); Hungarian Dances (Brahms). 6.0, Gramophone Concert: Symphonie Poem: Psyche (Franck); Le mariage de roses (Franck); Chiarade (Quintet); Petite Suite (Jongen); Overture: Schehadnezar (Verdi); Aria from Norma (Bellini); Two Arias from Mephistopheles (Boito); Aria from I Puritani (Bellini); Serenade from Iris (Alceni); Song from The Girl of the Golden West (Puccini); Overture: Don Pasquale (Donizetti). 7.15, Walton Report. 7.30, Review for Women, and Film Notes. 8.0, Concert by the Symphony Orchestra, conducted by Jean Kumps: Symphony in B Minor (Borodin); Les Dancesses de Kerlanon (Dancan); Minuet (Dancan). 8.45, Talk: The Flemish Influence in Education. 9.0, Concert (contd.): Overture to a Drama (Dupuis); Symphony in C (de Maleingreau); Rondo Capriccioso for Violin and Orchestra (Saint-Saëns); Three Melodies (Marsick): (a) Le Jeune Berger; (b) Au Crépuscule; (c) Scherzo; Pianoforte Solos: (a) Mirologue (Marsick); (b) Malaguena (Albeniz); Marche Joyeuse (Chabrier). 10.0, Le Journal Parlé. 10.10, Gramophone Concert of Light Music. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish. 12 Noon, Selection from The Barber of Seville Opera (Rossini) on Gramophone Records. 1.30 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Lecmans: Overture, Morning, Noon, and Night (Suppé); Waltz, Le pas des fleurs (Delibes); Russian Melody (Akinenko); Spanish Dance for Pianoforte, Cadiz (d'Agreves); Serenade for Flute and Cello (Titl); Serenade, The Blue Pavilion (Armandola); Selection from Les Géorgiennes (Offenbach). 2.0, Educational Programme. 5.0, Concert by Mickey's Club Jazz Attraction. 6.0, Siegfried Idyll (Wagner) on Gramophone Records. 6.15, Julia Tulken recites from her own works. 6.30, Concert by the Small Station Orchestra, conducted by P. Lecmans: Prelude and Cortège from Déjanire (Saint-Saëns); Midnight on Maundy Thursday in Seville (Curina); In the Steppes of Central Asia (Borodin); Two Pieces for Cello (d'Agreves); Introduction and Prelude for Pianoforte (Chabrier); Dance, Nocturne, and March (Fischer). 7.15, Talk: A Tour through Yugoslavia. 7.30, Variety Item. 8.0, Acts One and Two of Ondergang—Opera (A. Menckmans), relayed from the Royal Flemish Opera House, Antwerp. In the intervals, Gramophone Records: Rhapsody for Clarinet and Orchestra (Debussy); Romance in F for Horn (Saint-Saëns); Une soirée près du lac (Leroux); and Le Journal Parlé. 10.20, Light Music on Gramophone Records. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—3.0 p.m., Programme for Schools. 4.30, Concert of Romanian Music by the Luca Orchestra. 5.0, News and Time Signal. 5.10, Talk. 5.25, Concert by the Luca Orchestra (contd.). 6.0, Talk on Romania; Her Banks. 6.40, Light Music on Gramophone Records. 7.0, String Quartet, Op. 67 (Brahms). 7.30, Talk. 7.45, String Quartet (Debussy) by the Pro-Atte Quartet. 8.15, Light Music and Romanian Music by the Dinico Orchestra, relayed from the Eneeso Restaurant. 9.0, News.

BUDAPEST

550 metres; 18.5 kW.—Also relayed on 840 metres, from 6.30 to 11.0 p.m.—4.30 p.m., Johann Szegő Concert by Johann Halmos (Song-) and T. Kazasany (Pianoforte); Chasse aux papillons; Tarantella; Bijoux; Sylvesterleben; Du bist der Morgen; Suite, Pfadfinderleben. 5.10, German Lesson. 5.40, Song Recital. 6.30, Concert by the Opera House Orchestra, conducted by Otto Berg. 8.0, News Bulletin. 8.5, Concert by the Patron Jazz Band and the Béla Bodrics Cigany Band, with Hungarian Folk Songs by Julius Szótho, relayed from the Café Patria. 11.0 (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

231 metres; 0.75 kW.; and **KALUNDBORG, 1.153 metres; 7.5 kW.**—11.0 a.m., Time Signal and Chimes from the Town Hall. 11.3, Concert by Max Skalka's String Ensemble, relayed from the Hotel d'Angleterre. 2.20 p.m., Talk for Housewives. 2.30, Concert by Carl Rydahl's Instrumental Ensemble. Soloist, Agda Lohr (Pianoforte). Slovak March (Neruda); Waltz from Faust (Gonod); Selection from The Magic Flute (Mozart); Minuet from Berenice (Handel); Intermezzo from A Midsummer Night's Dream (Mendelssohn); Mazurka (Pecking); Pianoforte Solos: (a) Préludium in A Minor, and (b) Intermezzo in F Minor (Hilda Sehested), (c) Thème passionné with Variations, (d) Elegy in E Minor, and (e) Intermezzo in B Minor (Emma Liebmann); Selection from Den lille Prinsesse (Rygaard); Waltz Nordlys (Lumbye); Cradle Song (Danung); Torøder and Andalous, from Bal costumé (Rubinstein); Potpourri (Lyming); Zarougssa (de Gredos). 4.40, Exchange and Fish Market Prices. 4.50, Talk relayed from the Aalborg Studio. 5.20, English Lesson. 5.50,

ALGIERS
 363.3 metres; 13 kW.—7.0 p.m., Financial Notes. 7.10, Shipping Notes. 7.15, Weather Forecast and Agricultural Report. 7.20, Songs from Faust (Gounod). 7.55, News Bulletin. 8.0, Time Signal. 8.2, Book Review. 8.15, Tchaikovsky Concert by the Station Orchestra, conducted by Hubert Guillet: Overture, Romeo and Juliet; The Pathetic Symphony; Waltz from Eugene Onegin. 9.30, News Bulletin. 9.35, Harpsichord Solos. 9.45, Two Duets from Les Dragons de Villars (Maillart). 9.55, News Bulletin. 10.0 (approx.), Close Down.

ATHLONE
 413 metres; 60 kW.; and **Cork, 224.4 metres.**—1.30 to 2.0 p.m., Time Signal; Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Talk for Farmers: Seeds for Hay and Pasture. 8.0, Concert by the Sligo Musical Society relayed from the Town Hall, Sligo. 9.0, Three Reunions: Sketch by Sean O'Shea and Company. 9.30, Uilleann Pipe Solos by J. Brophy. 9.45, Song Recital by Joseph Guinan. 10.0, Traditional Trio Music. 10.30, Time Signal; News; Weather Report and Close Down.

BARCELONA
RADIO BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 6.30, Quintet Concert relayed from the Café de la Rambla. 7.30, Sports Notes; Exchange Quotations and Talk in Catalan. 8.0, Light Music on Gramophone Records and News. 9.0, Chimes from the Cathedral; Weather Forecast; Exchange Quotations and Market Prices. 9.5, Humorous Review of the Week in Verse. 9.15, Concert of Sardanas. 10.0, Violin and Pianoforte Recital by Julio Jarque (Violin) and Rosauro Coma (Pianoforte). 10.30, Concert by the Station Orchestra: Overture: Fingals Cave (Mendelssohn); Minuet from Iphigenia in Aulis (Gluck); Gavotte (Henneberg); Bagatelle for Violin (Alard Alday); Allegro maestoso (Rimsky-Korsakov); Saturnales (J. Massenet). 11.0, News. 11.30, Dance Music relayed from the Excelsior Dance Hall. 12 Midnight (approx.), Close Down.

BARI
 269.8 metres; 20 kW.—7.0 p.m., Agricultural Notes; Tourist Talk and Dopolavoro Notes. 7.20, Giornale Radio and Weather. 7.30, Time and Announcements. 7.35, Maunon Lescaut Opera in Four Acts (Puccini), on Gramophone Records. In the intervals, Talk and Theatre Notes. After the Opera, News.
BASLE.—See Schweizerischer Landessender.

BELGRADE
 430.4 metres; 2.8 kW.—4.0 p.m., Dialogue in German. 5.55, Time and Programme Announcements. 6.0, Orchestral Concert: March (Dominis); Potpourri (Dominis); Serbian Dance (Frit); Selection from La Mascotte (Audran); Indian Love Lyrics (Woodford-Finden); Fimle from Arleide the Tochter der Luft (E. Bach). 7.0, Programme relayed from Zagreb (307 metres). 9.0, News, followed by Dance Music on Gramophone Records.

BERLIN
KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 2.0, Talk for Women. 2.30, Weather and Exchange. 2.45, Review of Books. 3.0, Reading: A Journey in the Sahara. 3.30, Concert from Berlin (Witzleben). 4.10, Talk: The Political Campaign against the War Guilt Accusation. 4.30, Song Recital by Lillian von Graunelt (Soprano); Spring Song (Mendelssohn); Abendlied (Schumann); Jüngling an der Quelle (Schubert); Aufträge (Schubert); Give me your Heart (Schubert); Titania (Jännefeldt); Lonely (Melartin); Sun Rays (Kilpinen); Song (Kilpinen); Tales of the Vienna Woods (Joh. Strauss). 5.0, Talk for Civil Servants. 5.30, Making Music with Invisible Partners. 5.55, Weather and Announcements. 6.0, French Lesson. 6.30, A Poem. 6.35, Programme of Light Music. 7.0, Concert from Stuttgart. 8.0, Talk: Public Responsibility in Germany. 8.30, Pictures from an Exhibition (Moussorgsky), played by Claudio Arrau. 9.10, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BERLIN
WITZLEBEN, 419.5 metres; 1.5 kW.—1.0 p.m., Tristan und Isolde—Opera (Wagner), by the Cast of the Festspielhaus, Bayreuth, on Gramophone Records. 1.55, Exchange and Market Prices. 2.20, Talk on Charlotte Stieglitz. 2.35, Violin and Cello Recital. Duet in D (Carl Stamitz); Duet in Three Movements (Georg Fohr). 2.55, Song Recital by Anna Bellé (Soprano); Four Songs (Robert Franz): (a) Aus meinen grossen Schmerzen, (b) Abends, (c) Die blauen Frühlingsaugen, (d) Es hat die Rose sich

beklagt; Four Songs (Reger): (a) Mittag, (b) Von der Liebe, (c) Wenn die kleinen Kinder, (d) Wenn die Linde blüht. 3.15, Post Office Talk: The Removal of a Telephone. 3.30, Concert of Light Music from the Rheinterrasse of the Basen Vaterland. 4.30, Talk: Gothic Script. 4.50, Talk for Young People: Dumb Birds. 5.10, Sonata in A Minor (Mozart), by Else C. Kraus (Pianoforte). 5.30, Das Ende vom Lied Vom Lied das Ende (Hans Johnst), recited by the Author. 5.55, The Witzleben Station informs its Listeners. . . . 6.0, Topical Talk. 6.15, Talk on Music. 6.25, Emil Nikolaus von Reznicek Concert by the Berlin Wireless Orchestra, conducted by the Composer. Overture-Fantasia, Rasoknikov; German Folk Songs from Des Knaben Wunderhorn: (a) Der traunige Garten, (b) Gedankenstille, (c) Schwimm hin, Ringlein; Symphony in D. 7.25, Announcements. 7.30, An Excursion with the Microphone. 9.0, An Excursion with the Microphone. 9.0, Weather, News and Sports Notes, followed by Dance Music from the Roof Garden of the Café Berlin. 11.0 (also on Zeesen, 31.38 metres), The Heritage: Voices between Life and Death.

BERNE.—See Schweizerischer Landessender.
BEROMUNSTER. — See Schweizerischer Landessender.
BODEN.—See Stockholm.
BODO.—See Oslo.

BORDEAUX-LAFAYETTE
 304 metres; 13 kW.—7.30 p.m., News and Exchange. 7.40, Talk: Bordeaux, a Hundred Years ago. 7.55, Lottery Results. 8.0, Programme for Children. 8.15, Charades. 8.20, News and Weather. 8.30, Concert of Classical and Modern Music.

BRATISLAVA
 279 metres; 11 kW.—3.10 p.m., Military Band Concert. 4.10, See Prague. 4.50, Pianoforte Recital by R. Bass: Five Pieces (Chopin). (a) Fantasia in F Minor. (b) Waltz in E Minor. (c) Etude in E. (d) Etude in G Sharp Minor. (e) Etude in G Flat; Aria and Ballet Music from The Bartered Bride (Smetana); Liebestrium (Liszt); Hungarian Dance (Brahms); Slav Dance (Dvorák); Waltz in D Flat (Bass); Waltz (Chopin-Bass). 5.30, Talk on the French Language and Literature. 5.40, Popular Music on Gramophone Records. 6.0, See Prague. 6.10, Technical Talk. 6.25, See Brno. 6.40, A Play (Zatlonkal). 7.30, See Moravská-Ostrava. 8.25, See Prague. 9.15 (approx.), Close Down.
BREMEN.—See Hamburg.

BRESLAU
 325 metres; 60 kW.; and **GLEIWITZ**, 253 metres.—12.10 p.m., Gramophone Concert of Variety Music. 12.45, Time, Weather, News,

Exchange and Shipping Report. 1.5, Gramophone Concert. Overture, Ein Feldlager in Seldesien (Meyerbeer); Sicilienne (Paradis); Aria, Che gelida manina, from La Bohème (Puccini); Ständchen (Heykens); Chanson triste (Tchaikovsky); Yodel from the Zillertal; in a Persian Market (Ketelbey); Waltz, Fascination (Marchetti). 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Book Review. 3.0, Dialogue: Personal Impressions of America's Intellectual Life and its Universities. 3.20, Orchestral Concert, conducted by Franz Marszalek. Second Slav Rhapsody (Friedemann); Overture, Phèdre (Massenet); Suite, Kinderlieder (Bleeb); Old Russian Dance Pictures (Clemens); Ballet Suite from Les p'tits riens (Mozart). 4.30, Agricultural Prices, followed by a Talk on Modern Rent Problems. 4.55, Educational Report. 5.15, French Lesson. 5.40, Programme to be announced. 6.5, Talk: Research in Heredity. Fundamental Doctrines. 6.30, Weather for Farmers and Market Prices. 6.35, Light Music on Gramophone Records. 7.0, See Hamburg. 9.0, Time, Weather, News, Sports Notes, Market Prices and Programme Announcements. 9.30, Answers to Technical Correspondence. 9.40, Talk by Erwin Osten: Through Germany as a Reporter. 10.0 (approx.), Close Down.

BRNO
 342 metres; 35 kW.—5.25 p.m., German Transmission: News, Elementary French Lesson and a Talk on Art. 6.0, See Prague. 6.25, Talk. 6.40, Babalaika Music. 7.10, See Prague. 7.30, Concert by the Brno Symphony Orchestra, a Women's Choir and Soloists, relayed from the Stadium; Conductor: Bretislvav Bokahn. Psalm No. 129 for Organ, Baritone, Women's Choir and Orchestra (Hats); Concerto grosso (Bocci). 8.25, See Prague. 9.15 (approx.), Close Down.

BRUSSELS (No. 1)
 I.N.R., 509 metres; 15 kW. 12 Noon, Concert by the Small Station Orchestra, conducted by Lecmans: Oriental Procession (Lecmans); Three Oriental Miniatures (Fischer); Ballad for Pianoforte (Dupuis); Air (Kalkman); Three Pieces (Pierné); Meditation (Rasse); Romance for Cello (d'Agreves); Ballet Music from Hamlet (Thomas); Ou peut-on être mieux? (Gretry). 1.3 p.m., Le Journal Parlé. 1.10, Gramophone Concert of Operetta Music: Overture: The Nuremberg Doll (Adam); Air from La Fille de Madame Angot (Lecocq); Rondo from François les Bas bleus (Messager); Melody from Les Dragons de Villars (Maillart); Two Airs from Les Brigands (Offenbach); Selection from The Merry Widow (Lehar). 2.0, Programme for Schools. 5.0, Concert conducted by Jean Kumps: The Un-

MARCH 13th

MONDAY

continued

Weather Report. 6.0, News Bulletin. 6.15, Time Signal. 6.30, Talk: Confirmation, its Meaning and Form. 7.30, The Gipsy Baron—Operetta in Three Acts (Joh. Strauss). 9.30, News Bulletin. 9.45, Danish Music, by Louis Prell (Violin), Richard Madsen (Violin), Gunnar Frederiksen (Viola), Jens Sørensen (Cello), and Ernst Iye-Kimdsen (Flute). String Quartet in D (Anderson); Pieces for Flute, Violin, and Viola, Op. 55a (Eubourg); (a) Allegro moderato, (b) Andantino. (c) Adagio-allegro moderato da capo. 10.15 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30, News Bulletin. 12.45, Songs from Sound Films. 6.0 to 7.0, Programme in English by the I.B.C. C. Danvers Walker, R. Chene and B. McNabb announce. 6.0, Concert of Songs for Hearing Listeners: Wine, Women and Song (Strauss); Because (d'Hardelot); My Dear Soul; Waltz. The Blue Danube (Strauss); The Second Minuet (Besly); The Sweetest Flower that Blows (Hawley); Waldteufel Memories, Parts I and II (arr. Finck). 6.30, Military Band Concert for Eastbourne Listeners. Ständchen (Heykens); The Mad Major (Alford); Down South (Myddleton); Cupid's Army (Sievier); In the Sudan (Sebek); Selection from Floradora (Stuart); Carry On (Dundas). 7.0, Local News and Variety Music on Gramophone Records. 7.30, Radio Gazette. 8.0, Listeners' Half-Hour and News. 8.30, Concert relayed from Dieppe. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0, Light Music: Good Evening; Ho Hum; My Baby just Cares for Me; Shoo the Hoodoo Away; There's Happiness over the Hill; More than you Know; Lazy Louisiana Moon; Pardon Me; Bye Bye Blues; Whistling in the Dark; A Girl Friend of a Boy; Friend of Mine; With my Guitar and You; Goodbye to all That; Gipsy Melody; A Bench in the Park; Faithfully Yours. 11.0, Orchestral Music: Selection from (a) The King of Jazz (Somers), (b) Wonder Bar (Kerscher), (c) The Three Musketeers (Friml), (d) Show Boat (Kern). 11.30, Vocal Concert: Overture, The Caliph of Bagdad (Boieldieu); If I wet King (Coslow); Song of Hydrus the Cretan (Elliott); A Soldier's Song (Mascheroni); In Sheltered Vale (Clarke); Prelude, The Witches Ride and The Gingerbread Waltz from Hansel and Gretel (Humperdinck). 12 Midnight, Songs: Every Little Girl he Sees (Aktz); Here in my Heart (Campbell); Nobody Cares if I'm Blue (Clarke); Timely Melodies on a Piano; O dem golden slippers (Bland); When it's Sunset on the Nile; Poor old Joe (Foster). 12.30 a.m. (Tuesday), Xylophone Solos: Selection from Carmen (Bizet); Hornpipe (Russ); The Huntsman; Liebesfreud (Kreischer); Looping the Loop; First Waltz (Durand); Marionette (Easton); Tarantella (Byng). 1.0, Comedy Duets: Crystal Gazing; Aloft; Moonshine; Fun on the Phone; The Police Station; Happy Days; In the Trenches. 1.30, Banjo Solos: Boys of the Loch; Teetotallers; The Buffoon; Mullingar Races; Wexford Lassies; Fashionette; Cracker Jack; Darktown Dandies; Flapperette; Snatche; of Song. 2.0, Light Music. I've gone and lost my Little Yo Yo; I do like to see a Game of Football; The Gag Song; Sing a New Song; Pagan Moon; The Old Kitchen Kettle; Leave the Rest to old Man Moon; At Eventide; Speedway Sam; The Sun has got his Hat On; Dance of the Cocks; Singing in the Moonlight; When the Band goes marching By; Paradise; It's that extra little something; Strangers. 2.57 a.m., I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259.3 metres; 17 kW.; CASSEL, 245.9 metres; and TRIER, 259.3 metres.—5.25 p.m., Talk by Hermann Kesser: Ferdinand Hodler. 5.50, Time, Programme Announcements, Weather, and Exchange. 6.5, Workers' Camp—a Radio Sequence (Paul Laven). 7.0, See Stuttgart. 8.0, Germany, the Land of Work—a Radio Sequence (H. W. Goltz). 9.0, Time, News, Weather, and Sports Notes. 9.45, Serenade from Munich. 11.0 (approx.), Close Down.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—6.5 p.m., Reading. 6.25, Weather. 6.30, Recital on Two Pianofortes by Emmi Knoche and Franz Henking;

Rondo, Op. 73; Triumphal March, Op. 91 (Goria); Andalusian Dance, Ritmo (Mannel Infante); Jazz for Two Pianofortes (Mittmann). 7.0, High German and Low German Humour—Literary and Musical Programme comparing the Humour of Olden and Modern Times. 9.0, Time, Weather, and Announcements. 9.20, Topical Talk. 9.30, Concert, relayed from Café Wallhof. In the interval at 9.50, Ice Report.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—12.5 to 1.30 p.m., Gramophone Concert: Part I Classical Fantasias: Tannhäuser (Wagner); Schubertiana (Melielhar); Offenbachiana (Daebitz); Part II Operetta Fantasias: Johann Strauss Operetta Potpourri (Schlögel); Melodias (Eysler); Eva (Lehar); Der liebe Augustin (Fall); Im Reiche des Indra (Plotow); In an interval at 12.20, News. 2.0, Exchange and Market Prices. 2.30, Programme for Children. 3.0, Concert by the Little Orag Orchestra, conducted by Eugen Wileken: Overture, Faust (Spohr); Suite No. 3 (de Micheli); Czardas No. 9 (Micheli); Selection from Coppelia (Delibes); Overture, Lachendes Leben (Dust); Selection from Gasparone (Milibekker); Waltz, Roses and Marguerites (Waldteufel); Potpourri of Marches, Die Wache zieht auf (Kochmann). In the interval at 3.45 (approx.), Talk on Richard Zozmann on his Sixtieth Birthday. 4.30, Review of Books. 4.50, Talk: Travel Reminiscences of the West Indian Archipelago. 5.15, Market Prices. 5.20, Ice Report. 5.25 (from Danzig), Siberia—A Report by a Danzig Prisoner of War. 5.50, Talk: Memorable Days of the Week. 6.0, Variety Programme by the Little Orag Orchestra, conducted by Eugen Wileken, Else Kochmann, and Max Kuttner. 6.55, First General News. 7.0, See Langenberg. 9.0, Weather and News.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW up to 4.40 p.m.)—Programme of the Christian Radio Society (N.C.R.V.). 11.10 a.m., Light Music on Gramophone Records. 11.40, Police Notes. 11.55, Popular Music on Gramophone Records. 12.10 p.m., Organ Recital by Jan Zwart. 1.40, Programme for Schools. 2.15, Light Music on Gramophone Records. 2.25, Talk for Women. 2.55, Dress-making Lesson. 3.10, Military Lesson. 3.25 to 3.40, Interval. 3.40, Bible Reading, followed by Recital of Sacred Music by M. J. Smit Duyzentkunst (Baritone) and M. H. Smit Duyzentkunst (Organ). 4.40, Light Music on Gramophone Records. 4.55, Concert of Sacred Music by J. de Heer (Songs) and W. Verwer (Violin). 5.55, Talk. 6.10, The Letter Box. 7.10, Police Notes. 7.25, Religious Information. 7.40, Concert by the Orpheus Male Voice Choir, conducted by P. van de Putten, and the Sursum Corda Orchestra, conducted by M. Dielen. Choir: Praise ye the Lord; Entr'acte and Minuet from L'Arlesienne Suite No. II (Bizet); Overture, Orpheus in the Underworld (Offenbach); Selection from Aida (Verdi-Bielen); Choir: (a) The Day of Trial (Verhey), (b) Jerusalem (Oltman). 8.40, Talk. 9.10, Concert (contd.): Les martyrs aux Arènes (L. de Rillé); Goodnight (Roeske); Choir and Orchestra: To Peace (Browers); Overture, Light Cavalry (Suppé-Biffans); Aufzug der Stadtwahe (Jessel-Bielen); Selection from Faust (Gounod-Lucas); Hymn (Faure-Bielen). In the interval at 9.40, News. 10.25, Light Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—11.40 a.m. till Close Down, Programme of the Algenetice Vereeniging Radio Orceop (A.V.R.O.). 11.40, Time Signal. 11.41, Concert by Kovacs Lajos and his Dance Band, with Songs by Bob Scholte. 12.40 p.m., Popular Music on Gramophone Records. 1.10, Kovacs Lajos and his Band. 2.10, Talk. 2.40, Popular Music on Gramophone Records. 3.40, Pianoforte Recital by Ivan Engel: Choral (Bach); Prelude (Handel); Sonatine, Op. 110 (Beethoven); Allegro barbaro (Bartok). 4.10, Talk: Hot Jazz, with Gramophone Illustrations. 5.10, Organ Recital by Pierre Palla, with Boris Lensky (Violin) and Soprano Solos by Grethe Weijuschek-Hogenbirk. 6.10, Talk on Books. 6.40, Organ Recital (contd.). 7.10, Talk. 7.40, Time, Weather, and News. 7.45, Concert by the Wireless Orchestra, conducted by Nico Treep; Soloist, Franz Baumann (Songs): March, The Diplomat (Sousa); Grieg Potpourri (Urbach); Songs: (a) Maria della Salute (Baumann-Ailbott), (b) La Mattinata (Leoncavallo), (c) Sag ja! (Buchhorn-Buder); Valse des blondes (Ganne); Songs: (a) Ich suche Liebe (Zitzwitz-Buder), (b) So im Vorbergeh'n (Baumann-Redl), (c) Du bist so lieb, kleine Frau (Malkowsky-Buder); Overture, The Gipsy Baron (Joh. Strauss); Waltz from Faust (Gounod); Songs: (a) La Paloma (Vradier), (b) Eine Mütze auf dem Schädel (Buchhorn-Buder), (c) Und Bonn (Buchhorn-Redl); Türkische Scharwahe (Michaelis); Elegy

(Kettelbey); Songs, (a) Student in Heidelberg (Loh), (b) Student sein (Buchhorn-Loh), (c) Weit ist der Weg (Baumann-Buder); Bizet Potpourri. In the interval at 8.40, Talk. 10.10, Concert by the Tuschinski Salon Orchestra, conducted by Max Tak. 10.40, News Bulletin. 10.50, Concert (contd.). 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., History Talk. 6.15, Announcements and Popular Music on Gramophone Records. 6.25, Upper Silesian Fire Brigade Report. 6.30 to 9.5, See Warsaw. 9.5, Dance Music and Light Music from the Hotel Monopole. In the interval, Weather Report from Warsaw.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 40 kW.; and HELSINKI, 368.1 metres.—5.50 p.m., Pianoforte Sonata in F Minor, Op. 57 (Beethoven). 6.20, Recitations, relayed from Tampere (560 metres). 6.40, Request Concert by the Radio Orchestra.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert by the Station Orchestra, conducted by Eysoldt: March, Deutsches Blut (Wollny); Overture, The Golden Cross (Brüll); Auf der alten Burg (Dvorák); Baelhamale (Dvorák); Selection from The Flying Dutchman (Wagner); The Sixth Hungarian Rhapsody (Liszt); Pantomime (Friml); Cradle Song (Colotta); Selection from The Tales of Hoffman (Offenbach). In an interval at 1.0 p.m., News. 1.30, Meat Market Prices. 2.30, Exchange and Time Signal. 2.50, Programme for Young People. 3.20, Tales for Young People. 4.0, Concert by the Chamber Orchestra, conducted by Spitz. Soloists: Kläre Hansen (Soprano) and Leonardo Aramesco (Tenor): Waltz, Tales from The Vienna Woods (Joh. Strauss); Tenor Solos: (a) Ich muss wieder einmal in Gränzig sein (Benatzky), (b) Im Prater blüht wieder die Bäume (Stolz); Aquadellen-Walzer (Jos. Strauss); Soprano Solo: Du sollst der Kaiser meiner Seele sein (Stolz); Radetzky Marsch (Joh. Strauss); Hoch und Deutschmeistermarsch (Ertl); Tenor Solos: Vienna, City of my Dreams (Sieczynsky); Waltz, Gold and Silver (Lehar); The Blue Danube (Strauss). 5.15, Talk for Parents: Do you know your Child? 5.25, Talk: Christian Theodor Weinlig—Richard Wagner's Teacher. 5.45, Weather, Time, Exchange, and Sports Notes. 6.0, Talk for Women: The First School Year. 6.20, Reading of Unpublished Poems (Wilhelm Luettjens). 6.30, Technical Talk. 6.55, First General News. 7.0, Die Stadt—Die Land (From Town and Country)—A Sequence of Poems, Prose, Reading, and Gramophone Records, followed by Programme of West German Folk Music. 9.5, News and Sports Notes. 9.25, Programme of Songs and Poems. 9.50, Serenade and Dance Music. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319 metres.—11.5 a.m., Concert by the Pletzsch-Marko Orchestra. In an interval at 12.0 Noon, News, Weather, Snow Report and Time. After the Concert, Exchange, 1.0, Art and Film Notes. 1.15, Talk for the Twenty-Fifth Anniversary of the Death of Edmondo de Amicis. 1.30, Programme for the Unemployed. 2.10, Talk for Women on Sub-letting. 2.35, Economic Notes. 3.0, Gramophone Concert of Popular Music. 4.30, Weather and Time. 4.60, Economic Notes. 5.0, Educational Talk. 5.30, Talk: A Thousand Years of German Literature—the Reformation Period. 5.50, Programme to be announced. 6.0, Zither Recital by Franz Schöula. 6.30, People and their Callings—the Gauner. 7.0, And Jean Nicot was Victorious—an Amusing Dispute about Snoking (Sigfried Wisch). 7.45, Concert by the Symphony Orchestra, conducted by Carl Schenrich. Soloists: Ria Gunster (Soprano) and Friedbert Sammler (Harpisichord). Motet for Soprano and Orchestra, Esultate jubilate (Mozart); Three Chinese Songs from Bethge's Chinesische Flöte (Braunfels); Symphonic Poem I Pini di Roma (Respighi). 9.5, News Bulletin. 9.15, (approx.), Concert by the Emde Orchestra. Overture, Der Erlenkönig (Kuhlan); Waltz, Traumdeute (Fucik); Selection from The Merry Widow (Lehar); Maokkanische Patrouille (Jessel); Mazurka (Glinka); Die lxe Domianische (Lenke); March, Im Ziegenherber (Oschert); Erstes Begegnen (Becker); Potpourri, Grüsse aus Alt-Wien (tschwandner); Stolzenfels am Rhein (Meisler); Träumende See (Ellenberg); March, Mein Regiment (Blankenburg). 11.0 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 7 kW.—6.0 p.m., Serbo-Croatian Lesson. 6.30, Talk on Hygiene. 7.0, Concert of Chamber Music. 8.0, Concert relayed from the Café Zvezda. 9.15, Time and News.

LWOW

381 metres; 16 kW.—6.30 p.m., See Warsaw. 9.0, Talk: Women in Lwow. 9.15, Relay of Foreign Stations. 9.55, See Warsaw. 10.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Concert by the Vandelle String Quartet, Apothéose de Lulli (Couperin); Three Pieces for String Quartet (Stravinsky); String Quartet (Prokofev). News after the Programme.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—10.30 p.m., Variety Concert. 10.45, Radio Chronicle. 11.0, Variety Concert (contd.). 11.35, Sports and Bull-fighting Notes. 11.55, Light Music. 12 Midnight (approx.) Close Down.

MADRID

UNION RADIO; Call EAJ7, 424.3 metres; 2 kW.—7.0 p.m., Chinese, Exchange Quotations, and Request Gramophone Records. 8.15, News Bulletin. 8.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—5.30 p.m., German Transmission: Reading and Talk. 6.0, See Prague. 6.25, See Brno. 6.40, Country Band Concert, from Radvanice. 7.10, See Prague. 7.30, Concert by the Station Orchestra, conducted by B. Tvrdy: Overture, Maximilian Robespierre (Litolff); Lyric Suite, Op. 54 (Grieg); Polchinnelle (Provanzik); Spanish Dance (Kink); Waltz-Intermezzo (Smetak); Polka (Tichy); Spanish March (Gyldenmark). 8.25, See Prague. 9.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—4.30 p.m., Literary Programme. 5.30, Symphony Concert, relayed from the Conservatoire. 8.0, Talk in English: The Twentieth Anniversary of the Death of Karl Marx.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—3.0 p.m., Song Recital by Fanny Lehner and Luise Pfleger (Soprano) and Sergei Gagarin (Baritone). Four songs for Soprano (Karl Regner): (a) Waldesamkeit, (b) Des Kindes Gebet, (c) Schmelzkätzchen, (d) Mein Schätzlein; drei Italian Arias and Russian Songs for Baritone; Six songs for Soprano (Amende): (a) Frühlingstag, (b) Die Hände, (c) Anglerjung, (d) Herbstbeginn, (e) Abschied, (f) Frühling. 3.40, A Review of the Winter's Weather. 4.0, See Langenberg. 5.15, Talk: The Motor Car: Its Origin and Development. 5.35, Talk: The Memorable Expedition to the Kalahari Desert (March, 1906). 5.55, Introduction to the following Transmission. 6.5, Alessandro Stradella—Romantic Opera in Three Acts (Flotow), relayed from the National Theatre. In an interval, Agricultural Notes. 8.30, Die Puppenfee—Ballad (Hayler), relayed from the National Theatre. 9.20, Time, Weather, News and Sports Notes. 9.45, Serenade, conducted by Erich Kloss. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—4.0 p.m., Concert of Chamber Music by the Station Ensemble. 5.0, German Lesson. 5.30, Theatre Notes. 6.0, Announcements, Weather and News. 6.30, Geological Talk, relayed from Bergen (364 metres). 7.0, Time Signal. 7.1, Dramatic Programme. 7.45, Violin Recital, by Mme. Kaila Mitzel, relayed from the Logen Hall. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Political Review.

OSTERSUND.—See Stockholm.

PALERMO

537.6 metres; 3 kW.—7.0 p.m., Dopolivoro Notes, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 7.20, Popular Music on Gramophone Records. In an interval at 7.30, Time and Announcements. 7.45, Concert of Chamber Music. Soloists: Olga Niazzi Forno (Pianoforte), Antonio Micozzi (Clarinet), A. Ruggeri (Cello), Pianoforte Solos (Chopin): (a) Polonaise, (b) Waltz, Rhapsody for Clarinet with Piano.

MARCH 13th

MONDAY

continued

forte Accompaniment (Debussy); Concerto for Cello with Pianoforte Accompaniment (Saint-Saëns); Rondo for Clarinet with Pianoforte Accompaniment (Bonnard); Songs: (a) Aria (Ferro), (b) La fleuse (Dunkler); Pianoforte Solo: Pictures from an Exhibition (Mussorgsky). After the Concert. Light Music on Gramophone Records. 9.55, News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot signals).—5.45 p.m., Le Journal Parlé. 7.20, Weather Report. 7.30, Operetta Programme: Part I—Selection from Les Saltimbanques and Hans, the Flute Player (Ganne); Part II—Selection from Chouquette and Le Sire de Vergy (Terrasse). 8.30, Popular Programme. 9.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Hot Jazz on Gramophone Records. 7.30, Gramophone Concert of Light Music. 8.0, Talk by Dr. Ombredane. 8.5, Motoring Notes. 8.15, Interval. 8.30, Sponsored Concerts. 10.40, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW. 6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Report and Weather. 12 Noon, Concert by the Radio Paris Orchestra: Overture, Gli Orazi e i curiazi (Cimarosa); Selection from Don Carlos (Verdi); Siegfried Idyll (Wagner); Selection from The Huguenots (Meyerbeer); Ballet Music from William Tell (Rossini). 1.0 p.m., Exchange, News and Weather. 1.5, Pianoforte Recital by Lydie Demingian (Chaconne (Vitali); Minuet (Porpora); Coronach (Bartók); La plus que lente (Debussy); Two Commentaries on Ancient Themes (Nin); Danse from La Vida Breve (Falla). 1.30, Exchange. 1.35, Orchestral Concert (contd.): Alsatian Dances (Levadé); Suite bergamasque (Debussy). 3.45, Exchange and Market Prices. 6.40, Agricultural Talk. 6.30, Elementary English Lesson. 6.50, Film Review. 7.5, Review of New Books. 7.20, Concert by the Radio Paris Orchestra: Overture, The Cunning Peasant (Ivorik); Berceuse (Defosse); Suite pittoresque (Fouadain). 7.45, Commercial Prices and News. 7.50, Gardening Talk. 8.0, La Dame Blanche (The White Lady) Opéra Comique (Boieldieu). In the intervals at 8.30, News, Sports Notes, and Weather, at 8.40, Review by Roboux, and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Report. 9.45, Blue Ridge Buddies. 9.57, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Programme to be announced. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Booth Tarkington's Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Temperature Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Weather Report. 11.30, KDKA Orchestra. 11.45 to 3.30 a.m. (Tuesday), New York Relay. 11.45, To-day's News, by Lowell Thomas. 12.0 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Tea-yeast Jesters. 12.30, Five Star Theatre—Mary Brothers. 1.0, Clippet Club Eskimos. 1.30, Time Signal and Don Carney—A Talk for Dog Lovers. 1.45, Phillips Lord in The Country Doctor. 2.0, Sinclair Minstrels. 2.30, Jack Frost Melody Moments. 3.0, The Sizzlers. 3.15, Vic and Sade. 3.30, Bridge School of the Air, by E. Hall Downes. 3.45, Samuel Di Primio (Tenor) and Bradley Kincaid. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Smith Ballew and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, Hotel Bismarck Orchestra, from New York. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW. 6.5 p.m., Miscellaneous Items and Announcements. 6.28, Time Signal. 6.30, See Warsaw. In the intervals, Amusement Guide and Announcements. 9.0, Time Signal and Police Notes.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Bratislava. 4.10, Talk on the Use of Spectacles. 4.20, Talk. 4.30, Programme for Children. 4.50, Variety Music on Gramophone Records. 5.5, Agricultural Report. 6.15, Talk for Workers. 6.25, News in German. 6.30, German Transmission: Talk: Karl Hanel, a German Painter. 6.0, Chimes. 6.1, News. 6.10, English Conversation. 6.25, Talk: Karl Marx and his Work. 6.40, Talk on the following Transmission. 6.45, Concert by the Police

(Choral Society. 7.10, Before the Tribunal—One-Act Comedy (Homola) after a Story by Hornmann. 7.30, See Moravská-Ostrava. In the interval at 8.0, Time Signal. 8.25, Talk on the following Transmission. 8.35, Sonatas by the Bach Family—Pianoforte Recital by Jan Herman; Sonata in B (W. F. Bach); Sonatas (P. E. Bach); Sonata in E Flat (P. E. Bach). 9.0, Time Signal. 9.1, News. 9.15, Talk in English by Miss Rainier: The Development of Modern English Drama. 9.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres,** and **GENEVA, 760 metres.**—5.30 p.m. (from Lausanne), German Lesson. 6.0 (from Lausanne), Weather Forecast, News Bulletin and Announcements. 6.30, Lesson for Carpenters. 7.0 (from Geneva), Talk: The Work of the League of Nations. 7.20 (from Lausanne), Introductory Talk to the following Transmission. 7.30 (from Lausanne), Symphony Concert by the Station Orchestra, conducted by E. Ansermet. Soloist: Mme. Conchita Supervia (Songs). Symphony in B Flat, No. 8 (Haydn); Air from The Italian Girl in Algiers (Rossini); Ballet for Contralto and Orchestra, El Amor Brujo (Fallá); Spanish Melodies for Contralto and Orchestra (Nin); Rhapsody Española (Chabrier). In an interval at 8.10 (approx.), News and Weather Report. 9.15 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Popular Concert by the Station Quartet with Songs.

RIGA

525 metres; 15 kW.—5.40 p.m., English Lesson. 6.10, Weather Report. 6.15, Emilis Darzins Concert for Choir, Pianoforte, Baritone and Soprano with Address by Jaz. Wihtols. 7.10, News. 7.30, Orchestral Concert of Latvian Music: Dramatic Overture (Wihtols); Ballade (Kalmis); Popular Latvian Songs. 8.0, Weather and News. 8.15, Orchestral Concert of French Music: Overture, Fra Diavolo (Auber); Suite No. 1, from L'Arlésienne (Bizet); Selection from Samson and Delilah (Saint-Saëns); Danse macabre (Saint-Saëns); Overture, Phedre (Massenet). 9.15 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 441 metres; 50 kW. Relayed by Naples, 319 metres, and 2RO, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12.0 Noon, Time and Announcements. 12.2 to 1.15 p.m., Concert from Turin. In the interval at 12.30, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30, Concert from the Royal Philharmonic Academy. 6.0 (Naples), Shipping and Sports Notes. 6.10, Agricultural and Dopolavoro Notes. 6.20, Giornale Radio. 7.0, Time, Announcements and Light Music on Gramophone Records. 7.30, Sports Notes, Tourist Report and Gramophone Records (contd.). 8.0, See Turin. 9.0 (Naples), Talk. 9.15, Concert of Light Music. Napule canta (de Curtis); Arrivederci Mimi (Bonavolonta); Felicità luntana (Cannio); Mezzanotte (Staffelli); Spanish Duet, Tristezza gaucha (Valdes); Serenata andalus (Carducci); Ombra e luce (Nissini); Canta Siviglia (Fiasconero); Tr si scurdate 'e Napule (Nardella); Riflessi di Spagna (Valdes); Trio, Come ti lusinghi (Anepata); A rezza (Staffelli); Orchestral Music Relay. 9.55 (approx.), News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—7.30 to 8.15 p.m., New York Relay. 7.30, Revolving Stage. 8.0, Talk. 8.15, Antoinette Halstead (Contralto). 12 Midnight, Musical Programme. 12.15 a.m. (Tuesday), Stock Report. 12.30, The Up-staters—Male Quartet. 12.45, The Goldbergs—Comedy Sketch. 1.0 to 2.20, New York Relay. 1.0, Societyland Sketches. 1.30, Voice of Firestone. 2.0, A. & P. Gypsies. 2.30, Buick Programme—Paul Whiteman's Orchestra.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—11.28 a.m., Time Signal from Neu-châtel Observatory. 11.30, Weather Report and News Bulletin. 11.40 (from Basle), Variety Concert. 12.35 to 12.45 p.m. (approx.), Weather and Exchange. 2.30 (from Basle), Light Music. 3.30 (from Zürich), Concert by the Small Station Orchestra. 4.0

(from Zürich), Popular Music on Gramophone Records. 4.30 to 4.35, Weather Forecast. 5.30 (from Zürich), Philosophical Talk: Leisure Hours. 6.0, Time Signal and Weather Forecast. 6.15 (from Zürich), English Lesson. 7.0 (from Zürich), Debussy and Wolf Song Recital by Berthe de Vigier (Soprano) and the Station Orchestra, conducted by Hermann Hofmann. 7.45 (approx.) (from Zürich), Wagner Concert by the Augmented Station Orchestra, conducted by Hofmann. 8.30, Weather and News. 8.40 (from Zürich), Dance Music by the Radio Orchestra, with Gramophone Records in the intervals. 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 435 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—3.45 p.m., Shorthand Lesson. 4.5, Accordion Music. 4.30, Reading. 5.0, Popular Music on Gramophone Records. 5.55, Parliamentary Report. 6.30, Microphone Report. 7.0, Prince Igor—Opera (Borodin), relayed from the Opera House. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW. 11.30 a.m., Variety Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Light Music on Gramophone Records. 2.0 to 5.0, Interval. 5.0, Jazz Music, conducted by Roskam; Pasodoble, Manuela del Rio (Lucchesi); Foxtrot, How can you say No? (Dubin-Kalial-Burke); Foxtrot, I'm makin' Hay in the Moonlight (Seymour-Greer); Waltz, Pal of my Dreams (Gilbert); Foxtrot, Kennedy; Foxtrot, Crazy Stomp (Allouche); Man kann sein Herz nur einmal verschenken (Bader); Foxtrot, My sunny Monterey (Gilbert-Nicholls); Slow Foxtrot, The Echo of a Song (Mendoza); Waltz, La rose bleue (Aubry); Foxtrot, Sugar (Meyer); Slow Foxtrot, Starlight (Petkerc); Tango, Polve Senorita (d'Achiardi); Foxtrot, Desert Lover (Noël Gay); Rumba, Cuban Moon (Parish-War-hauer-Spriggs); Waltz, Poesia (Appollonio); Pasodoble, Querida Mia (Borsatti). 6.0, Film Notes. 6.15, Talk in French: Alsace in the French Novel. 6.30, Orchestral Concert, conducted by M. de Villers, Part I, Music by Philippe Gaubert: Ballet Music from Naïa; Divertissement Grecque for Two Flutes and Orchestra; Invocation Berceuse Orientale; Barcarolle; Waltz Scherzo; Berceuse for Viola and Orchestra; Four Sketches: (a) Extase, (b) Voiles blanches, (c) Une chaise an loin, (d) Lâ-haus, très loin, sur la mer. 7.30, Time and News. 7.45, Orchestral Concert (contd.): Part II: Prelude and Dance from Das Pensionat (Suppé); Selection from La Gioconda (Ponchielli); Suite gaie (Gabriel-Marie). 8.20, Lottery Results. 8.30, Song Recital by Lotte Lehmann, relayed from the Palais des Fêtes: Songs (Brahms): (a) Von ewiger Liebe, (b) Botschaft, (c) Vergilliches Ständchen, (d) Der Schmelid; Songs (Schubert): (a) An Sylvia, (b) An die Musik, (c) Der Tod und das Mädchen; Songs (Schumann): (a) Der Nussbaum, (b) Ich grille nicht, (c) Widmung, (d) Aufträge; Songs (R. Strauss): (a) Allerseelen, (b) Traum durch die Dämmerung, (c) Wiegelin, (d) Zueignung. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—12.30 p.m., Concert from Langenberg. 1.0, Musical Programme arranged by the Post Office. 1.15 (from Karlsruhe), Musical Programme arranged by the Post Office. 1.30, Spanish Lesson. 2.0, English Lesson for Beginners. 2.30 to 3.30, Interval. 3.30, Talk by Alfred Lehmann. 4.0, See Langenberg. 5.5, Light Music on Gramophone Records. 5.15, Time, Weather, and Agricultural Report. 5.25, Talk: The Spinning and Weaving Industry. 5.50, Talk: German Culture and South-East Europe. 6.15, Time and News. 6.20, Reading (Ludwig Diel). 7.0, Concert of Scandinavian Music by the Stuttgart Philharmonic Orchestra, conducted by Emil Kahn. Soloist, Karin Rossander (Violin): Overture, Nordische Seinfahrt (Gade); Völund's Klage (F. Henrichsen); Violin Concerto (Sibelius); F. Jorsalfar (Grieg). 8.0, See Frankfurt. 9.0, Time, News, Weather, and Programme Announcements. 9.20, Chess Lesson. 9.45, See Munich. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Music by an Argentine Orchestra. 6.30, Eine kleine Nachtmusik (Mozart). 7.0, Tourist Talk. 7.15, Racing Results, Market Prices, and News. 7.25, Local News Bulletin. 7.30, Operetta Music. Waltz from The Girl in the Taxi (Gilbert); Air from Les vingt-huit jours de Clairette (Roger); Waltz from The Gipsy Princess (Gilbert). 7.45, Opera Music, Selection from: (a) William Tell (Rossini), (b) La Juive (Halévy), (c) Faust (Gounod).

8.0, Orchestral Music. 8.15, Accordion Music. 8.30, Hunting Melodies. 8.45, Variety Programme. 9.15, Symphony Music. 9.30, Concert. Part I, Sound Film Music. Part II, Violin Solos. 10.0, Opera Music. Selection from I Pagliacci (Leoncavallo); Air from Romeo and Juliet (Gounod); Prelude to Act I of Le Roi Malgré lui (Chabrier). 10.15, North African News. 10.30, Concert for Listeners in Morocco. Gnomestef (Hagen); Prologue to I Pagliacci (Leoncavallo); Japanese Lantern Dance (Yoshihito); Le Chant de nos Cloches (Codini); Cello Solo: Slav Dance (Kreisler); Ravinus (Christine). 11.0, Popular Concert. 11.30 to 12 Midnight, Programme in English by the I.B.C. H. K. Hinchcock announcing. 11.30, I.B.C. Half Hour. Selection from Sunny Side Up; Come to me; Blues in my Heart; Selection from On with the Show; Love is like a Song; I believe in you; Selection from Say it with Songs. 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Tuesday), Dance Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.30 p.m., See Rome. 6.0, Variety Music on Gramophone Records. 6.20 to 6.35, See Turin. 6.35, Light Music from the Café Dante. 7.0 (approx.) till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—4.30 p.m., See Rome. 6.0, Light Music on Gramophone Records. 6.20, Giornale Radio. 6.30, Time, Announcements, Tourist Report and Gramophone Records (contd.). 7.0, Giornale Radio, Weather and Gramophone Records (contd.). 8.0, Orchestral Concert, conducted by Ugo Tansini. Soloist: Mario Corti (Violin). 9.0, A Comedy in One Act, followed by Variety Music on Gramophone Records. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in Italian. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—4.50 p.m., Talk: Feminine Life in the Art of Six Centuries. 5.10, Books of Reference in Connection with the Week's Talks. 5.15, Time, Weather, and Programme Announcements. 5.25, Paestrina—Opera in Three Acts (Pfitzner), relayed from the State Opera House. In an interval at 8.45 (approx.), News, Weather, and Announcements. 9.30, Dance Music by the Juan Llossas Band, relayed from Hübners Kursalon.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 11.20, Weather Forecast. 11.25 to 2.10 p.m., Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Answers to Correspondence. 2.35, Wireless Correspondence. 2.50, Popular Music on Gramophone Records. 3.25, Elementary French Lesson. 3.40, Talk: The Unemployment Problem. 4.0, Pianoforte Recital, by Mme. Padlewskaja. Preludes: (a) in C Sharp Minor (Chopin), (b) in G Flat (Sharp Minor) (Chopin), (c) in G Flat (Serbiab), (d) in E Flat Minor (Serbiab), (e) Fenilles mortes (Debussy), (f) in F (Debussy); Nocturnes: (a) in B, Op. 9 (Chopin), (b) in D Flat, Op. 9, for the Left Hand (Serbiab), (c) Nocturne (Debussy); Mazurkas: (a) in C Sharp Minor, Op. 30 (Chopin), (b) in F Sharp Minor, Op. 50 (Chopin), (c) in F, Op. 25 (Serbiab), (d) Nos. 17 and 19, Op. 50 (Szymanowski); Etudes: (a) in C Minor, Op. 10 (Chopin), (b) Three Etudes, Op. 33 (Szymanowski), (c) in C Sharp Minor, Op. 8 (Serbiab). In the interval, Announcements. 4.55, Programme Announcements. 5.0, Educational Talk. 5.20, Current Events. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Correspondence. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Das Violonchâtel—Operetta in Three Acts (Hellmesberger). In the intervals, Sports Notes and Radio Journal. 9.0, Technical Correspondence. 9.15, Dance Music. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music.

WILNO

563 metres; 16 kW.—6.0 p.m., Reading. 6.10, Miscellaneous Announcements. 6.15, Sports Notes. 6.30 till Close Down, See Warsaw. 10.0 (approx.), Close Down.

ZAGREB

307 metres; 0.75 kW.—7.0, Choral Concert. 8.0, Concert of Opera Music. 9.0, News Bulletin and Weather Forecast. 9.10, Dance Music, relayed from the Grill Room. 10.0 (approx.), Close Down.

ZÜRICH.—See Schweizerischer Landessender.

ALGIERS

363.3 metres; 13 kW.—7.10 p.m., Shipping Notes. 7.15, Weather Forecast and Agricultural Notes. 7.20, Two Melodies (Duparc): (a) La Vague et la Cloche, (b) Phylidylé. 7.30, Songs from White Horse Inn (Benatzky). 7.55, News. 8.0, Time Signal. 8.2, Talk: The Sahara. 8.15, Orchestral Music: Overture, The Thieving Magpie (Rossini); Symphonic Variations, Istar (V. d'Indy). 8.30, News. 8.35, Light Music. 8.45, Talk on Algiers. 9.0, Concert of Oriental Music. 9.30, News. 9.35, Concert of Oriental Music (contd.). 9.55, Wireless Notes. 10.0 (approx.). Close Down.

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.15, News and British Market Report. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Talk for Farmers. 8.0, The Station Orchestra. 8.20, Vocal Duets by A. Deale and Miss Preston. 8.35, The Station Orchestra. 8.55, Song Recital by Mary Crowley (Mezzo-Soprano). 9.15, Traditional Fiddle Music by Laborers O'Riagan. 9.50, Original Songs and Sketches by John MacDonagh and Company. 10.30, Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJI, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Request Gramophone Records. 7.30, Exchange Quotations and Talk on Art. 8.0, Light Music on Gramophone Records and News Bulletin. 8.15, Football Results and Gramophone Records (contd.). 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, Market Prices, and Messages to Seamen. 9.10, An Opera relayed from the Gran Teatro del Liceo. 11.0 (in an interval), News Bulletin.

BARI

269.8 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Talk, and Dopodavoro Notes. 7.20, Giornale Radio and Weather. 7.30, Time and Announcements. 7.35, Concert by a Plucked String Quartet. Poeta galante (Ancillotti). Selection from Le campane de S. Lucio (Sartori). Descriptive Inbrenzzo, Danza amantita (Hamm). Selection from Norma (Bellini). 9.15, Lettera suarritata—One-Act Comedy (Nicoletti). 9.0 (approx.). Concert (contd.). Overture, Patria lontana (Dieux). Prelude to Edmet (Catalani). Second Concerto for Two Mandolins in Three Movements (Pleyel). Martiri al Colosso (Rilli). Sogno di Jaya (Vittore). 9.30, Concert, relayed from the Grand Hotel Moderno. 9.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.8 kW.—3.45 p.m., Orchestral Concert: Perdita (Barbieri); Potpourri from Frühling im Wienerwald (Ascher); Movement from Jubelender Sommer (Leuschner); Selection from The Little Dutch Girl (Kálmán). 5.55, Time and Programme Announcements. 6.0, Popular Music on Gramophone Records. 6.30, Talk. 7.0, Quartet in F Minor, Op. 75 (Beethoven). 7.30, Tosca—Opera in Three Acts (Puccini), on Gramophone Records, with Introductory Talk. 9.30 (approx.). Close Down.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Guessing Competition on Gramophone Records from Berlin (Witzleben). 2.0, Programme for Young People. 2.30, Weather and Exchange. 2.45, Reading from Parzival (Albrecht Schaeffer). 3.0, Talks for Women. 3.30, See Leipzig. 4.10, Talk: Universities and the Technical Schools. 4.30, Duet in A, Op. 102, for Violin and Piano (Schubert). 5.0, Talk: The Independence of Agriculture and Industry in Germany. 5.30, Illustrated Talk: The same verse to different musical settings—the German Lied. 5.55, Weather and Announcements. 6.0, Talk: Greek Drama and the Present Day Man; 11—Sophocles. 6.30, A Poem. 6.55, Talk on Winter Relief. 7.0, See Munich. 7.35, Concert of Contemporary Choral Music, with instrumental accompaniment: Der grimmig Tod—cantata for Choir, Solo Voice and Instruments (Hermann Eitd); Schicksal für Voice and Strings (E. L. von Knorr); Ver-stohlen geht der Mond and (Walter Rein); Maientanz für Voice and Instruments (Walter Rein); Lügenlüge für Three Part Choir and Instruments (Paul Hindemith); Kinderreime für Tenor Voice, Chamber Choir, Piano (Leo Janacek); Winterstücken für Voice, Choir, and Instruments (Heinrich Spitta). 8.10, Young Soldiers and Old Beggars (Radio Pictures and Music of the Thirty Years' War. 9.10, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Concert from Hamburg. 11.0 (approx.). Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—6.0 p.m., Topical Talk. 6.15, Talk on the Fiftieth

TUESDAY

MARCH THE FOURTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** "Castle on the Hill," feature programme by C. Denis Freeman.
- LONDON REGIONAL** A "Mainly Sentimental" instrumental concert. Recital of madrigals and part songs.
- MIDLAND REGIONAL** "Chinese White," a play by Val Gielgud.
- NORTH REGIONAL** Concert from the Houldsworth Hall, Manchester. Choral and orchestral programme from the Town Hall, Leeds.
- SCOTTISH REGIONAL** Foundations of Scottish Song, the Gaelic Heritage.
- ABROAD**
- BRUSSELS (No. 2)** 8 p.m. Concert from the Salle de Fête, Malines.
- HAMBURG** 9.40 p.m. The Philharmonic Orchestra, conducted by J. Eibenschütz.
- HEILSBURG** 7.5 p.m. Opera: "La Tosca" (Puccini), from Danzig.
- HILVERSUM** 8.40 p.m. Acts 4 and 5 of "The Doctor's Dilemma," by Bernard Shaw.
- HUIZEN** 7.40 p.m. Sacred concert.
- LANGENBERG** 7.5 p.m. Comic opera: "Czar and Carpenter" (Lortzing).
- ROME** 7.45 p.m. Instrumental concert.
- STRASBOURG** 6.30 p.m. Orchestral concert conducted by M. de Villers.
- STUTTGART** 6.30 p.m. Opera: "Falstaff" (Verdi), from Frankfurt.

Anniversary of the Death of Karl Marx. 6.40, Announcements. 6.45, Concert by the Berlin Wireless Orchestra, conducted by Bruno Seidler-Winkler and the Berlin Wireless Chorus, conducted by Maximilian Abrecht. Hero and Leander, Op. 20 (Paul Ertel); Songs for Women's Choir, with accompaniment for two Horns and Harp, Op. 17 (Brahms); (a) Es tönt ein voller Hartenklang, (b) A Shakespeare Song, (c) Der Gärtner, (d) Gesang auf Fingal; Romantic Ballet Suite (August Reuss); Traumsommer-nacht—for Women's Choir, Violin, and Harp, Op. 25 (Ludwig Thuille); Nowegian Dances (Grieg). 8.10, I or We—Programme arranged by Fritz Kistow. 9.0, Weather, News, and Sports Notes. 9.40 (approx.). See Hamburg. 11.0 (approx.). Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODD.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.20 p.m., News and Exchange. 7.40, Programme for Women. 7.55, Lottery Results. 8.0, Topical Talk. 8.15, News and Weather. 8.20, Dramatic Programme.

BRATISLAVA

279 metres; 11 kW.—5.25 p.m., Light Music on Gramophone Records. 5.45, Slovak Spelling Lesson. 6.0, See Prague. 6.30, See Brno. 7.30, See Moravská-Ostrava. 9.0, See Prague. 10.0 (approx.). Close Down.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 60 kW.; and GLEIWITZ, 253 metres.—12.10 p.m., Gramophone Concert of Sound Film Music. 12.45, Time, Weather, News, and Exchange. 1.5, Gramophone Concert of Marches: Radezky-Marsch (Joh. Strauss); Mir soll's die Kaiserjäger (Mühlberger); Slav March (Tchaikovsky); Wedding March from A Midsummer Night's Dream (Mendelssohn); It's a Long Way to Tipperary (Williams); Deutschermeister-Regimentsmarsch (Jurek); Coronation March from The Prophet (Meybeer); March of the Priests from Athalia (Mendelssohn); Holtenriedberger Marsch (arr. Harkentgen); Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Programme for Children. 3.10, Orchestral Concert, conducted by Franz Marszalek: Prelude to Der Weltmeister (Rusch); Barenrolle from Casanova (Strauss-Benatzky); Waltz, Flott durchs Leben (Translaten); Serenata cubana (Marsiz); Potpourri, Für-Chu-Tee bei Robert Stolz (Dostal); March, Märkische Heide (Lincke). 4.10, Book Review. 4.30, Agricultural Prices, followed by Reading (Georg Büchner). 5.0, Programme to be announced. 5.40, Talk:

Research into Heredity—the most Recent Results. 6.5, Orchestral Concert, conducted by Franz Marszalek: Parade-marsch der Königsjäger (R. Strauss); Meditation (Woodin); Berlioz Potpourri (Hermann Weber); Waltz, Wie einst (Männecke); March Potpourri, Die Wache (Kochmann). In an interval at 6.30, Orchestral Concert of Light Music: The Hundred and Thirty-third March (Eilenberg); Overture, Die Irrfahrt ums Glück (Suppe); Die vier Temperamente (Wendlandt); Marionettes' Dance, from Scènes de bal (Glazunov); Hungarian Rhapsody (Liszt). 7.50 (from Gleiwitz), Songs by the Upper Silesian Radio Quartet. 8.20, Orchestral Concert (contd.): Waltz, Die Hydropathen (Gungl); Overture, Frühling-luft (Jos. Strauss-Reiterer); Intermezzo from Harry James (Kodaly); Alexander March (Leonhardt); Karussell (Nick); Selection from Clo-Clo (Lehar). 9.10, Time, Weather, News, Sports Notes, and Programme Announcements. 9.35, Political Press Review. 10.0, Theatre Talk. 10.15, Concert from Hamburg. 11.0 (approx.). Close Down.

BRNO

342 metres; 35 kW.—5.25 p.m., German Transmission: News, Talk and Agricultural Report. 6.0, See Prague. 6.10, Gramophone Concert of songs. 6.30, Military Band Concert. 7.30, Report from a Biological Laboratory. 8.0, Dance Music of Fifty Years Ago—Concert by the station Orchestra, conducted by J. Goffhard. In the interval: Recitations. 9.9, See Prague. 10.0 (approx.). Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Concert of French Music by the Station Orchestra, conducted by P. Lecamus, arranged by the Belgian Catholic Radio Society. Overture, Le roi Fa dit (Debussy). Little Pieces for Quintet (Debussy). Piano-forte Solo: Bourée fantasque (Chabrier). Waltzes from L'enfant et les sortilèges (Ravel). 12.30 p.m., Songs (Dabroze). 12.45, Fauré Music. Orchestral Suite, Dolly. Fantasia for Flute. 1.0, Le Journal Parlé. 1.10, Spanish Music on Gramophone Records. Extracts from El amor brujo (Falla). Fantastic Dances (Turina). 1.30 (in an interval), Songs. 5.0, Mozart Concert on Gramophone Records. Overture, Idomeno, Concerto in E Flat for Violin and Orchestra. 5.30, Programme for Children. 6.5, Literary Review. 6.15, Ballet Music from Marouf (Rabaud) on Gramophone Records. 6.30, Concert by a Working Girls Society. 7.30, Report of the Belgian Catholic Radio Society. 7.30, Theatre Review. 8.0, L'enfant prodigue, Cantata (Debussy) by the Station Orchestra, conducted by Arthur Benlétens. Soloists: Marguerite Thys, Oscar Jouan (Tenor), and M. Lits (Baritone). 8.45, Literary Talk. 9.0, Concert by the Full Orchestra. Soloist: M. Delyonne (Violin). Concerto for Violin and Orchestra (Brahms). Variations on a Theme

by Haydn (Brahms). 9.45, Poems on Gramophone Records. Les animaux malades de la peste (La Fontaine). Le mort et le bûcheron (La Fontaine). Non merci, and Tirade du nez from Cyrano de Bergerac (Rostand). 10.0, Le Journal Parlé. 10.10, Request Gramophone Records. Selection from The Tales of Hoffmann (Offenbach). Selection from Lakmé (Delibes). Selection from Les Cloches de Corneville (Planquette). Rayerie du soir (Saint-Saëns). Waltz in A (Brahms). 10.35, Sonata No. 5 in F Minor (Bach). 10.55, Christus vincit (Liszt). 11.0 (approx.). Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.— Programme in Flemish. 12 Noon, Overture Music on Gramophone Records: Strauss Potpourri; Lotte Lehmann and Richard Tauber: Finale from the Second Act of Die Fledermaus (Joh. Strauss); Selection from The Czardasch (Lehar); Richard Tauber: Two Songs from The Czardasch (Lehar); Selection from The Rose of Camboul (Fall); Richard Tauber: Two songs from The Land of smiles (Lehar); (a) You are my heart's delight, (b) Patiently Smiling; Richard and Charlotte Tauber: (a) Duet from The Gipsy Baron (Joh. Strauss); (b) Duet from Der Rastebinder (Lehar); Selection from The Blue Mazurka (Lehar). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Lecamus: Oriental March (Closs); Suite, Algerian Nights (Grieg); Chanson d'amour (Hollman); Gramophone Record: Song from The Girl of the Golden West (Puccini); Selection from Mirella (Gounod); Cat and Mouse Melody (Engleman); Spaciously (Gensler); Torero Ramon (Kostal). 5.0, Concert of Music dedicated to Children by the Radio Orchestra, conducted by Charles Walpot: Patrouille enfantine (Ganne); Mazurka, Les enfants terribles (Carbin); Selection from the Suite enfantine (Akan); To the Memory of a Baby (Turina); Les enfants (Massenet); Jeux d'enfants (Bizet). 5.45, Programme for Children. 6.20, Gramophone Records: Abridged Version of The Merry Wives of Windsor—Opera (Nicolaï); Selection from The Gipsy Baron (Joh. Strauss). 7.15, Talk on International Politics. 7.30, Tourist Review. 8.0, Concert, relayed from the Festival Hall, Malines: Marche rituelle (Dandieu); Ballet égyptien (Ludini); Recitation; Duo concertant for Trumpet and Trombone (Biondini); Prelude, Menuet, Entracte, and Finale from L'Arlequin (Bizet); Talk: Prelude to Parsifal (Wagner); Oboe Solos: (a) Concert Piece (Rietz), (b) Souvenir de Wiesbaden (Verstout), (c) Solo (Popper); (a) Andante, (b) Gavotte; The Blue Danube (Joh. Strauss). 10.0, Le Journal Parlé. 10.10, Light Music on Gramophone Records. 11.0 (approx.). Close Down.

BUCHAREST

294 metres; 12 kW.—4.0 p.m., Light Music and Romanian Music by the Motoi Orchestra. 5.0, News and Time Signal. 5.10, Talk. 5.25, Concert by the Motoi Orchestra (contd.). 6.0, Talk: The Historical Development of Romania. 6.40, Popular Music on Gramophone Records. 7.0, Song Recital by Mlle. Cretoiu. 7.20, Concert by the Station Orchestra, conducted by Nottara, Soloist: M. Theodor (Violin). Overture, Coriolanus (Beethoven). Violin Solos: (a) Air (Floriu-Nottara), (b) Seliienne (Nottara), (c) Lily (Stefanescu-Nottara). 8.0, Talk. 8.15, Concert (contd.). Slovak Suite (Novak). Symphony in D—the London (Haydn). 8.45, News.

BUDAPEST

550 metres; 18.5 kW.—4.30 p.m., Dance Music. 5.0, French Lesson. 5.30, Piano Recital by Lili Herz: Impromptu in B Flat (Schubert); Scherzo in B Flat Minor (Chopin); Andante spianato (Chopin); Polonaise in E Flat (Chopin); Maillon's Prayer; Valse impromptu (Liszt); March and Capriccio (Dohnanyi). 6.15, Talk. 6.45, Gramophone Concert: Overture, A Midsummer Night's Dream (Mendelssohn); Venetian Gondola Song (Mendelssohn); Selection from Aida (Verdi); Dance (Bazzini); Waltz, The Blue Danube (Joh. Strauss); Arabique (Popper); Ständchen from Rigoletto (Verdi); Song (Füedi); Hungarian Song (Kálmán); Song (Schubert); Hungarian Serenade (Layotta). 7.45, Die Sternenfänger—Dramatic Scenes (Georg Büchner). 9.0, News Bulletin. 9.15 (approx.), Music by the Sándor Bura (Gyányi) Band, relayed from the Hotel Ritz. 11.0 (approx.). Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,163 metres; 7.5 kW.—11.0 a.m., Time signal and Chimes from the Town Hall. 11.1, Concert by Harald Andersen's String Ensemble relayed from the Bellevue Strand Hotel. 2.0, Symphonic Jazz by Otto Lington and his Jazz Band: The Seal Song (Calloway); Songs from the Sound Film, Odds 777 (Andersen and Folke); St. Louis Blues; Marimba Solo; Lullaby to myself (Magidson); Selection from Landmandshøj (Andersen); Blue Jazz (Gifford); Same old Moon (Gifford); Comedy Number (Lington); Reading: Sweet and

MARCH 14th

TUESDAY

continued

Lovely (Arnheim); Trumpet Solo, Plenty of centre (Nicholls); More beautiful than ever (Barris); Melody (Lington); Violin Solo, Wild Cat, (Venuti); Melody (Folke); Song from Mr. Cinders (Ellis); Please (Rainger). 4.0, Programme for Children. 4.40, Exchange and Fish Market Prices. 4.50, Talk in English: Basic English. 5.20, German Lesson. 5.50, Weather Report. 6.6, News Bulletin. 6.15, Time Signal. 6.30, Talk. 7.0, Town Hall Chimes. 7.1, The Hansen Family—Humorous Episode (Locher). 7.15, Folk Dances by the Radio Orchestra, conducted by Lanny Gründahl: Norwegian Dance No. 3 in G (Grieg); Hungarian Dance No. 5 in G Minor (Brahms); Mock Morris (Grainger); Spanish Dance, Rondalla aragonesa (Granados); Swedish Dance No. 3 in A Minor (Aulin); North-West Jutland Folk Dances, orchestrated by Gründahl: Slav Dances No. 5 in A and No. 8 in G Minor, Op. 46 (Dvorak). 8.10, Recital of New Jutland Folk Songs (Aksel Agerby) by Aage Thygesen, accompanied by the Composer. 8.30, A Visit to a Textile Factory. 9.0, News Bulletin. 9.15, Concert of Seventeenth and Eighteenth Century Music by the Radio Orchestra conducted by Lanny Gründahl: Overture, Agrippina (Händel); Concerto grosso in G Minor for two Violins, Cello, Strings, and Harpsichord (Corelli); Suite from Le bourgeois gentilhomme (Lully); Minuet and Rondo from Divertissement, No. 17, in D (Mozart). 10.0, Modern Danish Music by Jens Waryu and his Band from Nimb's Restaurant. 11.0, Time Signal and Chimes from the Town Hall.

CORK.—See Athlone. DANZIG.—See Heilsberg. DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—12 Noon, Military Music. 12.30 p.m., News Bulletin. 12.45, Light Music on Gramophone Records. 6.0 to 7.0, Programme in English by the I.B.C. 6.0, Concert for Worthing Listeners: Musical Comedy: Selection from Wild Violets (Stolz), Song, The White Horse Inn (Benatzky); A Bachelor Gay, from The Maid of the Mountains (Fraser-Simson); Piano-forte Duet from The Cat and the Fiddle (Kern); I give my Heart, from The Dumbary (Millbaker); The Desert Song from The Desert Song (Romberg); Selection from Frederica (Lehár). 6.30, Concert for Bognor Listeners: Organ Solos: Selection of Popular Melodies, Part 1 (Tchaikovsky); Chant sans Paroles (Tchaikovsky); Longing (Haydn Wood); Ca c'est Madrid (O'Henry); Broken Dreams (Spitalny); Berceuse de Jocelyn (Godard); Melody in F (Rubinstein); Waltz Selection, Part 1. 7.0, News and Popular Music on Gramophone Records. 7.30, Radio Gazette. 8.0, Listeners' Half Hour. 8.15, Talk. 8.30, Programme relayed from L Havre. Talk on the Cinema, Music of Many Lands—Concert by the Orchestra of the Hotel Frascati, conducted by M. Sacha Malo; Soloist: Alphonse Renault (Accordion). 10.0 (till Close Down, Programme in English by the I.B.C. 10.0, Light Music: Them there Eyes; Always in all Ways; My Sweet Virginia; Dreaming of my Indiana Sweetheart; When I take my Sugar to Tea; I Apologize; Just You and Me; Moonlight on the Colorado; Must it end like This; Memories of You; River Stay Way from my Door; That's Somerser; Why Shouldn't I; The Parade of the Minuties; When you were the Blossom of Buttercup Lane; Koppakabanna. 11.0, Song Recital: Boots (McCall); The Song of the Flea (Mussorgsky); The Smuggler's Song (Mortimer); Vileain's Song (Gounod); Glowing Embers (Marsden); The Gay Highway (Drummond); The Admiral's Broom (Bevan); The Yeoman's Wedding (Pontiatowsky); Invitation to the Waltz (Weber). 11.30, Concert by a Light Orchestra: The Bumble Bee's Wedding (Clare); Selection from Die Fledermaus (Joh. Strauss); Columbine (Gerland); Bells across the Meadow (Kettelbey); Waldteufel Memories (Finck); Devotion (Kettelbey). 12 Mid-night, Songs: Cracker Jack (Roser); Exactly like You (Fields); I do like to do things for You (Yellen); My Lover (Yellen); Flapperette (Greer); Swingin' in a Hammock (Seymour); On the Sunnyside of the Street. 12.30, a.m. (Wednesday): Country Dances: One Step; Hornpipe; Highland Schottische; Irish Jigs and Reels; Reels; Strip the Willow; Strathspeys; Petronella. 1.0, Variety: Sing Holly, go Whistle, Hey Hey; Call me Darling; Topsy-Turvey; Talk; Marta; Bed; My hiking girl; The Scotch Italian Christening; Round the Marble Arch. 1.30, Hawaiian Duets; Hawaiian Waltzes; Alma mia; Sing something Simple; Goodnight Sweetheart; Bone Festa; Three Little Words; O sole mio; Hawaiian Medley. 2.0, Dance Music: Loveable; Put that Sun back in the Sky; When we're Alone; Where's Bill Bailey; Sailing on the Robert E. Lee; There's another empty Saddle; Gettin' Sentimental; Can't we Talk it Over; Bahama Mama; Moon; If you were only Mine; Let's put out the Lights and go to sleep; Moonlight; The Danube and You; Mad about the Boy; You're my everything; The Younger Generation. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin

FRANKFURT

259.3 metres; 17 kW.; and CASSEL, 245.9 metres; and TRIER, 259.3 metres.—4.0

p.m., Concert by the Station Orchestra. Soloist: Lili Rückward (Soprano). Part I.—Overture, Die Zauberharfe (Schubert); Three Songs (Carl Beines); Symphony No. 3 in D (Schubert); Three Songs (Carl Beines). Part II.—Programme of Old Marches. 5.15, Exchange Quotations. 5.25, Talk: It moves for all that—Galileo and the Roman Inquisition in 1633. 5.50, English Lesson. 6.15, Time, Programme Announcements, Weather, and Exchange. 6.30, Falstaff—Opera in Three Acts (Verdi), relayed from the Frankfurt Opera House. 9.0, Time, News, Weather, and Sports Notes. 9.20, See Stuttgart. 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin.

GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna. HAMAR.—See Oslo

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—6.0 p.m., Agricultural Report. 6.25, Weather. 6.30, Orchestral Concert conducted by S. Scheller: March, Germania (Keil); Overture, Euryanthe (Weber); Solzeig's Song (Grieg); Waltz, Golden Rain (Waldteufel); Italian Caprice (Tchaikovsky); March, Scupper vivum (Larcher); Overture, The Merry Wives of Windsor (Nicolaï); Spanish Dance (Moszkowsky); Selection from The Maid of the Black Forest (Jesse). 7.45, Earth a Comedy of Life (Schönberg). 9.10, Time, Weather, Announcements, Sports Notes and Police Report. 9.30, Topical Talk. 9.40, Concert by the Philharmonic Orchestra conducted by José Eidenbüsch: Overture to a Marionette Play (Gál); Largo (Haydn); Small Comedy Suite (Wunsch); Swedish Rhapsody, Midsonmarvaka (Alfvén); Potpourri, Offenbachiana (Cognadi); Overture, Der Wildschütz (Lortzing); Selection from Die Fäschingstee (Kálmán); Waltz, Rathaus-Balklänge (Joh. Strauss). In an interval at 10.20, See Report.

HANOVER.—See Hamburg. HEILSBERG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—12.5 to 1.30 p.m., Gramophone Concert of Variety Music. In the interval at 12.20, News. 1.30, Programme arranged by the Post Office, with Gramophone Records. 2.0, Exchange and Market Prices. 2.30, Announcements of the Children's Competition for Musical Improvisations. 3.0, Klara Hofer reads from her own Works. 3.20, Concert by the Little Orag Orchestra, conducted by Eugen Wilken: Overture, Beethoven (Lassen); Ballet Music from La Juive (Hatevy); Waltz, Loreley (Rhein-klinge (Joh. Strauss); Selection from Si j'étais Roi (Adam); Suite, from Southern Spheres (Fresco). 4.40, Dr. Faust—Play for Young People (Pascual du Bois-Reymond). 5.15, Market Prices. 5.20, See Report. 5.30, Talk for Workers. 6.0, Shorthand Dictation. 6.25, Talk on Karl Marx, on his Fiftyth Anniversary of his Death. 6.55, Weather and News. 7.5, Tosca—Opera in Three Acts (Puccini), from the Municipal Theatre, Danzig. 9.30 (approx.), Weather, News and Sports Notes.

HILVERSUM

(Announced HUIZEN). 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—11.55 a.m. till Close Down, Programme of the Christian Radio Society (S.C.R.V.). 11.55, Concert by a Bahalaika Ensemble, conducted by Iwan Schustow. In the interval, at 12.40 p.m., Gramophone Records. 1.40, Talk. 2.15, Talk for Women. 3.10, Dressmaking Lesson. 4.10, Violin and Piano-forte Recital by F. Hlize and F. Boshart: Sonata in G Minor (Sensuile); Chaconne (Bach); Gramophone Records: Slav Dances (Dvorak-Kreisler); Andante rubato (Dohnanyi); Gipsy Dances (Rachmaninov); Gipsy Airs (Espejo). 5.5, Concert by the K.R.O. Sextet: March (Maas); Liebeswalzer (Moszkowsky); Music and Roses (von Lindern); Potpourri, Ein Plauderstündchen mit Delibes (Urbaeh); Der schönste Gedanke (Abraham). 5.40, Topical Talk. 6.10, Esperanto Lesson. 6.30, Sextet Concert (cont'd.); Potpourri, Für Alle (Dostal); Maeh' dir nichts darans (Benatzky); Goodbye (Tosti); March, Interner Freiheitsstern (Blankenburg). 6.50, Talk on Life. 7.10, Police Notes. 7.25, Talk. 7.40, Sacred Concert: Miserere; Meditation on the Passion; Coenantes illis; Ave Regina Coelorum; Selection from Stabat Mater (Francon); Tantum ergo. 9.10, News Bulletin. 9.15, Song and Piano-forte Recital: La Danoiselle élie (Debussy); Asié (Ravel); Arabesque élie (Debussy); Two Spanish Dances (Fallá); Seven Popular Spanish Songs (Fallá); Ballet

Music from Carmen (Bizet); Overture, A Carnival in Rome (Joh. Strauss); Selection from Casanova (Joh. Strauss); Selection from Die geschiedene Frau (Fall); Selection from The Mikado (Sullivan). 11.10, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm. HUIZEN

Announced HILVERSUM, 1,875 metres; 5.5 kW.—10.10 a.m. till Close Down, Programme of the Algemeene Vereeniging Radio Onroep (A.V.R.O.). 10.10 a.m., Violin and Piano-forte Recital by Jo Juda and Jo Goudsmit. 10.40 (in an interval), Talk. 11.40, Time Signal. 11.41, Concert by the Wireless Orchestra, conducted by Nico Treep. 1.55 p.m., Interval. 2.10, Light Music on Gramophone Records. 2.40, Fashion Talk for Women. 3.40, Light Music on Gramophone Records. 4.10, Concert by a Children's Choir. 4.40, Fairy Tales for Children. 5.10, Talk. 5.40, Concert of Light Music, by Willy Lewis and his Band. 6.10, Talk. 6.40, Concert (cont'd.). 7.10, Elementary English Lesson. 7.40, Time Signal. 7.41, Weather and News. 7.45, Concert by the Wireless Orchestra, conducted by Nico Treep: March, Morgenröthe (Jessel); Suite No. 1, from L'Arlesienne (Bizet); Tesoro mio (Beeuceri); Introduction, Waltz and Gallop on Stranss Themes (Morena); Siamesische Wachtparade (Lincke); Witches' Dance (Casadesu); Overture to a French Comedy (Keler-Bela). 8.40, The Doctor's Dilemma—Acts, IV and V (Bernard Shaw). 9.40, Popular Concert by Kovacs Lajos and his Dance Band. 10.40 (in an interval), News Bulletin. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna. KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., Talk on Modern Photography. 6.15, Announcements and Gramophone Records. 6.25, Sports Notes. 6.30, Talk on Music, relayed from Cracow (312.8 metres). 6.45 to 10.0, See Warsaw. 10.0, Dance Music from the Astoria.

KIEL.—See Hamburg. KLAGENFURT.—See Vienna.

KOSICE.—See Prague. LAHTI

1,796 metres; 40 kW.; and HELSINKI, 368.1 metres.—6.5 p.m., Recitations. 6.30, Concert by the Radio Orchestra. 7.45, News in Finnish. 8.0, News in Sweden.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert, conducted by Wolf: March, Spontgeist (Emert); Rakoczy Overture (Keler-Bela); Selection from Manon (Massenet); Lament (Dvorak); Dance of the Goldins (Dvorak); Romantic Suite (Bullerian); Potpourri, Extravaganza (Morena); Waltz, Bei uns z'Haus (Strauss). In the interval at 1.0 p.m., News Bulletin. 1.30, Sponsored Programme, with Gramophone Records. 2.30, Exchange and Time Signal. 2.50, Programme for Children. 3.20, Notes on the Broadcasts to Schools. 3.50, Talk: Geography for Schools. 4.0, Concert, conducted by Wolf: Festival Overture (Lortzing); Country Dance and Waltz Mazurka, from A Spring Festival (Thomas); Selection from L'Africaine (Meyerbeer); Waltz, Die Werber (Lanner); Sang und Klang aus dem Osten—Fantasia on the Music of Russian Composers (Eberle); Two Pieces (Lindsay-Thiemer): (a) Waltz Intermezzo, Blütenzauber. (b) Villany Czardas. 5.15, Italian Lesson. 5.45, Weather, Time, Exchange and Sports Notes. 5.55, Talk on Agriculture. 6.15, Talk on the Fiftyth Anniversary of the Death of Karl Marx. 7.0, First General News. 7.5, Azar and Carpenter—Comic Opera in Three Acts (Lortzing). 9.15, News, Sports Notes and Silent Night.

LAUSANNE.—See Radio-Suisse Romande. LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319 metres.—12.15 p.m., Gramophone Concert: Nirs (Wagner): (a) Prelude to Lohengrin, (b) Overture, The Flying Dutchman, (c) Song from The Valkyries; Trinkspruch (Schmalstich); Die heilige Barke from Alt-China (Niemann); Der Wasserfall (Niemann); Sierzo for Flute and Piano-forte (Thomas); Adagio for Cello and Piano-forte (Thomas); Frühlingstraum (Schubert); Drei Wanderer (Hermann); Hülle mich in Liebe ein from Der Studentinprinz (Krausz); Presto from Der Divertimento in E Flat (Mozart); Jelängerjeliher and Vergissmeinnicht (Schein); Die Macht der Phyllis (Schein); After the Concert, Exchange. 1.0, Talk for the Unemployed. 2.35, Economic Notes. 3.30, Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber. Overture, Des Teufels Lustschloss (Schubert); Divertimento for Small Orchestra (Dehnert); Waltz (Waldteufel); Ballet, A Tale of the Champagne (Brüll); Scherzo-Caprice (Sedba); 4.30, Weather and Time. 4.50, Economic Notes.

5.5, Reading for Women. 5.25, French Lesson. 5.50, Introduction to the Gewandhaus Concert on the 16th March. 6.0, Talk on Calligraphy. 6.30, Concert by Theodor Blumer: Selection from Die Fledermaus (Joh. Strauss); Hungarian Suite (Hofmann); Potpourri, Eine Singsfahrt nach Wien (Silving); Waltz, Blaue Augen—blauer Himmel (Fetras); Overture, Hokuspokins (Lenschner); Ballet Music from William Tell (Rossini); Humorous Potpourri, Im Automaten-Salon (Vollstedt); Rheinischer Saug (Hamemann). 8.15, Talk on Economic Questions. 8.25, News. 8.35, Walter von Molo reads from his own Works. 9.5, News. 9.15, Piano-forte Quintet in D Minor (Müller); String Quartet (Roth). 10.45 (approx.), Close Down.

LJUBLJANA

574.7 metres; 7 kW. 6.0 p.m., Country Sketches. 6.30, Talk: Contemporary Heroes. 7.0, Programme relayed from Zagreb (307 metres). 9.0, Time, News and Light Music.

LWOW

381 metres; 16 kW.—6.45 p.m., See Warsaw. 9.15, Trio Concert. 9.55, See Warsaw. 10.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Dramatic Programme relayed from Paris (Ecole Supérieure) (447.1 m.).

MADRID

ARANJUEZ (EA2), 30.43 metres; 20 kW.—10.30 p.m., Concert. Pasodoble, Oviado (Marquina). Rondo and Badireña (Bach). Polonaise (Bach). 10.45, Radio Chronicle. 11.0, Concert (cont'd.). Molinos de viento (Luna and Frutos). 11.40, Light Music. 12.0 Mid-night (approx.), Close Down.

MADRID

UNION RADIO, Call EA7, 424.3 metres; 2 kw.—7.0 p.m., Chimes, Exchange Quotations, and Request Gramophone Records. 7.15, Medical Talk. 7.30, Talk by Joaquin Espana Cantos and Request Gramophone Records (cont'd.). 8.15, News Bulletin and Political Review. 8.30 to 9.0, Interval. 9.0, Linguaphone English Lesson. 9.30, Chimes, Time Signal, and Political Review. 9.45 (approx.), Werther—Opera (Massenet) on Gramophone Records. 11.45, News Bulletin. 12.0 Mid-night, Chimes and Close Down.

MALMO.—See Stockholm. MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by Plichta. 4.10, See Prague. 4.50, See Brno. 5.0, Talk: The Humorous Novel. 5.15, See Prague. 5.25, See Brno. 6.0, See Prague. 6.30, See Brno. 7.30, A Sketch. 8.10, Concert by the Station Orchestra, conducted by Plichta: Potpourri (Urbaeh); Waltz-Intermezzo (Volkov); Vampir Dance (Smatek); Polka (Tichy); Potpourri, Polonia (Lecotold); Old-fashioned Polka (Plichta); Moravian Dance (Balling); March (Dörfler). 9.0, See Prague. 10.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—4.30 p.m., Concert of Music by Beethoven, Schumann, and Chopin. 5.30, Symphony Concert, relayed from the Radio Theatre. 8.0, Talk in French: The Fiftyth Anniversary of the Death of Karl Marx.

MOTALA.—See Stockholm. MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—3.45 p.m., Concert by the New Munich Symphony Orchestra, conducted by Hellmut Fritz: Festival Overture (Lortzing); Allegretto quasi Andantino (Schubert); Selection from L'Africaine (Meyerbeer); Ochsennennett (Haydn); Scandinavian Suite (Juel-Fredriksen); Turkish March (Mozart). 4.45, A Tour of the Air Safety Exhibition in Munich. 5.15, Youthful Reminiscences of a Cyclist (Nikolans von Gager). 5.35, Talk: The Law in Popular Sayings. 5.55, Time, Weather, and Agricultural Notes. 6.5, Piano-forte Recital of Dances of the Nations: German Dances (Schubert); Minuet (Friedemann); Minuet (Ravel); Mazurka (Liadov); Russian Dance (Isserlis); Spanish Dance (Granados); Romanian Dances (Bartok); Polka from Selwanda (The Piper (Weinberger); Waltz from Faust (Gounod-Liszt). 6.35, Talk: The Island of Cebes, Dutch East Indies. 7.0, Concert of Upper Bavarian Folk Music: The Alt München Zither Club and Tyrolische Harpists and Yodellers; Münchener Schlitzensmarsch (Schiffel); Potpourri, Auf der Zwiessalm (Kretzner) for Two Harps, Zither Solos; Upper Bavarian Poachers' Songs; March, Freikugeln (Fetras). 7.35 (from Nürnberg), Concert by Fritz Brückner and his Orchestra: Comedy Overture (Bohn); Waltz, The Secrets of the Adige (Carena); Intermezzo, Queen Helen (Myers); Selection

MARCH 14th TUESDAY continued

from Frederica (Lehar); March, Im Fluge der Zeit (Brückner). 8.20, Chamber Music Concert. Hedwig Fasshaender Rohr (Violin) and the Station Orchestra, conducted by Hanns Rohr: Violin Concerto in A Minor (Vivaldi); Violin Concerto in C (Haydn); Violin Concerto in D (Mozart). 9.20, Time, Weather, News, and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—4.0 p.m., Orchestral Concert of Popular Music relayed from the Hotel Continental. 5.0, Two Talks for Housewives. 5.45, Mandoline Solos by Rudolf Mirov. 6.0, Announcements, Weather, and News. 6.30, English Lesson. 7.0, Time Signal. 7.4, Talk: Karl Marx and the Communist Manifesto. 7.30, Concert by the Station Orchestra, conducted by Hugo Kramm: Sonata in E Minor for Strings (Bach); Symphony in D—the London (Haydn); Carnival Music (Schmidt). 8.45, Weather and News. 9.0, Topical Talk. 9.15, Pianoforte Recital by Edvard Sylou Kientz: Sonata in E Minor (Grieg); Symphonic Suite (Sylou-Krentz). 9.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

537.6 metres; 3 kW.—7.0 p.m., Dopplavoro Notes, Tourist Talk, Agricultural Notes, and Giornale Radio. 7.20, Popular Music on Gramophone Records. In an interval at 7.30, Time and Announcements. 7.45, Concert of Theatre Music. In the intervals, Talk and Art Notes. 9.55, News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signal (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (preliminary and 6-dot signals).—5.45 p.m., Le Journal Parle. 7.20, Weather Report. 7.30, Pianoforte Recital of Dances by Marie Antoinette Pradier; Passacaglia (Händel); Sarabande and Bourrée (Bach); Mazurkas, Waltzes and Ecosaisés (Chopin). 8.30, Concert by the Firmin Touche Quartet: Quartet in D Minor (Mozart); String Quartet (Ravel).

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parle. 7.0, Sponsored Concert with Gramophone Records. 8.0, Film Talk. 8.5, Talk on the Music Hall by Pierre Basquaise. 8.15, Interval. 8.30, Concert of Music by Henri Duparc and Charles Levadé by the Station Symphony Orchestra. 10.30, News.

PARIS

RADIO PARIS; Call CFR; 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Concert by the Kretzky Orchestra: Overture, Haydée (Auber); Selection from The Pearl Fishers (Bizet); Selection from Tutti in Maschera (Pietrotti); Ballet Music from Isolde (Messager); Overture, Les Deux vicille-Gardes (Delibes); Selection from Marouf (Rahaud). 1.0 p.m., Exchange, News, and Weather. 1.5, Concert by the Kretzky Quartet: Second String Quartet (Borodin); Romance in C for Violin (Saint-Saëns). 1.30, Exchange. 1.35, Concert by the Kretzky Orchestra (contd.); Serenade (Ardeboloff); Castellanos (Collet); Poetic Scenes (Granados); Overture, Morning Noon, and Night (Suppé). 2.0, Exchange. 3.45, Exchange and Market Prices. 4.30, Elementary English Lesson. 6.10, Agricultural Talk. 6.30, Advanced English Lesson. 6.50, Theatre Review. 7.5, Talk on Art. 7.20, Concert by the Kretzky Orchestra: Little Grey Home in the West (Lühr-Chapelier); Where my Caravan has rested (Lühr-Chapelier); Passetip and Gigue (Bierne); Esquisses (Gaubert); Scherzo-valse (Chabrier). 7.45, Commercial Prices and News, and Anglo-Saxon Press Review. 8.0, Brigol et sa fille—Comedy (Capus). In the interval at 8.40, News and Weather; at 8.40, Review by Zamacois; and at 9.15, Press Review and News. 10.0, The Trout Quartet (Schubert), on Gramophone Records.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 506 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.31, Market Reports. 9.45, Johnny Muskrat. 9.50, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Programme to be announced. 10.15, Adventures of Dr. Dolittle, from New York. 10.30, The Singing Lady, from New York. 10.46, Little Orphan Annie. 11.0, Booth Tarkington's Made and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaherry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45 to 3.0 a.m. (Wednesday), New York Relay. 11.45, Today's News, by Lowell Thomas. 12.0 Midnight, Pepsodent Amos in Andy. 12.1 a.m., National Advisory Council on Radio in Education—Farm Relief by Prof. Benjamin Shambaugh, University of Iowa, and Senator Peter Norbeck, South

Dakota. 12.45, The Townsend Murder Mystery. 1.0, Eno Crime Club. 1.50, Time Signal and Adventures in Health. 1.45, Phillips Lord in The Country Doctor. 2.0, Household Musical Memories. 2.30, Willard Robinson's Deep River Orchestra. 3.0, The Tune Detective. 3.15, Vic and Sade, from New York. 3.30, Homay Bailey and Orchestra, from New York. 3.45, Bradley Kincaid. 4.0, Time Signal. 4.1, Teaherry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Smith Ballou and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, Cotton Club Orchestra, from New York. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Moravská-Ostrava. 4.10, Talk on Economics. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Variety Music on Gramophone Records. 5.5, Market Prices. 5.15, Talk for Workers: Karl Marx. 5.25, News. 5.30, German Transmission: A Scene from Julius Caesar—Drama (Shakespeare). 6.0, Chimes. 6.1, News Bulletin. 6.10, Short-hand Lesson. 6.30, See Brno. In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.4, News. 9.15, Variety Music on Gramophone Records. 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.0 p.m. (from Lausanne), Medical Talk. 5.30 (from Geneva), English Lesson. 6.0 (from Geneva), Weather Forecast, News Bulletin, and Announcements. 6.20 (from Geneva), Answers to Correspondence. 6.30 (from Geneva), Concert of New Gramophone Records. 7.0, Concert by the Station Orchestra. 8.5 (from Geneva), The Week's Review. 8.15 (from Lausanne), Cello Solos by Gerard Heekking. 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva), Talk: The Work of the League of Nations. 9.30 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Pianoforte Solos by Emil Thoroddsen. 10.15, Recitals. 10.35, Violin Concerto in E (Bach), on Gramophone Records.

RIGA

525 metres; 15 kW.—6.5 p.m., Concert of Latvian Music. 7.0, News. 7.20, Song Recital by Zelmā Gothards (Soprano). 7.40, Concert of Popular Music. 8.0, Weather and News. 8.30, Dance Music. 9.20 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 441 metres; 50 kW. Relayed by NAPLES, 319 metres, and 2RO, 254 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30 a.m., Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Concert from Turin. In the interval at 12.30, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30 to 5.15, See Turin. 6.0 (Naples), Shipping and Sports Notes. 6.10, Lesson in Morse, Agricultural Report, and Dopplavoro Notes. 6.20, Giornale Radio. 7.0, Time and Announcements. 7.2, Talk, Saturn. 7.15, Light Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 7.45 (approx.), Instrumental Concert. Soloists: Arrigo Serato (Violin) and Artalo Satta (Pianoforte). Sonata in A for Violin and Pianoforte (Frankel). 8.20 (approx.), Il dono della notte—Play (Carlo Vittorio Duse). 8.50, Instrumental Concert (contd.). Pianoforte Solo: Chromatic Fantasy and Fugue (Bach). Sonata in C Minor for Violin and Pianoforte (Grieg). Gramophone Records: Go Larghetto and Allegro from the Concerto grosso in G Minor (Vivaldi). (b) Symphonic Poem (Balakirev-Thamara). 9.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12 Midnight, General Electric Programme. 12.15 a.m. (Wednesday), Stock Report. 12.30 till Close Down, New York Relay. 12.30, Soloist Programme. 12.45, The Goldbergs. 1.0, Blackstone Plantation. 1.30, Wayne King's Orchestra. 2.0, Ben Bernie's Blue Ribbon Orchestra. 2.30, Ed. Wynn and the Fire Chief Orchestra. 3.0, Lucky Strike Hour, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; BASEL, 244.1 metres; and BERNE, 245.3 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather Forecast

and News Bulletin. 11.40 (from Zürich), Concert of Light Music by the Radio Orchestra. 12.35 to 12.45, Weather Forecast and Exchange. 2.30 (from Zürich), Concert by the Small Radio Orchestra. 3.0 (from Basle), Wind Instrument Music on Gramophone Records. 3.30 (from Basle), Extracts from Operettas, on Gramophone Records. 4.0 (from Basle), Dance Music on Gramophone Records. 4.30 to 4.35, Weather Forecast. 5.30 (from Bern), Programme for Children. 6.0, Time Signal and Weather Forecast. 6.1 (from Berne), Notes on the Broadcasts for Schools. 6.15 (from Berne), Talk: The Lutheran Religion in the Light of Modern Research. 6.45 (from Berne), Introductory Talk to the following Transmission. 7.0 (from Berne), Symphony Concert by the Berlin Music Society conducted by Fritz Brun. Soloists: Stoll Geyer (Violin), J. Cron (Tenor), and W. Rössel (Bass). 9.0 (approx.), Weather, News, and Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SABA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.5 p.m., Programme for Children. 4.50, Reading. 4.55, Popular Music on Gramophone Records. 5.55, Talk in German. 6.30, Talk, relayed from Malmö (231 metres). 7.0, See Munich. 7.35, Literary Review. 8.5, Concert: Gunnar Norby (Cello); Märta af Klingberg (Pianoforte) and Anna Tibell (Songs). Sonata in Old Spanish Style for Cello and Pianoforte (Cassado); Songs: (a) Lilies Solos; (a) Sicilienne (Faure); (b) Liebesfröhen (Kreutzer); Songs. 9.0, Concert of Light Music. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Classical Music on Gramophone Records. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Gramophone Concert: Allegretto from Symphony No. 7 (Beethoven); Invitation to the Waltz (Weber); Danse macabre (Saint-Saëns); Daphnis et Chloé (Ravel). 2.0 to 4.45, Interval. 4.45, Talk in French: Paul, the Birthplace of Henry IV. 5.0, Orchestral Concert, conducted by Roskam: Mystérieuse marche (Gillet); Réponse à Manon (Gillet); Baccuse (d'Hardelot); Overture, Isabella (Suppé); Serenade for Cello and Small Orchestra (Hofmann); Selection from The Maid of the Black Forest (Jessed); Romance à Manon (Donaudy); Esquisses Provençales (Popy); Sylvia, the Hope-dancer (Ragazzi); March, Les Allobroges (Sabatier). 6.0, Talk on History in French. 6.15, Topical Talk in French. 6.30, Orchestral Concert, conducted by Maurice de Villers: Part I: Music by Henri Février. Selection from Mamma Yanna; Interlude, Gli-Simonda; Danse galante, from Agnès; Violin Solo, Doux propos; Symphonic Fragments from Aphrodite. 7.30, Time and News. 7.45, Orchestral Concert (contd.): Part II: March, Hollywood (Leopold); Selection from Eine Nacht in Venedig (Joh. Strauss); Ballet Russe (Luigini); Tarantella Napoli (Mazzacapo). 8.20, Lottery Results. 8.30, Dramatic Programme, relayed from Paris. 10.30 (approx.), Close Down.

STUTTART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—12.15 p.m., Time, News, Weather, Show Report, and Programme Announcements. 12.30, March Pot-pourri (arr. Kaiser) on Gramophone Records. 1.0, Concert arranged by the Post Office. 1.30, Advanced English Lesson. 2.0 to 3.0, Interval. 3.0, Talk on Flowers. 3.30, Talk for Women. 4.0, See Frankfurt. 5.15, Time, Weather, and Agricultural Report. 5.25 (from Freiburg), Talk on the German Post. Klopstock, on the 130th Anniversary of his Death. 5.50, See Frankfurt. 6.15, Time and News. 6.30, See Frankfurt. 9.0, Time, News, Weather, and Programme Announcements. 9.20, Concert by the Stuttgart Philharmonic Dance Band with Walter Maurer (Tenor). 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres, 8 kW.—6.0 p.m., News Bulletin. 6.15, Popular Melodies. 6.30, Literary Talk: A son of Gascony—M. du Barri. 6.50, Songs from Sound Films. 7.0, Instrumental Music: Theme with Four Variations on a Trio (Tchaikovsky); Trio in D Minor (Mendelssohn). 7.15, Racing Results, Market Prices and News. 7.25, Local News Bulletin. 7.30, Music by an Argentine Orchestra. 7.45, Opera Music: Airs from (a) The Pearl Fishers (Bizet), (b) La Basoche (Messager), (c) Lakmé (Delibes). 8.0, Opera Music: Barcarolle, from the Tales of Hoffmann (Offenbach); March from The Mastersingers (Wagner); Polonaise from Boris Godunov (Mussorgsky). 8.15, Accordion Music. 8.30, Music by a Viennese Orchestra. 8.45, Extracts from Veronique-Operetta (Messager). 9.15, Symphonic Music: Air from Ramuntcho (Pierné); Waltz No. 2 (Godard); Souvenir (Drda); Entr'acte from Messidor (Bruneau); Valse du Pas des Fleurs

(Delibes); Retreat and Prayer (Kreutzer). 10.0, Opera Music: Airs from (a) The Tales of Hoffmann (Offenbach), (b) Faust (Gounod), (c) Prince Igor (Borodin). 10.15, North African News. 10.30, Concert for Listeners in Morocco: Melody (Lowerthal); Air from Act I of Cavalleria rusticana (Massenet); Selection from La Bohème (Puccini); Dolorita (Charabon); March from The Prophet (Meyvorber); Perdita (Cavallieri). 11.0, Recitations. 11.15, Orchestral Music. 11.30 to 12 Midnight, Programme in English by the I.B.C., H. K. Hitchcock announcing. 11.30, I.B.C. Half Hour, Roomin for Romance; As you desire me; One Hour with You; Try a Little Tenderness; We will always be Sweethearts; So Ashamed; In the Shade of the Old Apple Tree; Clarinet Marmalade. 11.57, I.B.C. Goodnight Melody. 12 Midnight, Weather and Announcements. 12.35 a.m. (Wednesday), Popular Songs. 12.15, Military Music 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.30 to 6.0 p.m., see Turin. 6.0, Light Music on Gramophone Records. 6.20 till Close Down, see Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by M.LAN, 331.5 metres; GENOVA, 312.8 metres; and FLORENCE, 500.8 metres.—4.30 to 5.15 p.m., Orchestral Concert on Gramophone Records. 5.35, Giornale Radio, Agricultural and Dopplavoro Notes. 6.0, Light Music on Gramophone Records. 6.20, Giornale Radio. 6.30, Time, Announcements, Report of the Royal Geographical Society, and Gramophone Records of Variety Music. 7.0, Giornale Radio and Weather, and Gramophone Records (contd.). 8.0, Variety Programme. 9.0, Talk. 9.15, Dance Music. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and 50.25 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in English. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—4.15 p.m., Concert by the C. M. Winterthur Orchestra: Overture, Stradella (Plowden); Waltz, Delphin (Joh. Strauss); Can-can Sketches (Ippolitov-Ivanov); Foxtrot, Wenn die Sonne scheitern geht (Vomg-Petkerc); Waltz, Schau mir ins Auge (Strauss-Grim); Selection from The Czarenitch (Lehar); Foxtrot, Wecher Weg führt zum Glück (Buder). 5.30, Agricultural Talk. 5.55, Talk: Centres of Technical Research. 6.25, Talk: The Regulation of Prices in Austria. 6.50, Time, Weather, and Programme Announcements. 7.0, See Munich. 7.30, Talk on Karl Marx. 8.0, Reading of Writings about Karl Marx. 8.30, Song Recital by Erich Zimmermann; songs (Schumann). (a) Meine Rose, (b) Sändchen, (c) Unter die Soldaten, (d) solen Morgen in der Früh, (e) Der Page; songs (Wolf). (a) Blumenruss, (b) Frühling übers Jahr, (c) Der Gärtner; Lied: du um Schönheit? (Muller); Heute ist Sonntag, Palmarum (Hortschel); Annemarie (Hortschel); Glück, das nie verliert from Die tote Stadt (Korngold); Lolita (Luzzi-Peccia). 9.10, News, Weather, and Announcements. 9.25, Dance Music by the Astoria Band, relayed from the Westminster Café; Soloist, Dolly (Songs).

WARSAW

1,411 metres; 120 kW.—10.57, Time Signal and English Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.50, Light Music on Gramophone Records. 12.20 p.m., Weather Report. 12.25 to 12.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Aviation Notes and Anti-Gas Drill. 2.30, Announcements. 2.35, Book Review. 2.50, Popular Music on Gramophone Records. 3.20, Educational Talk: The Renaissance and Humanism. 3.40, Talk on Germany, relayed from Cracow (12.8 metres). 4.0, Symphony Concert by the Warsaw Philharmonic Orchestra, conducted by G. Fitelberg. Soloist, E. Wojtowicz (Pianoforte). Overture and Ballet Music from Aida (Händel); Pianoforte Concerto in G (Mozart); Overture, Coriolanus (Beethoven). In the interval, Announcements. 4.55, Programme Announcements. 5.0, Talk on Polish Literature. 5.20, Current Events. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Bulletin. 6.30, Talk: Musical Criticisms, relayed from Cracow. 6.45, Radio Journal. 7.0, Concert by the Station Orchestra, conducted by J. Ozimski. Soloist, Jean Dworkowski (Violin). Suite, Mozartiana (Tchaikovsky); Two Romances (Beethoven) (a) in F, (b) in G, Gipsy Dances (Nachaz); Suite Africaine (Lacôme); Italian Serenade (Wolf); German Dances (Schubert); Minuet and Dance of the Fireflies from The Danimation of Faust (Berlioz); March from Athalia (Mendelssohn). In the interval, Sports Notes and Radio Journal. 8.35, Song Recital by Eugène Mossakowski (Baritone). 9.0, Reading of a Spanish Story (Larrea). 9.15, Dance Music. 9.55, Weather Forecast for Aviation and Police Notes. 10.0, Dance Music.

ZURICH.—See Schweizerischer Landessender.



ROLA

the World's Finest Reproducers

Synonymous with Progress in Quality Reproduction since Radio's Earliest Days

For nine years Rola speakers have been universally recognised as "the world's finest reproducers." All the accumulated experience of these years is embodied in the present Rola range. Rola speakers, made in Europe's most modern speaker factory, are used by the large majority of British radio manufacturers. They offer a degree of tonal brilliance never before attained and for fidelity of reproduction they occupy a position of unchallengeable supremacy. Write to-day for illustrated folder or ask your dealer for a demonstration.

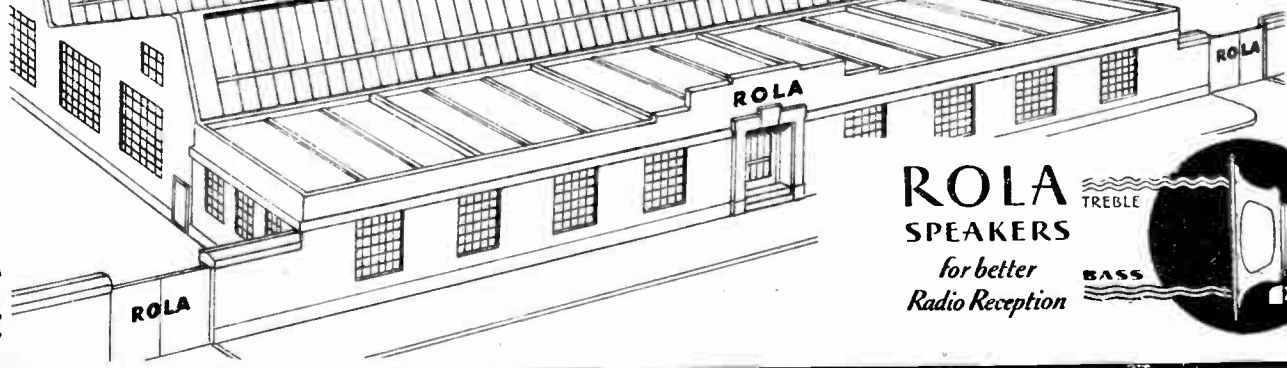
● **EXTENSION SPEAKERS**

There is a correct Rola Extension Speaker for practically all British Radio Receivers. Write for list.

Rola Speakers have been selected by the Designers of the following "Constructor Sets" . .

- "WIRELESS WORLD" MODERN A.C. QUALITY AMPLIFIER.
Rola Dual Balanced Pair consisting of one F6-2500 and one F7-2500 Speaker with 00B Transformer - - - - - £4 5 0
- "WIRELESS WORLD" A.C. MONODIAL SUPER.
Rola Type F6-2500 - - - - - 35/-
or Dual Balanced Pair F6-2500 and F7-PM with class 00B Transformer - - - - - £4 12 6
- "WIRELESS WORLD" MODERN STRAIGHT FIVE AMPLIFIER.
Same as A.C. Monodial Super.
- "WIRELESS WORLD" BABY SUPER.
Rola Type F6-P2500 - - - - - 35/-
- "WIRELESS CONSTRUCTOR" A.C. S.T.400.
Rola Special Model F6-S.T.400 - - - - - 35/-
- "WIRELESS MAGAZINE" WORDS & MUSIC RADIOGRAM DE LUXE.
Rola Type F5-PM - - - - - 32/6
- "WIRELESS MAGAZINE" A.C. QUALITY GEM.
Rola Type F6-P2000 - - - - - 35/-
- "WIRELESS MAGAZINE" WORDS & MUSIC Q.P.P. RADIOGRAM.
Rola Type F5-PM - - - - - 32/6
- "AMATEUR WIRELESS" PUSH-PUSH AMPLIFIER.
Rola Type F6-PM-QPP-22A - - - - - 49/6
- "AMATEUR WIRELESS" JAMES PUSH-PUSH 3.
Rola Type F6-PM - - - - - 49/6
- "AMATEUR WIRELESS" EVERYBODY'S HOME RADIOGRAM.
Rola Type F6-PM-1 - - - - - 49/6
- "AMATEUR WIRELESS" HOME-STATION A.C.2.
Rola Type F5-PMP - - - - - 32/6
- "AMATEUR WIRELESS" NEW CENTURY SUPER.
Rola Type F5-PM - - - - - 32/6
- "SUNDAY EXPRESS" S.G.2 RADIOGRAM.
Rola Type F6-PM-1 - - - - - 49/6

**Rola's New Home-
Now Nearing
Completion-
Europe's Best Equipped Speaker Factory**



THE BRITISH ROLA CO., LTD.,
Brondesbury Works,
179, High Rd., Kilburn,
N.W.6.
Telephone: Maida Vale 9017-8-9.

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.

5 New FERRANTI Transformers for QUIESCENT PUSH-PULL

- 1 **Type AF11c.** Ratio 1:10. Inductance 50.25 hys. 0.10 m.A. Good amplification curve, giving approximately double the amplification at 50 cycles hitherto obtainable. Price **34/-**
- 2 **Type AF12c.** Ratio 1:9. Inductance 30.15 hys. 0.6 m.A. A lower priced transformer which yet has a good performance and a higher step-up than others in this price class. Price **15/-**
- 3 **Type OPM11c.** P.P. Output Transformer. Ratio 35, 56 and 100:1. Specially suitable for use with AF11c, will carry a current, if necessary, up to a maximum of 100 m.A. in Q.P.P. (200 m.A. in ordinary P.P.). For operating low resistance M.C. Speakers. Primary Price **26/6** Res. approx. 230 ohms.
- 4 **Type OPM12c.** Ratios 1:7 and 4.5:1. To correspond in quality with the AF12c. Carries D.C. Primary Current up to 75 m.A. in Q.P.P. (150 m.A. in ordinary P.P.). For use with high resistance Speakers or low resistance M.C. types with or without built-in Transformers. Price **15/-** Primary Res. approx. 210 ohms.
- 5 **Type OPM13c.** Ratios 1:7, 2:7 and 4.5:1. Also specially suitable for use with the AF11c, but for operating high resistance Speakers of any kind, including M.C. Speakers with built-in Transformers. Max. D.C. Primary Current 100 m.A. in Q.P.P. (200 m.A. in ordinary P.P.). Primary Res. approx. 230 ohms. Price **26/6**

ALL PRICES INCLUDE PUSH-PULL ROYALTY
 NOTE.—Either of these Quiescent Push-Pull A.F. Transformers may be used with any of the three Output Transformers mentioned above. Both the AF11c and AF12c types may be used in ordinary Push-Pull circuits, or as straight A.F. Transformers.

This system enables much greater power to be obtained from Battery Operated Receivers and Amplifiers for a given expenditure of High Tension Current than has hitherto been possible. In fact, by its use, Power Output and Volume comparable to that given by the average Mains set are obtainable, even when employing the small H.T. Batteries in common use.

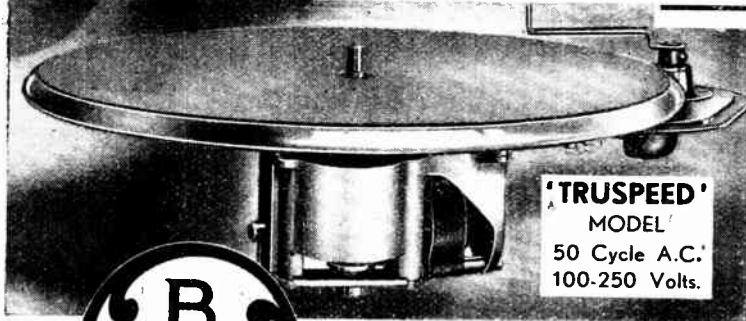
Ferranti Ltd. have produced these five Transformers to enable the experimenter to obtain the best possible results from Quiescent Push-Pull at reasonable cost. It will be noted that the inductances and ratios of these new Ferranti Transformers are unusually high.



FERRANTI TRANSFORMERS

FERRANTI Ltd., Hollinwood, Lancs. London: Bush House, Aldwych, W.C.2

GET BETTER MUSIC IN THE HOME BY FITTING THE BEST



"Truspeed" Electric Gramophone MOTOR

YOUR LOCAL DEALER STOCKS THEM

RECOMMENDED BY "WIRELESS WORLD"

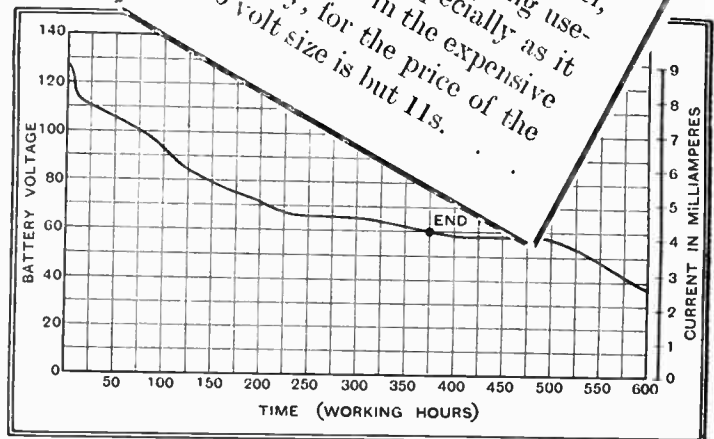
The "Truspeed" is giving complete satisfaction to thousands of users. Fit one to your instrument and enjoy the many distinct advantages of electric drive.

WRITE FOR FREE FOLDER ON THIS AND OTHER MODELS

The British Thomson-Houston Company Ltd. Head Office & Works . . . Rugby, England

It speaks for itself

Extract from "Wireless World" February 21.
 Few batteries tested have maintained their voltage at such a high level for so long as this "Anodex" model, or exhibited such a long useful life, more especially as it does not fall in the expensive category, for the price of the 120 volt size is but 11s.



Discharge curve of Smith's Anodex 120-volt dry cell H.T. battery.

"ANODEX"

DRY BATTERIES FOR HIGH TENSION AND GRID BIAS. Standard, Extra and Triple Power types are available. Agents throughout the country.

S. SMITH & SONS (Motor Accessories) LTD., CRICKLEWOOD, LONDON, N.W.2

A1390N

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.



One step ahead of Progress...

The history of radio is short, but crowded with events. So rapid, indeed, has been its advancement that it is hard to pick out milestones. Names alone can claim distinction. Names that have been associated with every development, like the name of Dubilier whose products will continue to serve and to lead radio as faithfully in the future as in the past.

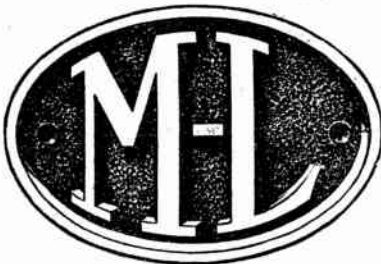
Send for interesting Free Booklet on Condensers and Resistances.

DUBILIER CONDENSERS

DUBILIER CONDENSER CO. (1925) LTD.
Ducon Works, Victoria Rd., North Acton, London, W.3



The Dubilier Type BB Condenser is a high-efficiency condenser in moulded bakelite case. Working voltage 200 D.C. (peak)-test voltage 500 D.C. Capacities from .09 mfd to 4.0 mfd. Prices from 1/9

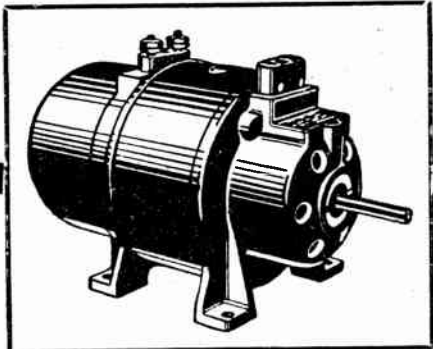


D.C. to A.C. ROTARY TRANSFORMERS

Owing to increased demand and improved methods of production, it has been found possible to considerably reduce the prices of these famous transformers. Quality unchanged. Built to last!

REDUCED PRICES!

Type	Cat. No.	Output Watts.	Reduced Prices
LEA	220	40	£11-10
HEA	221	40	£11-10
LFA	222	85	£13-10
HFA	223	85	£13-10
LJA	232	200	£15-10
HJA	233	200	£15-10



Write now for full details!
ROTAX LTD., RADIO DEPT. 1, WILLESDEN, LONDON, N.W.10.

The DOCTOR of RADIO WILL END YOUR RADIO TROUBLES



Whatever trouble may develop in your radio, the "All-in-One" Radiometer will quickly point to the cause. The "All-in-One" Radiometer is the doctor of radio and instantly diagnoses the reason for any radio trouble. There is no other instrument in the world like it. Ask to see it demonstrated at your radio dealer's or electrician's. If any difficulty, send P.O. direct to PIFCO LTD., High Street, MANCHESTER, or 150, Charing Cross Road, London, W.C.2.

PIFCO
ALL IN ONE
RADIOMETER

De Luxe Model for all types of radio. Price, £2 : 2 : 0. Always shown the Standard Model for Battery Sets only. Price 12/6.

PREH POTENTIOMETERS MEET EVERY KNOWN NEED

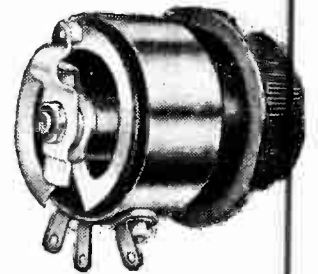
The new range of variable "wirewound" resistances have been designed to meet the demand for a component with a particularly silent and smooth movement. The curve of the potentiometer is arranged "straight line," which gives a straight line ratio between angular movement and resistance variation. The resistance can be supplied with "straight line" or logarithmic curves according to requirements. In resistances of a value more than 50,000 ohms, the guaranteed tolerances are -15 per cent and +30 per cent of the rated values. In the case of low value resistances, the corresponding guaranteed tolerances are + or -10 per cent. These components are also supplied with a combined switch, making an extremely neat and robust unit. The switch has a quick make and break movement, and will handle 1.2 amperes at 250 volts without arcing.

Prices for your special requirements on application

Preh

**POTENTIOMETERS
AND RHEOSTATS**

PREH MANUFACTURING CO., LTD.
Broadwater Road,
Welwyn Garden City.



Manufacturers and wholesalers only supplied.

Sole Sales Organization: Harwell Ltd., The Sessions House, Clerkenwell Green, E.C.1. Phone: Clerkenwell 6905-6.



Illustration shows the Davenset Shell Type Transformer.

Ensure the success of your set with

DAVENSET TRANSFORMERS

THE "Wireless World" Laboratory has tested DAVENSET Transformers and finds them "well above the average in performance and exceptionally well made." Such unbiased judgment is the best guarantee to home set constructors, and others, that DAVENSET Transformers will make a material contribution to the success of their sets.

WRITE FOR a copy of "Mains Transformers and Power Smoothing Chokes for Radio and Industrial Purposes."

Davenset Transformers are manufactured to your own individual requirements, whilst our Technical Department is at your service to advise and suggest the simplest and yet most practical schemes for overcoming your Transformer or Rectification problem.

PARTRIDGE, WILSON & CO.
Dept. 29, Davenset Works, Leicester.
Scottish Branch: 200, St. Vincent Street, Glasgow, C.2.

SAFEGUARD GOOD PERFORMANCE WITH



**HYMEG
CONDENSERS**

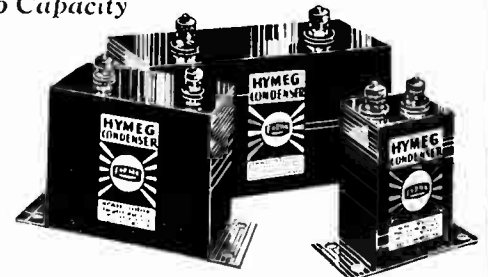
The accuracy of Formo "HYMEG" Condensers represents a big advance in fixed condenser construction. Meticulous care has been taken to obtain and to guarantee a really LOW POWER FACTOR plus all the following points:

- 1 High Test Voltage, 1,000 volts A.C.
- 2 High Working Voltage.
- 3 Insulation resistance not less than 2,500 meg. mfd at working voltage.
- 4 Low A.C. Resistance.
- 5 TRUE to rated capacities.
- 6 Long Life. Low Price.

Guaranteed true to Capacity

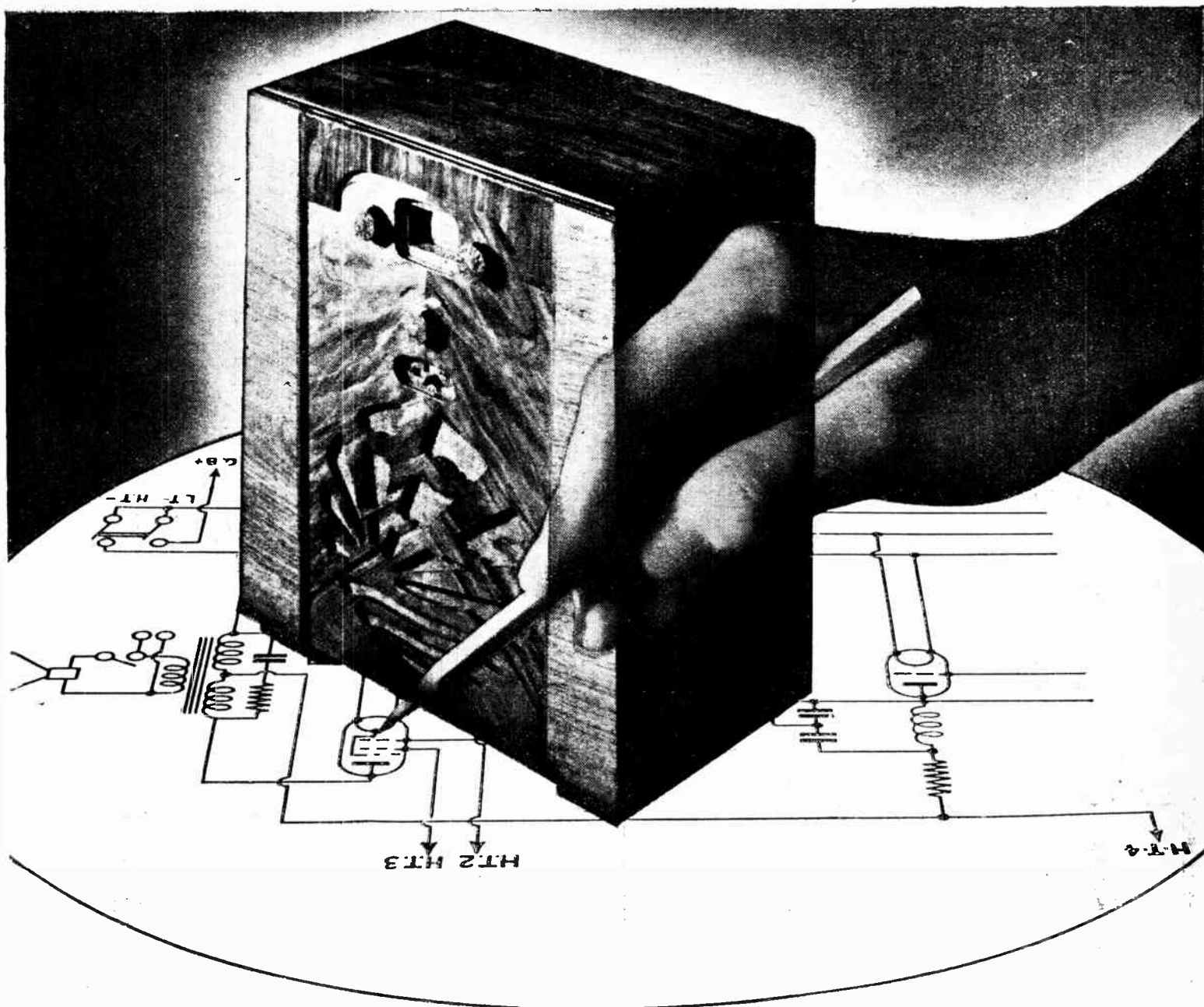
- 34B 1MFD 2/6
- 35B 2MFD 3/3
- 36B 4MFD 5/6
- 37B 6MFD 8/0
- 38B 8MFD 10/6

Obtainable from all radio dealers but in case of difficulty write direct. Ask for the Formo Catalogue.



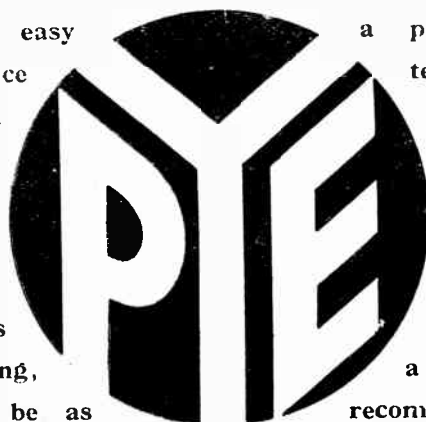
FORMO, CROWN WORKS, REGENT'S PARK, SOUTHAMPTON

FORMO COMPONENTS
THE 'MAKING' OF A GOOD SET



LINKING "IT SHOULD" WITH "IT DOES."

That is the Pye conception of progress. Progress that means something to the public. Progress that is apparent in Pye performance. You, who understand technicalities, can appreciate that though it may be easy to incorporate a new technical advance in one individual set, it becomes a different and more complex problem when applied to a great factory. A factory where minutes mean money, where machines are specialised, where hands develop habits. A factory where costs are reckoned in fractions of a farthing, where the standard of precision must be as



high as 1/10,000th of an inch and where hundreds of perfect sets must go through every day. That is where Pye have triumphed. They have perfected a production system standardised to a tenth of a penny in cost and to three-fifths of a second in time, and yet elastic enough to embrace new designs and circuits with speed and certainty of success. That is why you find Pye first with Q.P.P. in their "G.B." Model. That is why you, as a technical man, can appreciate and recommend Pye.

Pye Radio Ltd., Sales Organisation, Africa House, Kingsway, London, W.C.2.

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.

Give YOUR Loudspeaker a chance—Follow the B.B.C.

Most loudspeaker cabinets spoil low notes and speech with "boom" or resonance, making perfect reproduction impossible. There is only one way to prevent this, the way the B.B.C. itself has chosen. Every Loudspeaker in Broadcasting House is fitted with the Howe Box Baffle—and it does the job!

You can get "Simply Marvellous Results."

Why not make your existing speaker just as perfect. Easily, simply economically. Why suffer from "boominess" any longer? It requires no technical knowledge, no skill to fit a Howe Box Baffle to your present loudspeaker. Here are a few enthusiastic extracts from unsolicited letters: "Astonished at the wonderful improvement." "Results are simply marvellous." "Almost incredible improvement." "Really excellent." "Enormous improvement. I congratulate you." "Improvement of speech and music was wonderful." "The illusion is complete."

Follow the B.B.C. and you will find the results equally astonishing. You will fit a Howe Box Baffle sooner or later, so why not now?

Let us send you details FREE.

Let us send you full details of how you can fit a Howe Box Baffle to your own speaker. The "Kit," complete with full instructions and every single item required can be obtained as low as 20/-.



POST THIS COUPON OR A CARD TO-DAY!

POST THIS FOR FREE BOOKLET
To F. McNEILL & CO., LTD. (Radio Dept. 20),
Head Office: 52, Russell Square, W.C.1.
Please send me full details of Howe Box Baffle Kit.
Name _____ Address _____

Look for the 'SCRUIT' Man the sign of EFFICIENCY



—and the mark of the finest British Made Electrical Wiring Connectors.

"SCRUIT" Midget and Normal Connectors mean efficiency, speed, safety and simplicity in electrical wiring.

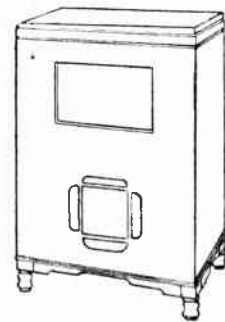
Stocked by all principal wholesalers and factors, or write direct to the manufacturers for samples.

V.G. MANUFACTURING CO. LTD.
GORST RD., PARK ROYAL, LONDON, N.W.10.

Willesden 1632.

SCRUIT NORMAL & MIDGET CONNECTORS

REDUCED PRICES



LOCKWOOD RG.63 RADIO-GRAM CABINET

PHENOMENAL SUCCESS AND INCREASED OUTPUT HAVE ENABLED US TO MAKE THESE REDUCTIONS. HIGH FINISH AND QUALITY MATERIALS ONLY USED.

60/-, or 8/3 down and eleven Monthly Payments of 5/3.

Carriage Paid. Completed with Baffle. OAK, WALNUT or MAHOGANY.

NOW 60/-

Phone: Harrow 1950

LONGLEY RADIO MFG. CO., 63, Longley Road, Harrow, Middlesex.

THE TECHNICAL PRESS & THE TRADE acclaim—

Plastape

SELF-MOULDING RIBBON WIRE

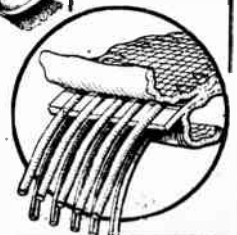
"THE MOST EFFICIENT INDOOR AERIAL EVER PRODUCED!"

Lies flat against walls—round door jambs—under lino and carpets. Makes a wonderfully neat and highly efficient job of all interior radio wiring. In a range of colours (Red, Buff and Grey) to tone with your room. From dealers, 30 ft. 3/6, 20 ft. 2/6, 15 ft. 2/-, or send P.O. to

KENDEN MANUFACTURING CO., 16, Tooks Court, Cursor Street, E.C.4. 10 STRAND Triple Insulated "GRIDWOUND" AERIAL (indoor). 8 STRAND Speaker Extension Wire. 4 STRAND Earth Wire.

AND—interesting (fully illustrated) description of entirely new method of wiring and making joints of wonderful efficiency and invisibly neat.

Only 1" wide, almost as thin as a visiting card. 10/28 8W.12 copper wires. (300 ft. in 30 ft. length). Mechanically sealed at sides. Very attractive finish.



SEND FOR FREE SAMPLE LENGTHS

Electro Dynamic ROTARY CONVERTERS

OPERATE YOUR A.C. RECEIVER FROM D.C. WITH VASTLY IMPROVED RECEPTION BY INSTALLING

FROM D.C. TO A.C.

THE LEADING MACHINES ON THE MARKET

FREE FROM INTERFERENCE. SUBSTANTIALLY mounted in sound-proof cabinet and equipped with highly efficient filter unit, the Electro Dynamic Converter enables any A.C. Receiver or Radiogram to be run off D.C. with Guaranteed Reliable Service.

ELECTRO DYNAMIC CONSTRUCTION CO. LTD. DEVONSHIRE GROVE, LONDON, S.E.15 Telephone: NEW Cross 1972 (4 lines).

FORTIFY your set with a REDFERN

"Twoside"

E BONITE RADIO PANEL MAHOGANY FRONT, BLACK REVERSE, POLISHED BOTH SIDES

AND USE ALSO REDFERN'S E BONITE LOW LOSS COIL FORMERS Supplied in 20 Sizes.

MANUFACTURED BY REDFERN'S RUBBER WORKS LTD., CHESHIRE. HYDE.



Suppliers of
Electric Lamps
By Appointment



Suppliers of
Electric Lamps
By Appointment

EDISWAN

The name that means 'EXCELLENCE'

**"Quiescent Push-Pull" was successfully
launched by the Mazda engineers**

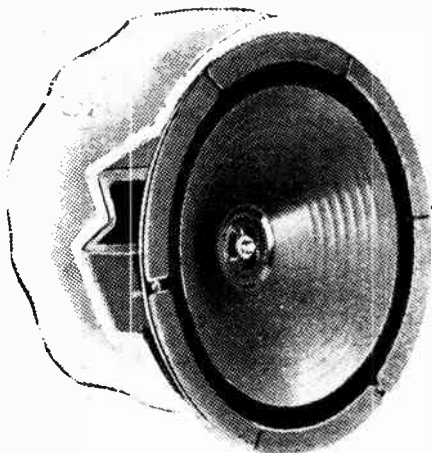
**NOW—here is a
specially designed
Permanent Magnet**

B.T.H.



**MOVING
COIL
REPRODUCER**

for use
with Q.P.P.
output



R.K. "Minor" Permanent Magnet Loudspeakers fitted with Q.P.P. output transformer and high efficiency permanent magnet. Price 5/6. Also available complete with cabinet.

Here is a new model B.T.H. R.K. Reproducer specially designed for operation by a "Quiescent Push-Pull" output stage. It incorporates a special accurately matched transformer to suit Mazda PEN.220A valves. The speaker itself is of the well-known "Minor" R.K. type with powerful permanent magnet. The combination produces the best possible results from Q.P.P. receivers.



The Edison Swan Electric Co. Ltd.
155 Charing Cross Rd., London, W.C.2

GOOD RADIO DEALERS RECOMMEND EDISWAN

W.268



**"ATLAS" GIVES MORE
POWER FOR LESS
THAN 1/- A YEAR**

JUST imagine unlimited and infinitely better reception for less than one shilling a year—the price of a packet of cigarettes! Power from the mains with an "ATLAS" Unit is fifty times cheaper than batteries.

There's an "ATLAS" Unit for *your* battery set whether portable, table or radio-gram, from 39/6 or 10/- down. Abolish batteries now and save 50/- every year.

Ask for a demonstration to-day and be sure to insist on "ATLAS," the only Units to win the Olympia Ballots for two years in succession. No other is so silent, safe and sure. Guaranteed 12 months. Westinghouse Rectifiers.

If your dealer cannot supply, write to:—
**H. CLARKE & CO. (M.C.R.) LTD.,
PATRICROFT, MANCHESTER.**
London: Bush House, W.C.2.
Glasgow: The G.E.S. Co., Ltd., 38,
Oswald Street.

★ Ask for details of the new "ATLAS Q.P.P." Units, specially designed for "Q.P.P."

CLARKE'S "ATLAS" MAINS UNITS

MESSRS. H. CLARKE & CO.,
CM(cr.), Ltd., George St., Patri-
croft, Manchester.
Please send me full details of "ATLAS"
Mains Units, etc.
Name
(in capitals)
Address
1933

**POST
NOW**

Progress with SONOCHORDE

SONOCHORDE now offers the most complete and attractive range of high quality moving coil speakers available. Irrespective of whether your requirements are for A.C., D.C., or battery operation SONOCHORDE can supply either single units or dual matched pairs.

SONOCHORDE reproduction is so true in sound and spirit that broadcasting and recorded music reaches new heights in entertainment value.

The SONOCHORDE method of suspension of the moving coil indicates rapid progress in design. There is no spider to warp and throw the speech coil out of alignment. The one piece moulded cone ensures a crisp clear response throughout the entire range of frequencies. There is one test only for a moving coil speaker that is "how does it perform." Ask your dealer to demonstrate SONOCHORDE and you will quickly realise that it is the best obtainable irrespective of price.

The following revised prices became effective 1st March, 1933.

Junior P.M. 6in. Cone	29 -
Junior D.C. 6in. Cone	25 -
Standard P.M. 7 1/2 in. Cone	35 -
Standard D.C. 7 1/2 in. Cone	27 6
Standard A.C. 7 1/2 in. Cone	62 6
Senior P.M. 11in. Cone	65 -
Senior D.C. 11in. Cone	45 -
Senior A.C. 11in. Cone	77 6
Junior P.M. for Q.P.P.	31 6
Standard P.M. for Q.P.P.	37 6
Senior P.M. for Q.P.P.	67 6



A postcard will bring you the complete Sonochorde speaker catalogue and technical data booklet, also full details covering the new range of dual matched, baffle mounted, speakers illustrated above. Write to-day and don't delay.

The "Wireless World" specifies a pair of Sonochorde dual matched Senior D.C. units for the Modern Quality A.C. Amplifier described in the issue of 17th February, 1933.

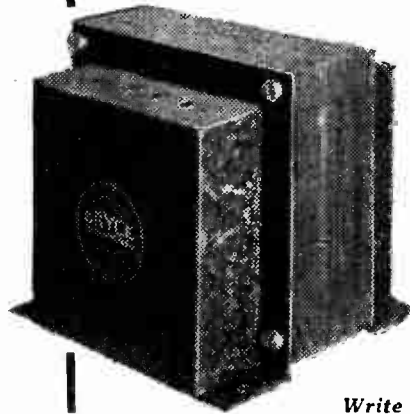
SONOCHORDE REPRODUCERS LTD.

1, Willesden Lane, London, N.W.6

Phone: Maida Vale 6066 (5 lines)

Distributors in Belgium—Von der Becke and Marsily, 40, Rempart Kipdorp, Antwerp, Belgium, under the trade name SONOVOX.

1ST CHOICE OF THE DESIGNER! 1ST TRANSFORMER OF ITS DESIGN! 1ST SET OF ITS DESIGN! THE "WW" FERROCART III The BRYCE



MAINS TRANSFORMER MODEL AB 191

- Totally Shrouded.
- All leads cut to correct lengths.
- Screened Primary.
- Insulation tested to 15,000 v.
- Lewcos Wire used exclusively. **28/6**
- L.F. CHOKE, 2,500 ohms Res. **15/-**
- WILBURN 5-WAY CON-NECTOR BLOCKS **2/6**

ACCEPT NO DELAY. DISPATCH GUARANTEED IN 24 HOURS.

Write or 'Phone—Bury 1251

W. ANDREW BRYCE & CO. WOODFIELD WORKS BURY, LANC.

LONDON AREA:— Quick Deliveries can be obtained.
WILBURN & CO., 23, BRIDE LANE, E.C.4. 'Phons: Cent. 6994.
On B.B.C. ELEC. CORPORATION, FOREIGN & COLONIAL LISTS.

STATIONS NOT MERELY SEPARATED—BUT ISOLATED!

The LATEST "STENODE" RADIO-GRAMPHONE

Remarkable selectivity and tonal fidelity. Output 5,500 milliwatts. Specification includes Marconiphone Pick-up. R.K. Senior Energised Speaker. G.E.C. Gramophone Motor. Massive Walnut Cabinet. Unbeatable Value at ... **45 GNS.** complete (A.C.)

Chassis only can be supplied if desired.

Send for Details to—

WEST END ELECTRICAL CO.
25, Banner Cross Road, Ecclesall, SHEFFIELD

RADIO DATA CHARTS A SERIES OF ABACS

Providing most of the essential Data required in receiver design

By R. T. BEATTY, M.A., B.E., D.Sc.

All keen amateurs will appreciate this book

PRICE 4/6 net

BY POST 4/10

From all leading booksellers, or direct from the Publishers, Published from the offices of "THE WIRELESS WORLD" DORSET HOUSE, TUDOR STREET, LONDON, E.C.4

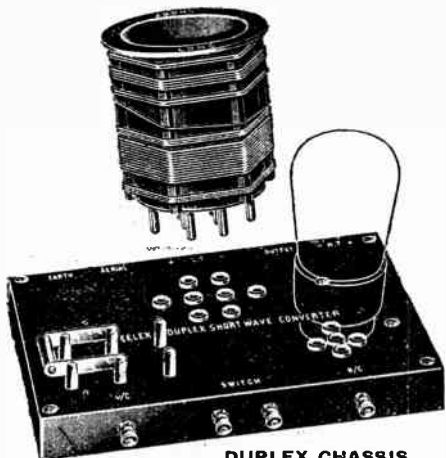
W.W. 93

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

BUILD YOUR SET TO RECEIVE AMERICA

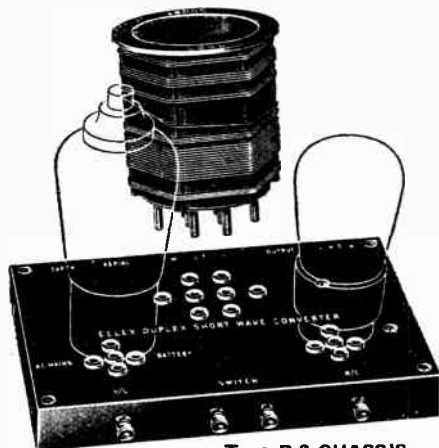
EELEX Short-Wave Converter Chassis can be built into most receivers.

When you build your new receiver, make it an all-wave set by incorporating an Eelex Short-Wave Chassis in the circuit. You will then be able to receive short-wave stations from America, Australia and other distant countries. Here are two examples of the various types obtainable. Instructions for wiring supplied with each model.



DUPLEX CHASSIS

Single valve Chassis supplied with Duplex coil. Price £1 15 0. Other components extra.



Type B.2 CHASSIS

Complete with Duplex coil for building into existing receivers. Price £2 19 6. Other components extra as Duplex model.

For further particulars and details of other models write for Eelex Short-Wave Booklet Number C.41.

J. J. EASTICK & SONS,
Eelex House, 118, Bunhill Row, London, E.C.1

Phone: Metropolitan 0314 (6 lines).

SUCCESSFUL EASY PAYMENT SERVICE

ALL GOODS CARRIAGE PAID TO YOUR DOOR

NO TROUBLE NO DELAY

THE FERROCART III

DURING THE LAST EIGHT YEARS we have supplied many thousands of readers of "Wireless World" with their radio requirements. Our aim has always been to give our customers complete satisfaction, and our advice on all radio matters is at their disposal.

COMPLETE KIT OF PARTS, exactly to "Wireless World" specification, less valves and cabinet £12.10.0
or £1 with order and 11 monthly payments of 23/-. Cash or C.O.D.

KIT AS ABOVE, but including set of Cossor Valves as specified. £15.7.6
or 25/- with order and 11 monthly payments of 29/3. Cash or C.O.D.

Set of Ferrocart Coils (Colvern). Cash or C.O.D. £2.10.0
or 5/- with order and 10 monthly payments of 5/-.

Set of 4 Cossor Valves as specified. Cash or C.O.D. £3.7.6
or 5/2 with order and 11 monthly payments of 6/3.

Any part for the **Ferrocart III** supplied separately, Cash or C.O.D. We pay all postal and C.O.D. charges. Prompt delivery guaranteed.

FINISHED RECEIVER FERROCART III, including valves, less cabinet, wired and thoroughly tested. Really superb workmanship. (Will customers please note this price includes the necessary Marconi Royalty.) £18.10.0
or £2.10 with order and 11 monthly payments of 31/-.

Q.P.P.

Everything for the new Q.P.P. circuits supplied promptly, Cash, C.O.D. or Easy Terms. We shall be pleased to advise customers on all Q.P.P. matters.

R.I. Push-Pull Input Transformer and R.I. P.P. Output Choke, with two Mazda, Cossor or Mullard Pentode Valves. Cash Price £3/4/-, or 5/10 with order and 11 monthly payments of 5/10.

Same as above, but with two Super Power Valves instead of Pentodes. Cash Price £2/13/-, or 5/4 with order and 10 monthly payments of 5/4.

Varley P.P. Input Transformer and Varley P.P. Output Choke complete with two Mazda, Cossor or Mullard Pentode Valves. Cash Price £3/9/-, or 6/4 with order and 11 monthly payments of 6/4.

Same as above, but with two Super Power Valves instead of Pentodes. Cash Price £2/18/-, or 5/4 with order and 11 monthly payments of 5/4.

Cash or C.O.D. Items. We pay postal charges.

R.I. Q.P.P. Input Transformer ... 15/3
R.I. Q.P.P. Output Choke ... 12/6

Varley Q.P.P. Input Transformer ... 17/3
Varley Q.P.P. Output Transformer ... 18/3

Ferranti A.F.11 c Input Trans. ... 34/-
Ferranti O.P.M.11 c Output Trans. ... 28/3

ACCESSORIES

ROLA PERM. MAGNET M.C. UNIT F.6. Cash Price £2 9 6. With order
And 10 monthly payments of 5/-. All other Rela Units supplied on easy terms. **4/-**

BLUE SPOT 99 P.M. MOVING-COIL UNIT. Cash Price £2 19 6. With order
And 11 monthly payments of 5 6. **5/-**

NEW R. & A. "VICTOR" PERMANENT MAGNET MOVING-COIL REPRODUCER DE LUXE. With 6-ratio transformer and cadmium-plated grill. Cash Price £3 10 -. With order
And 11 monthly payments of 6 5. **6/5**

EXIDE W.H. HIGH-TENSION ACCUMULATORS (120 volts, 5,000 M/A). The cheapest and best high-tension supply where mains are not available. Cash Price £3 15 -. With order
And 11 monthly payments of 7 -. **7/-**

SPECIAL ATLAS ELIMINATOR FOR Q.P.P. (Just released.) Output and H.T. tappings arranged for Q.P.P. circuits. Cash Price £3 12 6. With order
And 11 monthly payments of 6 8. **6/-**

We shall be pleased to send you a quotation for any radio goods you may require. Prices List free.

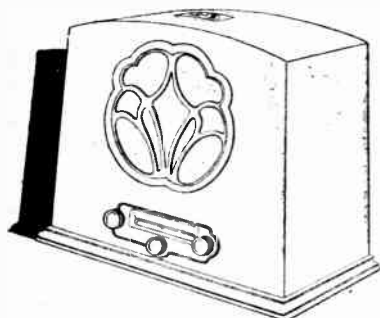
To avoid delay, will customers kindly send first payment with order.

The **LONDON RADIO SUPPLY COMPANY**

11, OAT LANE · LONDON · E.C.2

Established 1925 Phone National 1977

"His Master's Voice" Radio



DE LUXE RADIO FOUR (MODEL 436).

Electrically operated. Four Marconi valves (inc. rectifier). Moving coil speaker, mains energised. Band-pass circuit. Single knob tuning. Mains aerial on A.C. model. Provision for gramophone pick-up. Socket for additional loudspeakers. 200-250 volts A.C. 195-250 volts D.C. Walnut cabinet.

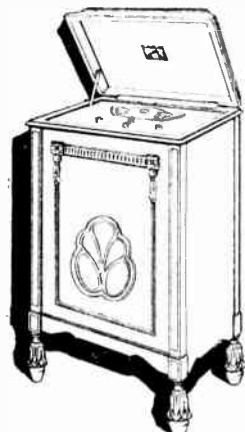
17 gns
or by hire purchase.



TRANSPORTABLE RADIO-GRAM (MODEL 501).

Electrically operated. Four Marconi valves (inc. rectifier). A.C. or D.C. Band-pass tuning. Permanent magnet moving coil loudspeaker. Combined operating switch. Single tuning knob. One volume control. Illuminated wavelength scale. Mains aerial on A.C. model. Electric gramophone motor and pick-up, both the finest that can be obtained. Walnut cabinet with felt-lined lid.

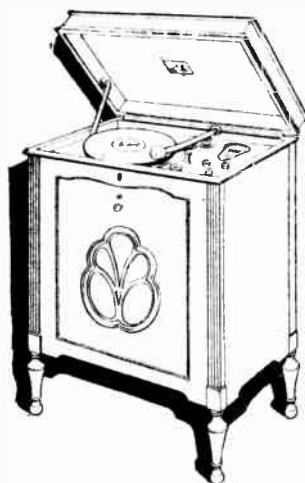
19 gns
or by hire purchase.



SUPERHET LOWBOY SEVEN (MODEL 470).

Electrically operated. Seven-valve (inc. rectifier) Super-heterodyne radio receiver incorporating band-pass tuning and mains energised moving coil speaker. Variable mu valves in high and intermediate frequency stages. Mains aerial. 200-250 volts (A.C.). 190-250 volts (D.C.). Figured Walnut Cabinet. All valves Marconi.

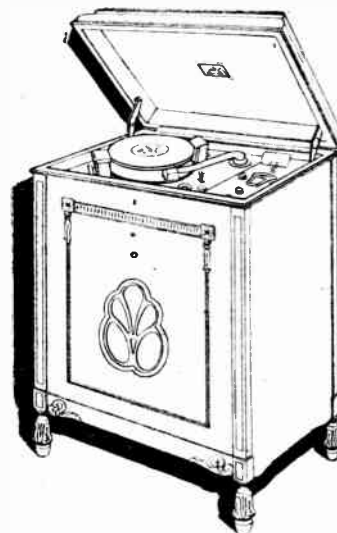
32 gns
or by hire purchase.



SUPERHET RADIOGRAM SEVEN (MODEL 523).

A seven-valve (inc. rectifier) all mains superhet radio receiver combined with electrically reproducing gramophone. Variable mu valves in high and intermediate frequency stages. Energised field moving coil speaker. Electric gramophone motor and pick-up. Tone control. A.C. only. Walnut cabinet. All valves Marconi.

48 gns
or by hire purchase.



SUPERHET TEN AUTORADIOGRAM (MODEL 532).

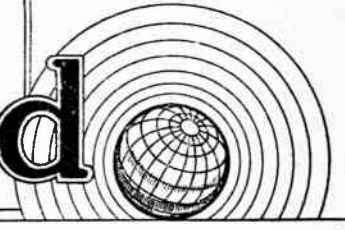
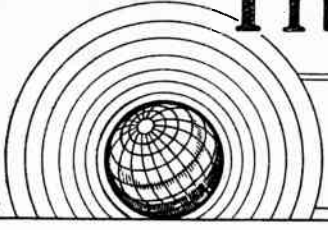
Ten valves (inc. rectifier). New tone or brilliance control. Improved automatic record-changing mechanism, allowing 8 records to be played consecutively, one record to be repeated indefinitely, or the changer to be thrown out of action so that the instrument can function as an ordinary electric gramophone. Electrically excited speaker. Variable mu valves in high and intermediate frequency stages. 100-160, 200-260 volts, 50-60 cycles. A.C. only. Imposing walnut cabinet.

80 gns
or by hire purchase.

Before you buy a wireless set, consider: what is it for? It is, of course, for you to listen to. Many people, however, are apt to forget this. They think of the set as a station-finder, and have too little regard for the pleasing of their ears. Yet it is this, above all, that is important—this question of tone quality. For long after the owner has tired of reaching for Motala or Barcelona he will be using his radio as something to entertain him in a much wider sense. Think, then, when you buy: "I shall listen to this set, day in, day out"—and be fastidious, as is your right, in the matter of reproduction. "His Master's Voice" radio and radio-gramophones are designed and built to do their job as station-receivers; they are also designed and built—with a generation of experience in sound reproduction—to give your ears the pleasure which they should demand.

The Wireless World

THE
PRACTICAL RADIO
JOURNAL
22nd Year of Publication



No. 706.

FRIDAY, MARCH 10TH, 1933.

VOL. XXXII. No. 10.

Proprietors: ILIFFE & SCNS LTD.

Editor:

HUGH S. POCOCK.

Editorial Offices:

116-117, FLEET STREET, LONDON, E.C.4.
Editorial Telephone: City 9472 (5 lines).

Advertising and Publishing Offices:
DORSET HOUSE, TUDOR STREET,
LONDON, E.C.4.

Telephone: City 2816 (17 lines).
Telegrams: "Ethaworld, Fleet, London."

COVENTRY: Hertford Street.

Telegrams: "Cyclist, Coventry." Telephone: 5210 Coventry.

BIRMINGHAM:

Guildhall Buildings, Navigation Street, 2.

Telegrams: "Autopress, Birmingham." Telephone: 2970 Midland (3 lines).

MANCHESTER: 260, Deansgate, 3.

Telegrams: "Iliffe, Manchester." Telephone: Blackfriars 4112 (1 line).

GLASGOW: 26B, Renfield Street, C.2.

Telegrams: "Iliffe, Glasgow." Telephone: Central 4857.

PUBLISHED WEEKLY. ENTERED AS SECOND CLASS MATTER AT NEW YORK, N.Y.

Subscription Rates:

Home, £1 1s. 8d.; Canada, £1 1s. 8d.; other countries abroad, £1 3s. 10d. per annum.

As many of the circuits and apparatus described in these pages are covered by patents, readers are advised, before making use of them, to satisfy themselves that they would not be infringing patents.

CONTENTS

	Page
PROGRAMMES FROM ABROAD, pp. I—XXIV	
Editorial Comment	181
The Evolution of the Superhet ..	182
The Mains Set. Where we Stand To-day	184
Radiocrazy	186
Loud Speakers: Are we Progressing?	188
The H.F. Amplifier	190
News of the Week	192
Detection: Yesterday and To-day	193
Broadcast Brevities	195
The Output Stage	196

EDITORIAL COMMENT

Progress

Prospects Were Never Greater

IF one were to search through records from the earliest days of civilisation to the present time, we feel certain that no more typical example of progress could be found in any branch of science than wireless provides, particularly in its relation to broadcasting.

It can generally be stated that the first essential for encouraging rapid progress in science or industry is that there should be a popular demand for the results achieved, for public demand must always remain the greatest stimulant to technical progress.

To attempt to record the successive stages by which we have reached the present state of development in broadcast transmission and reception would take volumes of print and a vast amount of investigation, so that, although the present issue of *The Wireless World* is described as a "Progress" Number, it must be realised that it has not been possible to attempt more than a superficial survey of progress made, and then only in connection with the development of the broadcast receiver. We feel, however, that the time has come when our readers would like to be able to take stock of the present position and be reminded of some of the more important steps which have succeeded one another and brought us to the stage where we stand to-day.

In endeavouring to compile a Progress Number along these lines, we have dissected the modern broadcast receiver and deal with various units separately as being probably the most convenient and concise method of attaining the object in view.

Valves are likely to play a very important part in influencing the design of future receivers, and there will

very shortly be released several new types having new applications and designed to be employed with new and interesting circuits.

The outstanding characteristic of many of the new valves will be that they will combine the functions of two valves in the same container. Their applications will be principally for automatic volume control and for push-pull amplification. In addition, we may expect to have the principle of the pentode applied to H.F. amplification instead of being confined to low frequency amplifiers, as in the past.

There are to-day more avenues for future progress opening up than at any previous time in the history of broadcasting, and, far from having approached a stage of stagnation, as pessimists were inclined to prophesy a year or so ago, we seem to have arrived at a position where there are so many new things waiting to be applied that the designer himself is embarrassed with the material available to him.

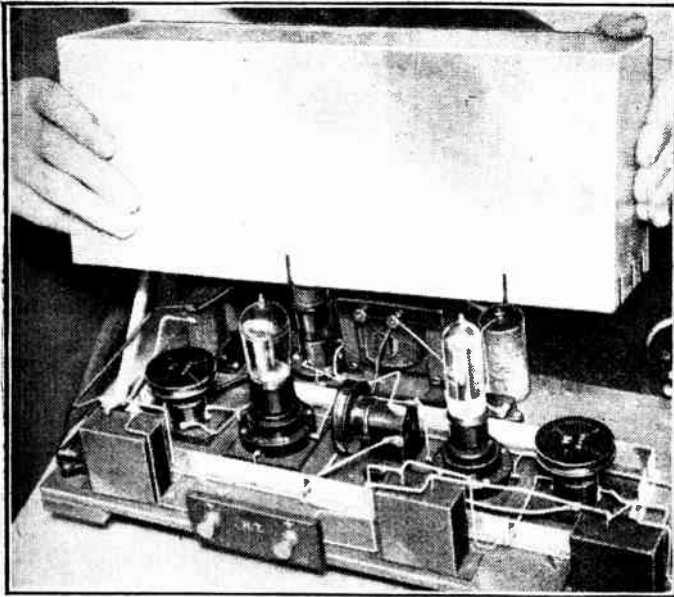
Reductions in Price

Only one aspect of progress need cause us anxiety for the future. There has been a recent tendency to cheapen the product to a point where performance begins to show signs of suffering. There is so much competition amongst manufacturers to-day that commercial success, instead of going hand-in-hand with progress, is tending to come into conflict with it. The ideal should be to give the public the advantage of every new development of importance, and to regard the selling price of the article as a subservient consideration.

We recognise that price must always remain a very important factor, but we sincerely trust that progress will not be stayed as a result of over-emphasis of the significance of price reduction.

The Evolution of the Superhet

By W. T. COCKING



The I.F. stages of a superhet described in the pages of this journal during 1925

OF recent years the superheterodyne has developed so rapidly that it may seem as if finality has been reached. An examination of the question, however, shows that this is not so, and a review of past history indicates the possibility of further advances. The author traces the progress made in the last decade and suggests the lines on which future research may develop.

Changes which Contributed to a Revival of Popularity

TEN years ago the superheterodyne was one of the most popular receivers, and it formed the chief standby of serious experimenters; it was, in fact, considered the ideal receiver, and it was usually spoken of as the Rolls-Royce of radio. Nevertheless, it was doomed to early extinction, and, within a few years, the superheterodyne became something of a rarity, and so it remained until its revival by *The Wireless World* in the autumn of 1930. Since that time, however, it has made rapid strides, and it has earned for itself a popularity far exceeding that which it enjoyed in its early life.

Early Examples

The superheterodyne, therefore, is unusual, for it is not common in wireless for early types of apparatus to be revived in any recognised form, and the modern superheterodyne is identical in its fundamental principles with the first working model. It is interesting, therefore, to examine in some detail the faults of the early superheterodyne which led to its former demise, the reasons which led to its revival, and the developments which are responsible for placing it in its present position of pre-eminence.

The superheterodyne was originally developed because stable and effective high-frequency amplification upon broadcast wavelengths was impossible, and it retained its popularity only as long as such amplification remained impossible. These early receivers were all very similar in design, and usually eight valves were employed. A two-valve frequency-changer was fed directly from a frame aerial, for second-channel interference was then of little importance. Three triodes

were normally fitted in the I.F. amplifier, which was often tuned to 50 kc. and kept stable by the application of *positive* bias to the amplifiers; a second detector and two transformer-coupled L.F. stages completed the receiver. The current drawn from the L.T. battery was often over 6 amperes at 6 volts, and the demands on the H.T. battery were also heavy; mains operation was practically unknown, so that the receiver was obviously rather expensive in upkeep.

The sensitivity and selectivity obtainable were quite high, however, and were really the sole justification for its use, for the sideband cutting of the I.F. transformers, combined with the distortion introduced by poor L.F. transformers and overloaded valves, made the receiver notorious for its poor quality of reproduction. No quality is so appalling as that given by a badly designed superheterodyne, and this type of receiver soon became identified with poor quality, and it is undoubtedly largely through this that it fell into disuse. Unfortunately, however, the blame for the poor quality was laid on the superheterodyne principle, rather than on the practical examples of it, with the result that in certain quarters the receiver is still viewed with suspicion. Actually, of course, a properly designed superheterodyne is in no way inferior to

a straight set, and is capable of giving equally good quality of reproduction, as has been conclusively proved by recent *Wireless World* designs.

The development of the Neutrodyne circuit enabled stable and effective high-frequency amplification to be obtained, and sensitive straight sets were introduced. These sets employed fewer valves than the superheterodyne, and they gave better quality, so that it is hardly surprising that their use became general. Consequent upon the later development of the screen-grid valve, the straight set became practically universal, but the superheterodyne was never completely displaced, although it was employed only for special purposes.

The year 1929 saw the introduction of band-pass tuning and a consequent improvement in both selectivity and quality. In spite of this development, however, broadcasting stations were increasing so rapidly in both numbers and power that straight sets were becoming inadequate to deal with the congestion of the ether, and satisfactory distant reception was becoming increasingly difficult. It became abundantly clear that only the superheterodyne could hope to deal with the situation so far as selectivity was concerned, but there still remained the grave problem of quality of reproduction. It was soon realised by *The Wireless World*, however, that the poor quality of the superheterodyne as then known was due merely to poor design, and was in no way fundamental.

Band-pass

As soon as modern principles of L.F. amplification, power grid detection, and band-pass tuning were fully applied, and the receiver was designed throughout for both quality and selectivity, a startling improvement was evident. All the well-known desirable characteristics of the superheterodyne were found to be still present, but the old bugbear of poor quality had disappeared. In the autumn of 1930, therefore, the first band-pass

The Evolution of the Superhet—

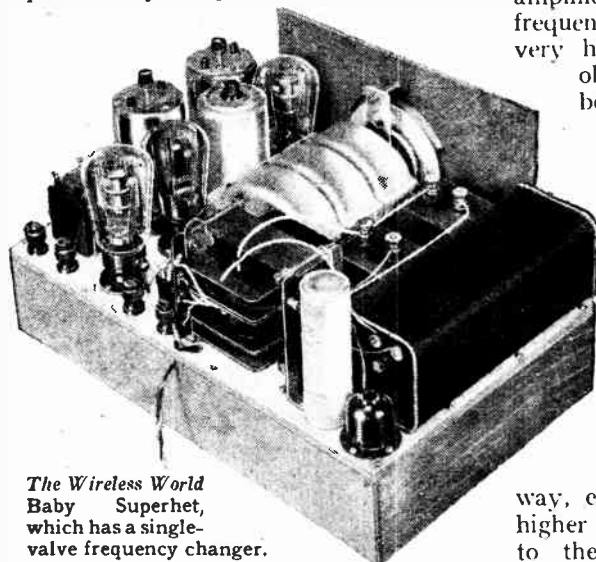
superheterodyne made its appearance,¹ and this event is a landmark in the history of wireless, for it marks the beginning of the superheterodyne revival.

Further development was still necessary, however, in order to keep pace with the increasing power of transmitters and to simplify the receiver. It was soon found desirable to employ an outdoor aerial, and this led to the design of non-radiating frequency changers,² so that quite modest superheterodynes became a possibility, and a five-valve set could provide sufficient sensitivity.³ Experience showed, however, that there was a definite limit to the amount of intermediate-frequency amplification which could be usefully employed, and if this limit were exceeded background hiss became unduly prominent. In a highly sensitive set, therefore, a return to a signal-frequency H.F. stage became desirable, although this might still be unnecessary in a receiver of only moderate sensitivity.

Single-dial Control

All this time the superheterodyne lagged behind the straight set in one particular—two tuning controls were employed. Ganged tuning could readily be achieved in a straight set, but in a superheterodyne the problem was much more difficult, since the various circuits had to be tuned to different frequencies but still maintain a constant frequency separation as the tuning was varied. Two solutions were eventually found, and the one which has proved the most successful from the constructor's point of view has been that in which a gang condenser with specially shaped plates is employed.

At the end of 1931, therefore, the usual superheterodyne operated from an out-



The Wireless World Baby Superhet, which has a single-valve frequency changer.

door aerial, and in order to avoid second-channel interference and radiation two

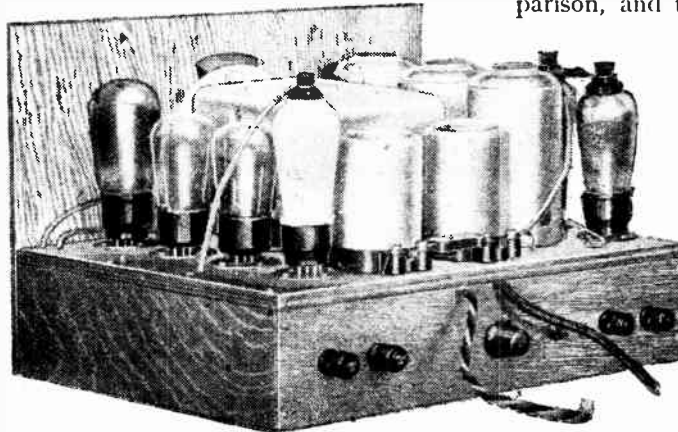
¹ The Band-Pass Superheterodyne, *The Wireless World*, November 5th and 12th, 1930.

² Frequency Changers, *The Wireless World*, May 6th, 1931.

³ The Super-Selective Six, *The Wireless World*, June 3rd and 10th, 1931. The Super-Selective Five, *The Wireless World*, July 15th and 22nd, 1931. The D.C. Super-Selective Five, *The Wireless World*, August 12th and 19th, 1931.

pre-selector circuits preceded a non-radiating frequency changer. A single I.F. stage with band-pass tuning was used, and a power grid second detector fed a pentode output valve. Ganged tuning was just beginning to make its appearance.

The unquestioned superiority of the band-pass filter was then challenged by a rival system—the Stenode method of employing highly selective tuned circuits in conjunction with low-frequency tone



The Monodial A.C. Super with A.V.C., an announcement about which is made elsewhere in this issue.

correction. After much research, a combination of the two methods proved the best, and early in 1932 the Monodial A.C. Super⁴ made its appearance. A judicious combination of the band-pass filter with the tone-correction principle permitted a definite improvement in both selectivity and quality of reproduction to be made, while for the first time an entirely satisfactory ganging system made its appearance. A moderate degree of I.F. amplification with additional signal-frequency H.F. amplification enabled a very high degree of sensitivity to be obtained without background hiss becoming obtrusive.

The appearance of the Monodial does not mark so much the culmination of the superheterodyne as the start of a new class—quality superheterodynes. From that time development proceeded on distinct, and yet allied, lines; on the one hand research was conducted ever to the improvement of performance, and, on the other, to the production of a small superheterodyne comparable with the three-valve straight set in every way, except that it would possess much higher selectivity. This latter line led to the Baby Superhet⁵—a four-valve receiver of moderate sensitivity, good quality, and really good selectivity.

At the present time, therefore, we have two entirely different superheterodynes—the Monodial Super and the Baby Superhet—each representing the latest

⁴ The Monodial A.C. Super, *The Wireless World*, April 13th, 20th and 27th, 1932.

⁵ The Baby Superhet, *The Wireless World*, August 19th and September 2nd, 1932.

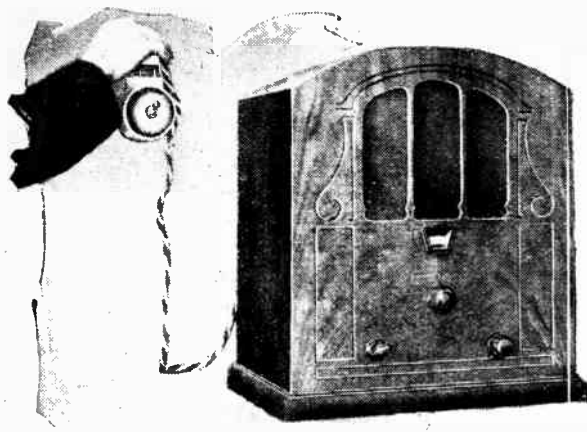
development in its class. From 1930 to 1933 the superheterodyne development has been rapid and steady, and it is now fitting to pause and enquire in what direction the future trend is to be.

In the past the straight set has progressed largely by sudden leaps forward, alternating with periods of stagnation, whereas the superheterodyne, excepting one period when it fell into disuse, has developed more slowly and steadily. The straight set falls behind the superheterodyne until it is nearly useless in comparison, and then suddenly makes a big stride forward and catches up with it. One such improvement to the straight set has just taken place—the introduction of highly efficient iron-cored tuning coils—which has resulted in a vast improvement in selectivity. It may be asked, therefore, whether the straight set may not once more become predominant.

Since superheterodynes now fall into two distinct classes, this question requires two answers; it seems probable that the straight set will now be a serious rival to, or even replace, the small superheterodyne, but it is improbable that it will ever equal, still less surpass, the quality superheterodyne. The selectivity of new straight sets will probably nearly equal that of small superheterodynes, and they will use a valve less, so that in the absence of any new development we may anticipate that the straight set will at least hold its own.

The Future

The case of the quality superheterodyne, however, is entirely different, and it seems unlikely that the same combination of selectivity and quality will ever be as simply attained with the straight set. Many new possibilities are opening out before us, and it seems probable that the superheterodyne of the future will be as great an advance upon present-day technique as modern sets are on those of a few years ago. Developments which appear probable are the general inclusion of ultra-short wavebands in the tuning range, the use of quiet automatic volume control systems, the adoption of iron-cored tuning coils, the employment of metal rectifiers instead of valve detectors, and the inclusion of controllable selectivity and quality; some of these developments will, of course, be applicable to any type of receiver, but others will be practically usable only with the superheterodyne. It should not be expected that these tendencies in design will be soon found; there are many technical difficulties to be overcome before they are realisable in a satisfactory form. Within the next few years we may hope to see most of them.



The Mains Set

Where We Stand To-day

By H. F. SMITH

ALTHOUGH the mains-operated receiver is now admitted to be superior to its battery fed counterpart in every respect, it is not so long ago that it was regarded merely as a rather unsatisfactory and unreliable substitute for it. This article deals with the vicissitudes through which the mains set has passed, and is illustrated by simplified diagrams which show that the modern power supply system is much less complex than is generally supposed.

ALMOST as soon as the first wave of public enthusiasm for broadcasting had subsided, it became evident that mains-driven receivers were bound to come sooner or later. The need for periodical battery replacements—and of finding out when they were due—was in itself a barrier to popularity among ordinary users, although a simple matter for the knowledgeable amateur.

Early attempts to press the mains into service were mainly confined to D.C. systems, for the obvious reason that no rectifier was needed. A start was made with H.T. supply, condensers and smoothing chokes being inserted at random in an attempt to eliminate ripple. When more economical valves arrived their filaments, connected in series, were heated from the same source, smoothing being effected by chokes of more or less adequate current-carrying capacity. Later on, as specialised valves for different purposes were introduced, it became

of replacing it by a crystal. As often as not, grid-bias voltages were obtained from batteries, although the drop in voltage across a resistance interposed in the filament circuit was also used. Difficulties were gradually overcome, and more or less satisfactory D.C. sets, still with series-connected battery valves, were evolved. But their performance was rather uncertain, and was influenced to a great extent by the characteristics of the mains supply.

Amateur transmitters probably led the way to the use of rectified and smoothed current from A.C. mains for wireless purposes. Their rectifiers were of the electrolytic type—messy cells with aluminium electrodes in an alkaline solution. A tantalum-lead combination in an acid electrolyte proved to be rather more reliable, and was employed both for H.T. supply purposes and for charging batteries.

Early Power Rectifiers

It was soon found that an ordinary bright-emitter valve, with anode and plate connected together, made quite a good half-wave rectifier, and gave enough H.T.

H.T. battery eliminator and the L.T. battery charger were quite ordinary articles of commerce.

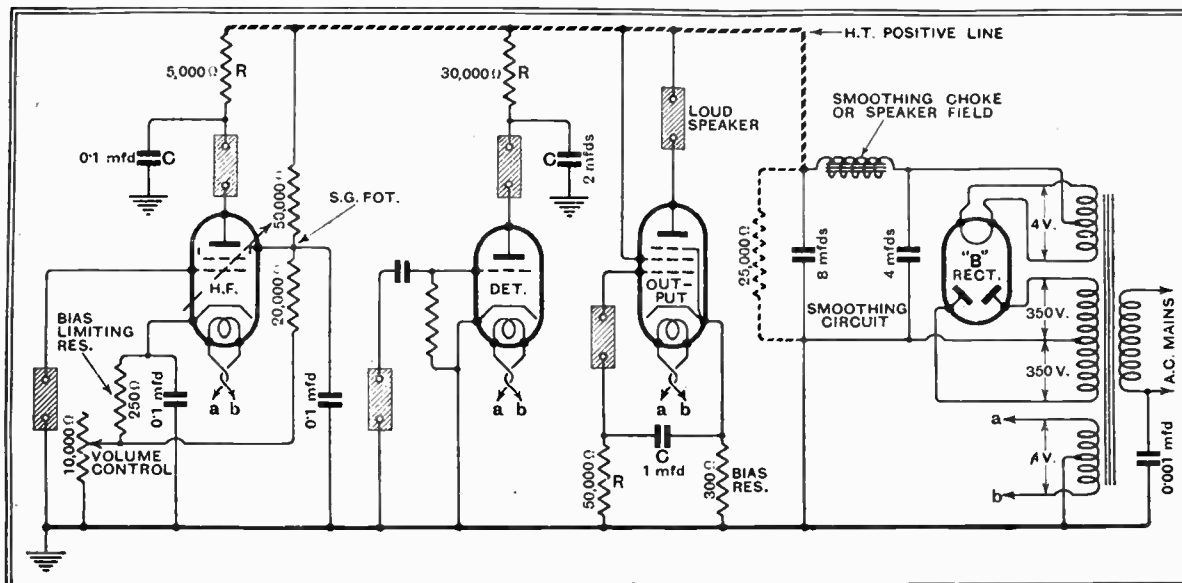
With regard to filament supply, hardly anything could be done, but, with a little luck, the early wireless enthusiast could make himself independent of the battery station by using a trickle charger for his accumulator.

Serious attempts to evolve a real all-mains set met with a measure of success in 1926. A series of Gambrell receivers, produced in that year, were fed from a valve rectifier delivering 60 milliamperes at quite a high voltage. The smoothed

output of this rectifier supplied a chain of series-connected 0.06 amp. valves with filament current, H.T. supply, and grid bias potentials, the general arrangement being reminiscent of D.C. set practice.

In the same year came the far-reaching innovation of the indirectly heated A.C. valve. Up to then all valves were heated by the passage of current through their cathodes, and so heating by means of A.C. was virtually impossible where any subsequent magnification was required. As alternating differences

of potential across a combined cathode-filament were inevitably impressed on the grids to a more or less serious extent, it was impossible to get reasonably hum-free reception. The new I.H. valve, on the other hand, had a separate heater and cathode, the latter element being raised to the necessary working temperature by



The power supply system of a typical modern A.C. set (the Ferrocart III) simplified by omitting grid and anode impedances, which are represented by shaded "boxes." The 25,000-ohm loading resistance reduces H.T. line voltage to the required value, at the same time ensuring ample magnetising current for the speaker field and restricting the initial rise of voltage.

necessary to employ comparatively elaborate series-parallel filament networks.

In early D.C. mains sets the detector valve often gave trouble, which was sometimes overcome by the drastic expedient

supply for the sets of the period. Smoothing was very similar to that used to-day, but the finer points were not appreciated.

Special rectifying valves, both for H.T. and L.T., soon appeared, and by 1925 the

The Mains Set—

heat radiated from the former. In this way the difficulties connected with A.C. filament heating were overcome, and a great impetus was given to the design of true all-mains sets.

Anode voltages at first were quite low; we regarded the power supply unit merely as a substitute for the battery, and for a time were quite satisfied to get the same output from it, plus the advantage of consistency and reduced upkeep cost. But, as better output valves were produced, the advantage of higher voltages became evident, and as any desired voltage was readily obtainable from A.C. mains there was little need to be niggardly.

In conjunction with the early I.H. valves, it was quite customary to use a directly heated battery valve of the super-power type, its filament being fed with A.C., stepped down to the rated voltage. Later on, output valves of the indirectly heated type became available, and also special types for direct A.C. heating, with thick filaments.

The early A.C. sets suffered from various defects, not the least serious of which was grid emission in the indirectly heated valves. The grid became coated with emissive material thrown off from the cathode, and itself began to emit electrons when its temperature became sufficiently high—as it often did.

All Mains—Except Bias

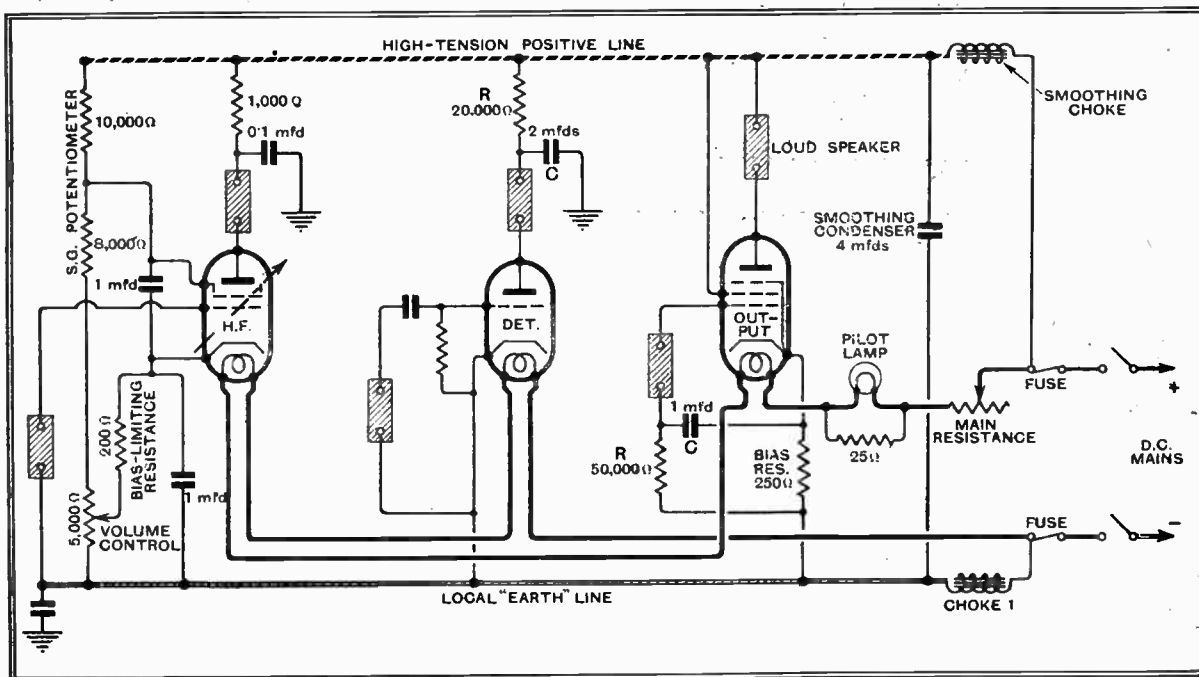
Automatic grid bias gave a lot of trouble to designers, and sometimes they chose to include bias batteries in sets which otherwise derived all their working voltages from the mains. This proved to be a bad move; the uninformed public naturally neglected the bias batteries, with disastrous results to the quality of reproduction and also to the valves. Those who avoided the use of batteries entirely often went to the length of employing a separate bias unit with its own rectifier. True self-bias, where grid voltage is derived solely from the anode current of the valve itself, was looked upon with suspicion, as cathode-heater insulation was another weak point in the early I.H. valves; it was dangerous to work them with appreciable differences of potential between these electrodes.

The Westinghouse copper-oxide rectifier, introduced in 1927, played an important part in establishing the all-mains receiver. This device, on account of its permanency, robustness, and simplicity, became almost immediately a serious competitor to the valve, and was

used for the supply of H.T., grid bias, and also for accumulator charging.

The modern A.C. set dates from about 1929 or 1930, when the defect of grid emission in I.H. valves was finally overcome by improvements in construction,

anode feed circuits of those valves requiring less voltage than that of the H.T. positive "line." A somewhat elaborate potentiometer network is provided for maintaining a reasonably constant voltage on the H.F. valve screening grid.



The power circuits of the "Modern D.C. Three" serve to illustrate present-day practice in D.C. set design. Wiring of the series-connected valve heaters is shown in heavy lines.

by which it was ensured that the grid should run cool. Since that time A.C. sets have no longer been looked upon merely as unreliable substitutes for those with battery valves; they are definitely better, on account of the inherently greater efficiency of I.H. valves with equi-potential cathodes.

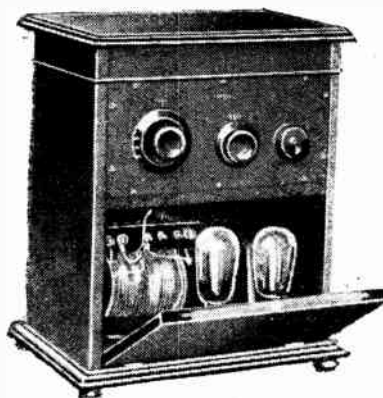
Nowadays the design of an A.C. set has become an exact science, and follows almost stereotyped practice; even a short-wave receiver may be made to operate as satisfactorily from the mains as from batteries. The power supply system for a typical three-valve circuit will seldom be basically different from that shown in the accompanying diagram. Anode current is derived from a full-wave valve or a metal rectifier, smoothing being effected by the loud speaker field in conjunction with large condensers. These condensers may be of the electrolytic type, which, apart from combining high capacity and compactness with low cost, have the convenient property of restricting undue rise in H.T. voltage by developing a leak when excessive potentials are applied to them.

Valves are customarily self-biased, each by the flow of its own anode current through a bias resistor inserted in the cathode lead. Decoupling or voltage-reducing resistances are inserted in the

After many delays, the D.C. mains user has now been placed in almost as good a position as those with A.C. supplies; his remaining handicap is a limited H.T. voltage. Economical indirectly heated D.C. valves, virtually equivalent to their A.C. counterparts, have recently been produced, and they may be operated with differences of potential of well over 100 volts between cathode and heater.

The power supply system of a present-day D.C. set is generally on the lines indicated in the diagram on this page. It will be seen that the main difference, as compared with an A.C. receiver, is that the valve heaters are wired in series. The principle of self-bias is adopted—indeed, there is no satisfactory alternative—and all cathodes, grids, and anodes are returned to a local "earth." The original element of uncertainty has almost disappeared, and a set planned on these lines can be depended upon to work well in any circumstances.

Radio apparatus of almost every kind is now operated successfully from the mains, and few difficulties remain to be overcome. Excessive variations in supply voltage are still met with, but the position is improving, and it is being brought home to the supply companies that they are under a legal obligation to deliver their product "true to label."



Completely independent of batteries: a Gambrell A.C. set of 1926.

RADIOCRACY

By
FREE GRID, Junior

Glancing Back at the Future

IT is with some trepidation that I take up my pen to record the events which have led up to the distressing state of affairs in which our country now finds itself. At great personal risk I succeeded in constructing the all-metal subterranean chamber in which I write, hoodwinking the authorities into believing that I was experimenting with a new earthing device. I am now in the one place where, owing to the screening effect of its walls, the ears and eyes of the all-powerful bureaucracy still known as the B.B.C. cannot penetrate.

It is not yet eighty years since the natal cry of the present tyranny was heard on an upper floor in what used to be known as Marconi House. In its early years it showed but little sign of the cloven hoof; indeed, it was welcomed in the homes of the people as a new invention and was regarded with friendly eye even by theatrical producers and similar parasites who at that time batted on the easy tolerance of the public.

When, however, the monster passed its teething stage the theatrical mandarins began to sense a growing menace to the fatness of their wallets. But their resistance was brief and transitory, and at the age of ten years the monster had already shown signs of riding roughshod over everything that opposed it. Its Director-General, after whom the first month of the

soon as they secured the reins of government.

In the decade following, the monster threw off the last vestige of its sheep's clothing and succeeded in getting Parliament to pass a Bill putting all forms of entertainment in B.B.C. hands.

The end of all our liberties came in the year 1970 when the B.B.C. succeeded in getting Parliament to pass a Bill abolishing itself and placing the destinies of this once fair land into their own sacrilegious hands, so establishing the present reign of terror. With all power in their hands the B.B.C.'s first step was to revise the calendar and commence a new era from the date of the foundation of the B.B.C. Thus the year 1922 A.D. became 1 anno Bebeciensis; hence we are now in the year 78 A.B. At the same time all measurements of time were changed over to the decimal system, the months were reduced to ten and their names changed to commemorate the vandals who took part in our present enslavement. As these notes are intended for (I hope) a newer and a better civilisation, I shall stick to the old-style calendar.

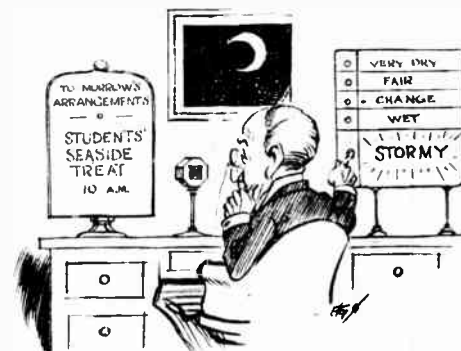
Goodbye to All That

Following the establishment of the radiocratic form of Government in the year 1970 our ancient and hard-won freedom was speedily abolished, Magna Carta being torn up in the latter part of the same year. One of the earliest acts of the radiocracy was to abolish unemployment by the simple expedient of making it illegal. In the following year all unofficial books and newspapers were suppressed. During the next five years our children were educated on lines laid down by the B.B.C. History was definitely abolished to the great delight of the younger generation and geography was greatly modified, with the result that a child of to-day has no knowledge of any history preceding the present era nor has he anything but a hazy inkling of those lands beyond the sea where freedom still reigns. Some of the more daring of grandparents had ventured to tell their sons of the last European war.

I myself well remember how in my early years my late-lamented father told me of it and stressed the terrible privations and suffering which it brought about. Before his lamentable death at the hands of the B.B.C., however, he had discreetly changed his opinions and used to sigh for the good old days when he spent many

happy hours knee deep in icy water with but little to eat and the shells bursting all around him.

In those days one was not compelled to take protein and carbohydrates in the special quantities and times prescribed from Broadcasting House; it was permissible to eat anything you could get hold of, while drinking was allowed for at least six hours during the day. It will probably be remembered that quite early after the founding of the new regime my lamented parent was arrested on an old charge of breaking into Broadcasting House some thirty-five years previously and summarily put to death, his embalmed body being suspended in the foyer of Broadcasting House as a public example. There it may still be seen.

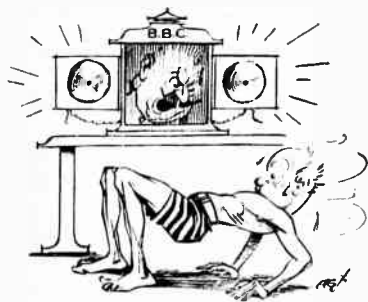


As decided upon by the D.-G.

All sport was, of course, eventually abolished as the Government decided that the entertainment provided by them in the evening was sufficient for human needs. These entertainments, I must point out for the benefit of posterity, consisted and still consist of moral and intellectual uplift dramas written by synthetic dramatists devised by the B.B.C. technical experts.

Graded and Degraded

It was not long before further interference with our daily liberties took place, and we were and still are all compelled to rise from our beds in the morning at the word of command barked on the television screen opposite our beds by an individual somewhat reminiscent of my father's prismatic description of the old-time Sergeant-Major. Severe punishment is meted out to all those who do not spring to it smartly. Once out of bed we are compelled to go through a brutalising routine of physical exercises still under the harsh voice and baleful glare of the B.B.C. official. This finished, and our baths taken by numbers in the same manner, breakfast is taken, consisting of a Government tablet containing the necessary number of proteins and carbohydrates for the day's needs. This is, of course, the last as well as the first meal of the day. Breakfast over, scholastic



A brutalising routine.

year is now named, had already stated that he intended to give the people such entertainment (save the mark) as he thought they needed rather than that for which they craved. Although the monster gradually gained a stranglehold on our educational system during the next few years it cannot be said that the menace became acute until the perfection of television in what would be about the year 1940 in the old-style calendar, or 18 anno Bebeciensis in the new-style calendar established by our present oppressors as

PROGRESS!

COLVERN FERROCART COILS

OPEN A NEW ERA IN RADIO RECEPTION

It has long been recognised that tuning coils of maximum efficiency are of paramount importance in the attainment of selectivity and sensitivity from a receiver. The design of tuning coils has made large strides in the past few years, but space considerations and the realisation of effective screening for band-pass filters and between the various stages of a receiver has involved the use of relatively small winding diameters for the coils. Thus, although actual progress has been made, this self-same progress has involved a reduction in the efficiency of the coils themselves.

Colvern Ferrocart coils have, however, changed all this at one fell swoop. These coils, though of considerably smaller dimensions than the relatively inefficient screened air-cored coils to which we have become accustomed, are actually more efficient than the unscreened Litz wound large diameter coils which have always been regarded as the last word in efficiency but which could never be put to practical use in a receiver, owing to their bulk and the impossibility of screening without very serious loss of efficiency.

The first types to be available are:—
TYPE F1—F2. Input band-pass filter.

Constant selectivity, ganging unaffected by variations in aerial reactance, symmetrical resonance curve.

TYPE F3.

Autotransformer inter-valve coupling with reaction, ganging perfectly maintained on both wave ranges by transfer of tapping point in correct turns ratio, practically constant reaction.

SPECIFIED FOR THE "W.W. FERROCART THREE"

One set F1, F2, F3 Coils ganged on sub base plate with wave change switch .. Set **50/-**
One aluminium chassis, pierced with necessary holes, finished grey cellulose **10/6**
One 10,000 ohms Potentiometer, Type ST5C .. **5/3**

Regarding the performance of a three valve receiver, standard in other respects, but employing the above combination of Ferrocart coils in place of the corresponding types of air-cored coils, we do not think we can do better than quote a few passages from the "Wireless World" review of the receiver they have designed round these coils.

"The introduction of ultra-efficient iron-cored tuning coils has at last made it possible to obtain from a simple straight set a degree of selectivity which bids fair to rival that of the superheterodyne. To those accustomed to ordinary sets the selectivity given by the new coils is a revelation, and the principle undoubtedly opens out a new era in radio reception and will give a new lease of life to the straight set."

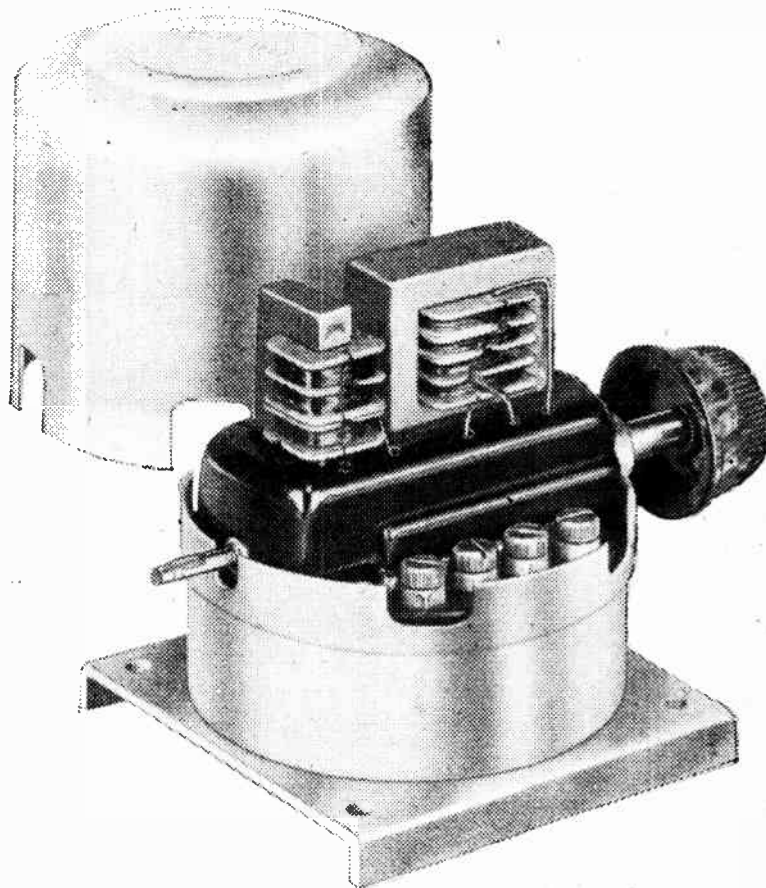
"The improvement in performance which this receiver shows over a similar type fitted with ordinary coils is so great that it can be realised only by actually handling the set . . . it is in selectivity that the performance is so outstanding. It is no exaggeration to say that the selectivity is considerably greater than that given by the average two H.F. set with four tuned circuits."

All Colvern Ferrocart coils are matched to the following inductance values—medium wave 157 μ H, long wave 2,200 μ H when screened, the departure from these values is guaranteed to be less than $\frac{1}{4}$ of 1%.

MADE UNDER LICENCE FROM THE PATENTEE, HANS VOGT.

COLVERN LTD., MAWNEYS ROAD, ROMFORD

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.



NO MORE MISSED PROGRAMMES

DOWN!
TIME TO RECHARGE



NOTHING EXTRA TO PAY FOR THE AUTOMATIC DISCHARGE INDICATOR

The Oldham Automatic Discharge Indicator is like a watchman. When your accumulator begins to run down, that beckoning bead says "It's time to recharge!" And there's nothing extra to pay for this ingenious indicator. Get a Lively "O," the accumulator that bristles with exclusive features! It's ready to do its job five minutes after you've bought it... ready to give you extra hours of listening luxury... without trouble—for less money.



The Lively O ACCUMULATOR

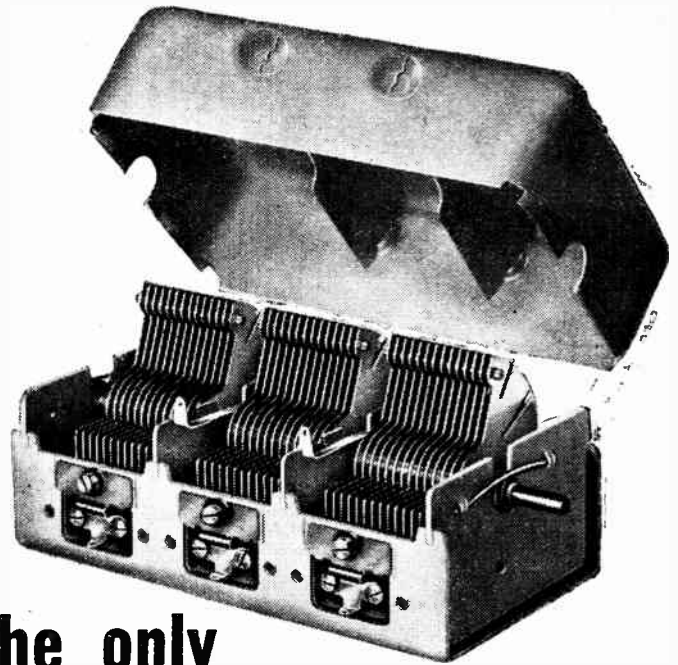
British made by Oldham & Son, Ltd., Denton, Manchester, and at London, Glasgow, Belfast and Dublin. Makers of Dry Batteries & Accumulators Established 1865.

MADE BY



0.25 (Green Label) 25 amp. hrs. (actual) for 2-valve Sets - - - - 5/6	0.50 (Red Label) 50 amp. hrs. (actual) for 3-valve Sets - - - - 9/-	0.75 (Blue Label) 75 amp. hrs. (actual) for 4-valve and Larger Sets - 12/6
---	---	--

ALWAYS IN THE VAN OF PROGRESS



The only GANGED CONDENSER

specified for the

FERROCART III

"The aim has been to obtain a maximum of selectivity and the choice of suitable components becomes quite limited The sharper tuning renders ganging more critical and necessitates the choice of a ganged condenser with very accurately matched sections."—"Wireless World," Feb. 24

British Radiophone ganged condensers have been chosen exclusively for use in the "Ferrocart III" because they are the only condensers that will satisfactorily tune with the new Ferrocart coils.

British Radiophone Ganged Condensers are constructed with such precision that accuracy is guaranteed between any two sections to within 1 m. mfd. or 1/2% whichever is the greater.

The main frames are built up from sheet steel so as to resist all tendency to distort. The best aluminium is used for the vanes, which are of substantial thickness and well spaced by a unique method eliminating any possibility of error.

Patented spring loaded bearings fitted with keep plates are employed, preventing end play and ensuring smooth spindle rotation.

Specified for the

"WIRELESS WORLD" FERROCART III

Standard 3 gang Condenser; with R.H. Trimmers complete with cover, type 344J	28/-
Escutcheon and Disc Drive Assembly with pilot lamp attachment	5/-
Volume control 10,000 ohms, type 474	5/-
Q.M.B. Change-over switch, type 450	1/9

Write for full descriptive literature.

BRITISH RADIOPHONE LTD.
ALDWYCH HOUSE, ALDWYCH, LONDON, W.C.2.

RADIOPHONE GANGED CONDENSERS

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

Radiocracy—

studies (adult and juvenile) commence and last throughout the day since all necessity of earning a living has long since been abolished, our clothes as well as our food being provided by the Government.

Soon we were all graded into various categories according to our intellectual capacity as revealed by the universal system of psycho-analysis developed by the B.B.C., general listening was forbidden, and fixed wavelength receivers were doled out by the Government, the wavelength being allotted according to the mental category of the listener; he was thus unable to obtain any of the intellectual sustenance intended for anybody in another category.

But no matter in what category a person was placed, he was compelled to have a visaphone—or combined sound and sight instrument—hanging from each wall of every room, and in the garden as well. Thus throughout every moment of his life, whether sleeping or waking, he was under the protective eye of a B.B.C. official.

With regard to our physical well-being, I may mention that ill-health of any kind was definitely made a criminal offence in 1977. It did not take long for the B.B.C. to establish a regular medical inspection service, and now we are examined every morning through the visaphone by a B.B.C. medical man.

Birds, Beasts and Flowers

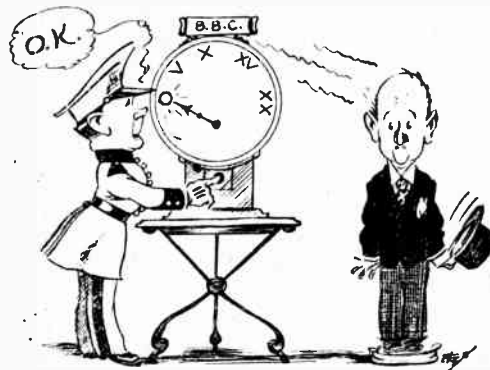
Naturally such old-fashioned methods of diagnosis as temperature taking and auscultation have long since been abandoned in favour of radio methods, which consist in measuring the ether-wave absorption of any suspected organ and comparing it with its normal absorption. Carefully tabulated data concerning the inner working of every citizen are kept in the medical archives of Broadcasting House.

It seems hardly credible that our weather, owing to what must be conceded was a really marvellous development by their technical experts, is now absolutely under the control of the B.B.C. Instead of going through the old-world custom of reading a weather forecast, which, judging by its reliability or lack of it, was apparently obtained by the study of the chief announcer's hand made by an old-fashioned palmist, the Corporation now issues the exact barometer and thermometer readings, wind velocity, etc., which have been decided upon by the Director-General. This is announced in the general orders of the day which are broadcast the previous evening.

I well remember the shocked but naturally suppressed feelings of the populace some twenty years ago, when the fiat went forth for the demolition of Westminster Abbey and similar buildings on the ground that they did not comply with the artistic requirements of the B.B.C. A similar futile outcry arose when the countryside was denuded of all trees, flowers, and other forms of vegetation, synthetic articles taking their places. Birds, feathered or

otherwise, were replaced by loud speakers in the substitutes for trees.

The site of Westminster Abbey is to-day



All thoughts picked up.

occupied by a chromium plated steel structure in which the remains of the outstanding personalities of the B.B.C. are entombed. The site of St. Paul's is taken up with a similar mausoleum for the Directors-General.

It is fifteen years now since the edict went forth that all our streets and cities were to be renamed after famous B.B.C. officials.

The last straw has been the invention of the thought machine, whereby the thoughts of each individual are picked up and transmitted to the B.B.C. It was indeed fortunate that before this final calamity occurred I had already installed this metallic underground chamber, effectively screened from all Government spies for the simple reason that, as yet, none of the experts has invented any method by which ether waves can penetrate thick metallic plates. This naturally accounts for the decree forbidding the use of metal in the construction of buildings.

What will be the outcome of it all I don't know, but something vast and cataclysmic is needed which will make the French Revolution appear like a Sunday School treat. Oh for the dear old days of Arcady in 1933 or thereabouts when our mis . . . [Here the manuscript is torn.]

DISTANT RECEPTION NOTES

SIDEBAND splash is now by far the worst bugbear of the long-distance man equipped with a sensitive and selective receiving set. He may have, for instance, no difficulty in separating Katowice—one of the most reliable of European stations—from its wavelength neighbour, Athlone, no kind of interference being observable. But the moment the Irish station begins to transmit speech the unintelligible splutterings of sideband splash ruin the reception of Katowice.

The same is true of many another pair on adjacent wavelengths: the Poste Parisien and Breslau, the North Regional and Langenberg, the Scottish Regional and Hamburg, Heilsberg and Bratislava are all examples. The sad part of it is that the trouble is mainly due to hopeless overmodulation by transmitting stations during spoken items, and that very little can apparently be done with the best of receiving sets to improve matters.

The listener in all parts of Europe has shown emphatically that he wants to be able to hear foreign stations when the local programme is not to his liking. It is surely the duty of the broadcasting authorities in the many countries of Europe to ensure that the performances of a first-rate set are not unduly handicapped by delinquencies on their part. This matter should be thoroughly thrashed out at the forthcoming conference of the U.I.R.

The Berlin Relay continues to give a good account of itself on 283.6 metres, though there is still no official information regarding any increase in power, or the *solus* use of the nominal common wavelength by this station. If any reader has been in the habit of skipping over 283.6 metres, thinking that it could not possibly be worth while spending time in tuning to a group wavelength, I hope that he will give the Berlin Relay a trial on one or two nights during the present week, for it is often by far the best medium for the reception of the excellent Berlin programmes.

What exactly is the power output of the

Hungarian station using officially the wavelength of 209 metres, though at the present time its transmissions make a closer approach to 210 metres? In some lists it appears as a mere fraction of a kilowatt, whilst in others it is shown as many times as much. It certainly sounds like several kilowatts!

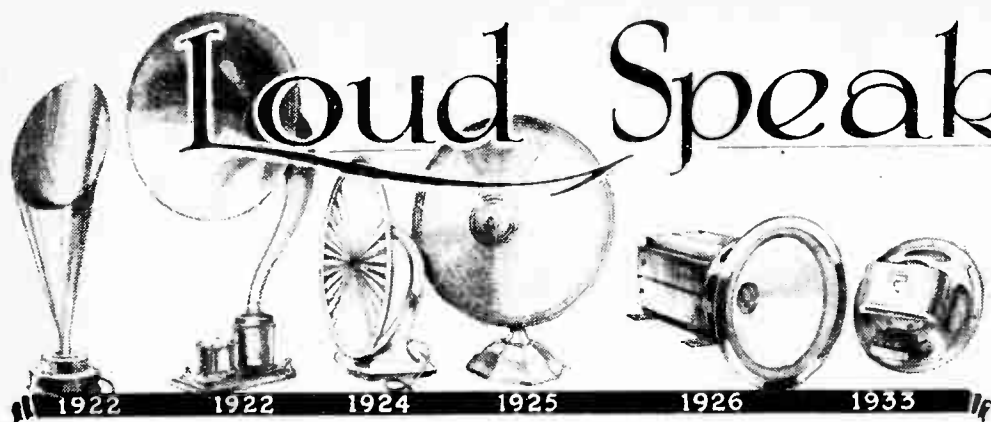
Atmospherics Mar Long Waves

I was amused to read recently in a lay paper that, though American reception might provide certain thrills, it was hardly for the man in the street, since it demanded almost uncanny feats in the way of fine tuning. Anyone who has heard WCAU, WPG, WIOD, WTAM, WTIC, or KDKA on a night when conditions were favourable may be excused a smile on reading such statements. These stations, and often a good many others, are far easier to tune in than most European stations, for their strength is amazing, and one has not the difficult task of separating them from powerful wavelength neighbours.

The big changes that we have experienced recently in temperature and in the barometric level have produced a certain amount of atmospherics, which have had at times an adverse effect upon the reception of long-wave stations. Still, we can hardly complain, for Huizen (Hilversum programmes), Zeesen, Radio-Paris, and Kalundborg have been coming in with fine strength both in daylight and after dark. Motala, too, is very well heard, though Warsaw has been, perhaps literally, a little under the weather.

The evils of sideband splash notwithstanding, it is a poor set nowadays that cannot give its user a choice of at least a dozen alternative programmes of genuine entertainment value on the medium waves on any evening of the week. My own "star" list at the moment is: Nürnberg, Hörby, Trieste, Turin, Hilversum (Huizen programmes), Bordeaux Lafayette, Genoa, Milan, Brussels No. 2, Strasbourg, Toulouse, Stockholm, Rome, Prague, Florence, Munich, and Budapest.

D. EXER.



Loud Speakers—Are We

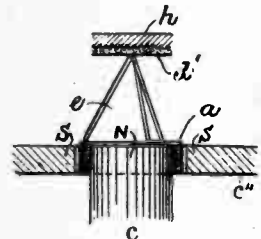
THE cone diaphragm moving-coil loud speaker made its debut in this country in 1926. To-day it is the predominant type. In the intervening period what improvements, if any, have been made and in what direction are we to look for future developments?

Past Progress—Future Development

WHEN broadcasting started in this country reception on headphones was to all intents and purposes universal. In 1922 Messrs. S. G. Brown introduced their "loud speaking telephone" with its straight-sided conical horn, but at first it was regarded merely as a novelty for demonstration purposes, and the majority of broadcast listeners, while admitting the advantages of the new device for domestic reception, were unshaken in their belief in the superiority of the crystal set with headphones from the point of view of "purity of tone."

The general adoption of the loud speaker by the listening public was therefore dependent on the attainment of quality of reproduction comparable with crystal-headphones standard. The introduction of the curved horn, roughly approximating to the now well-known exponential law of expansion, marked the first step forward. Then attention was directed to the driving movement, and the Western Electric balanced armature and Magnavox moving-coil horn loud speakers did much to shake the confidence of headphone enthusiasts.

The landslide in favour of loud speaker reproduction was undoubtedly started by



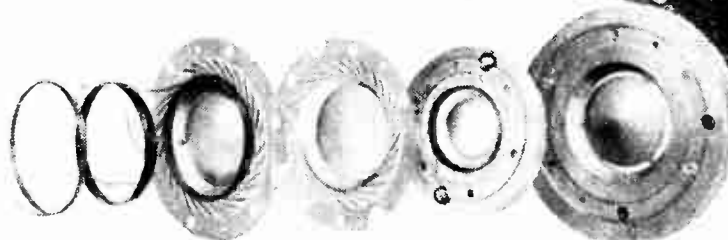
A moving-coil loud speaker in 1898! (Reproduced from British Patent No. 9712 by Sir Oliver Lodge.)

the introduction in 1924 of the Sterling "Prima" pleated diaphragm. The improved bass response and apparent absence of direction effects made a very deep impression, and definitely established the so-called "hornless" loud speaker in public favour. The next two years saw a steady advance in the design of this type, and the Celestion reinforced diaphragm and the Western Electric "Kone" models will always be remembered as landmarks in the development of sound reproducers.

All this time the moving-coil principle had been sadly neglected. Patented in

1898 by Sir Oliver Lodge, the only important application to commercial loud speakers was in the Magnavox horn. The prototype of the modern coil-driven cone loud speaker was developed in America by Rice and Kellogg in 1925, and the first commercial model made its appearance in this country in 1926 as the B.T.H. R.K. Its superiority over all previous types was at once apparent. The full bass response, comparative freedom from harmonic distortion and excellent reproduction of transients were instantly appreciated by enthusiastic amateurs, and there was quite a boom in the supply of kits of parts for home construction.

By 1928 it was evident that the moving-coil loud speaker had come to stay, but so far no effort had been made to cater for the mass of broadcast listeners using

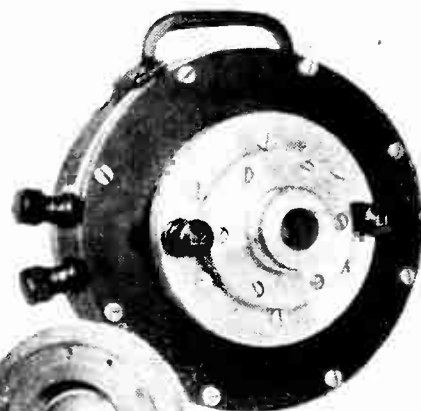


mains or battery sets of low power. The moving-coil speakers of this period were massive affairs with cast-iron mains-energised field magnets, large-diameter coils, and wide air gaps. Their sensitivity was low, and it was generally accepted that only the more affluent members of the so-called "L.S.5 brigade" could afford to run them. Nevertheless, the quality of reproduction at this stage was of a very high order, and it is open to question whether that standard has been improved upon.

The fact that the majority of listeners continued to use their moving-iron cone loud speakers was no reason for supposing that they would continue to do so if moving-coil quality were offered them at a price within their reach. As the

majority of sets at that time were battery operated it was evident that moving-coil loud speakers for the masses would have to be of the permanent-magnet variety.

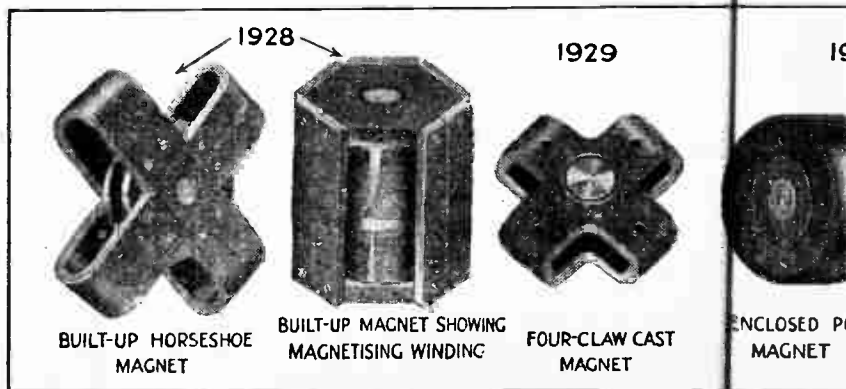
The subsequent trend of commercial loud speaker design has been largely influenced by the development of the permanent magnet. The earliest examples



Talking pictures have brought the coil-driven horn loud speaker to a high state of efficiency. This Western Electric unit has an efficiency of 50 per cent. compared with 1 or 2 per cent. in the case of domestic broadcast loud speakers.

in 1928 were cumbersome and expensive. For the most part they were built up of standard horseshoe or bar magnets, and in some cases magnetised by field windings

STAGES IN THE DEVELOPMENT



BUILT-UP HORSESHOE MAGNET

BUILT-UP MAGNET SHOWING MAGNETISING WINDING

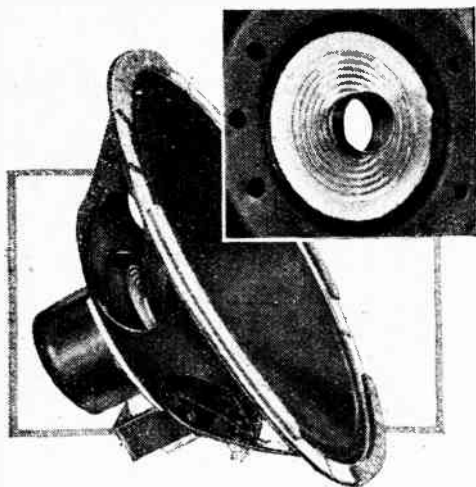
FOUR-CLAW CAST MAGNET

ENCLOSED PERMANENT MAGNET

Progressing?

which had to be left inside the magnet assembly.

The first real advance came with the introduction by Swift, Levick and Dar-

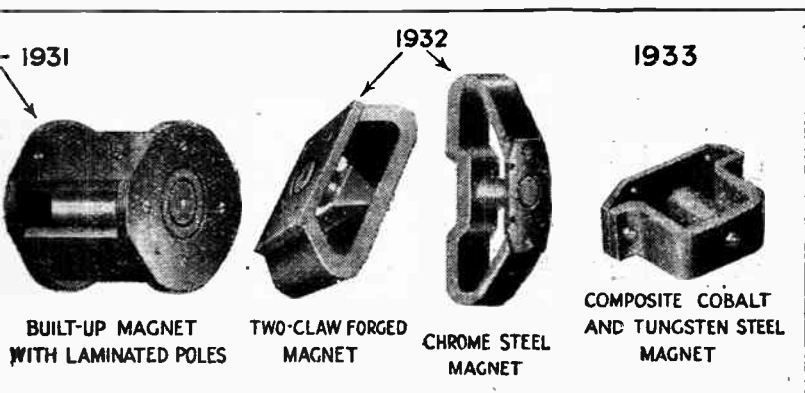


Accurate and permanent centring of the moving coil has been necessitated by smaller air gap clearances in the field magnet. In the Sonochorde loud speakers a concentrically corrugated sub-diaphragm gives adequate freedom of movement with great lateral rigidity.

wins in 1929 of the four-claw cast-steel magnet with mild-steel pole pieces. This type held the field for the next two years, and although totally enclosed pot magnets and built-up magnets with laminated end plates had a short vogue in 1931, it was not until 1932 that the next important advance was made. It was then found that forged bars would give just as satisfactory results as cast magnets at a much lower cost, and the two-claw magnet became the standard type. The latest development is the composite magnet in which two different grades of magnet steel are employed.

For a given weight of magnetic material the useful working flux is increased as the length of the air gap is reduced. Thus we find that the loud speaker manufacturers in their efforts to reduce prices have been

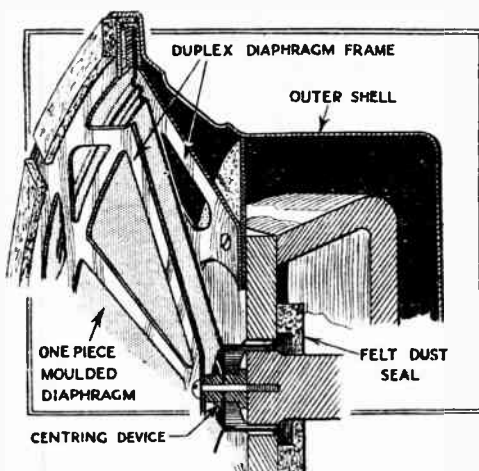
OF THE PERMANENT MAGNET



forced to accept progressively smaller clearances for the moving coil. This has proved a great incentive to precision methods of manufacture, and the modern small permanent magnet moving coil is vastly superior from the point of view of mechanical construction to the massive hand-made product of the 1928 period.

The next step was to ensure reliability, for, although the problem of producing loud speakers with small clearances had been solved, the percentage of returns due to damage in transit and repeated handling in the assembly shops of set manufacturers was high. The question of mechanical rigidity and permanence of alignment has, however, now been solved, and the Magnavox range of loud speakers and the R. & A. "Victor" model are notable examples of the methods adopted to afford protection for the diaphragm.

To sum up the position, it can be said without fear of contradiction that the small moving-coil loud speaker of to-day shows a great advance on its predecessor



The R. & A. "Victor" loud speaker; an example of modern methods of construction in the interests of mechanical strength and permanence of alignment.

of five years ago from the point of view of consistency of performance between individual specimens of a given make and reliability under normal conditions of operation. At the same time mass-production methods have resulted in standardisation, not only of mechanical design, but also to some extent of quality of reproduction. Nevertheless, the general effect is remarkably good, and there can be no doubt that the purchaser of a small moving-coil loud speaker to-day

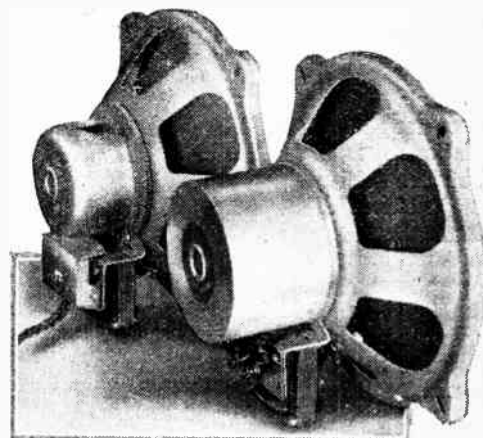
gets a better performance for his money than he did in the days of the moving-iron cone loud speaker.

Eliminating for the moment the question of price, can it be said that the performance of the average moving-coil loud speaker is better than it was in 1928? Without going so far as to say that there has been a definite retrogression, no

one will dispute that progress has been in the direction of supplying a certain standardised performance at decreasing cost and with increasing reliability. The time has now come to call a halt to the price war, and to divert all new technical developments to improved performance at existing prices.

The Future

With a few minor improvements the small, low-priced, permanent magnet moving coil may be regarded as having reached finality. The advent of quiescent push-pull amplification will ensure its survival for some time to come, for by this means we can supply the power necessary to work it satisfactorily from battery-operated receivers. It is now time that manufacturers turned their attention to the requirements of the connoisseur of high-quality reproduction. Wider frequency response, freedom from harmonic distortion, and better transient reproduction are required, and it will be interesting to see in which direction future developments will move. The possibilities of the single unit coil-driven cone have now been fully exploited, and it is probable that dual or triple units may be required to cover a wider frequency range. Under the stimulus of talking pictures the horn loud speaker has been brought to a high state of efficiency, and acoustic output up to 50 per cent. of the electrical input power are not uncommon. The experience gained in this field has not yet been applied to domestic broadcast reproducers, where efficiencies of the order of 1 or 2 per cent. are still accepted without demur. Exponential horns of large flare diameter suitable for frequencies down to 50 cycles



A future trend? The field magnet in the "Magna" loud speaker compared with the standard Magnavox model.

are not suitable for use in small rooms, but there seems no reason why a cone diaphragm moving-coil unit should not be used for the lower half of the musical scale, and a short coil-driven exponential horn designed to cover the high frequencies up to 10,000 cycles. Failing the discovery of some fundamentally new principle this would seem to be the logical development of the quality reproducer of the near future.

The H.F. Amplifier

Progress—Past and Present

By A. L. M. SOWERBY, M.Sc.

THE ever increasing demand for selectivity has evolved an H.F. amplifier in which more stages are used, though each has a smaller stage gain, this being the price paid for easier tuning control. For the future the author predicts the extensive use of iron-cored tuning coils and the introduction of the variable- μ pentode in place of its tetrode counterpart.

DETECTORS are of several types, but all, without exception, have one common characteristic. None of them will operate satisfactorily unless the signal applied to them is reasonably large. The exact numerical

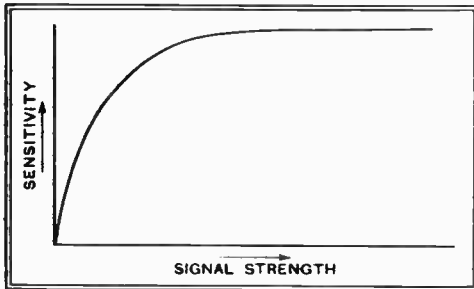


Fig. 1.—Typical sensitivity curve of detector. The sensitivity, though both high and constant for strong signals, is vanishingly small for weak ones.

value of the high-frequency voltage necessary to enable the detector to give an audible signal is not, perhaps, susceptible of precise definition, but it is quite certain that the average foreign station delivers to the set a signal that falls far below the necessary intensity. For reception of such stations it is, therefore, essential to insert, between the aerial and the detector, one or more stages of high-frequency amplification.

A valve may be regarded as a device operated by a voltage applied to its grid, and releasing in response to this a corresponding current in its anode circuit. This current, in order to be made available for operating the next valve in the chain,

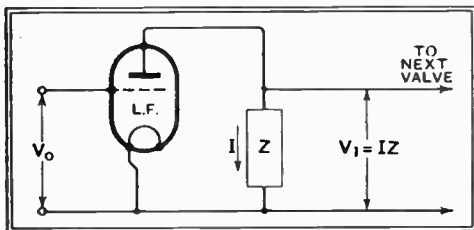
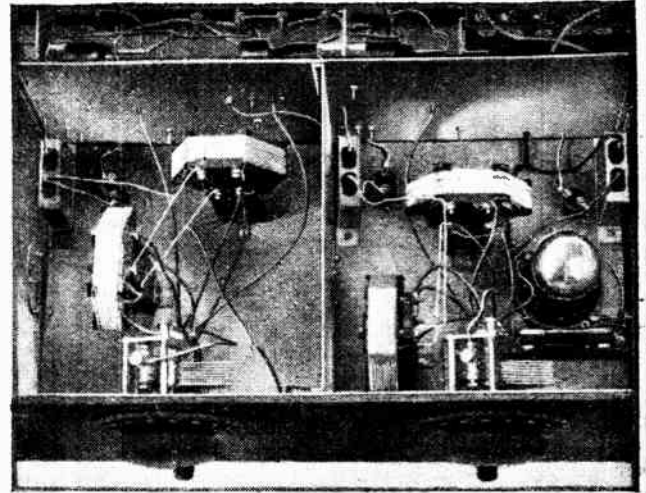


Fig. 2.—Simplified scheme of amplifying stage. The received signal voltage V_0 causes a current I to flow in the anode circuit: the voltage V_1 dropped by the passage of this through the impedance Z operates the next valve. The ratio V_1/V_0 is the stage gain.

Part of an early screen-grid set, in which the neutrodyne style of construction was still used. Stage-by-stage screening made ganging practically impossible.



must be caused to set up a voltage by making it pass through an impedance, and this, in the interests of efficient amplification, will naturally be made as high as possible. The only known means of building up an impedance high enough to offer adequate opposition to the flow of high-frequency currents is by the use of a tuned circuit. The history of high-frequency amplification is, therefore, largely the history of the evolution of the tuned circuit and of the valve to be used with it.

In the early days of broadcasting the simple tuned-anode circuit of Fig. 3 was the greatest favourite, the valve used with it being of very low efficiency according to present-day standards. The coil L_2 was a plug-in coil of one type or another. Owing to the capacity between the grid and anode of the valve no appreciable amplification could be attained before the stage went into self-oscillation. There was, therefore, no incentive to improve the efficiency either of the valve or of the tuned circuit, and for some years practically no progress at all was made.

The introduction of the neutralised stage, in which the anode-grid capacity of the valve was balanced out in some such way as is indicated in Fig. 4, marked the beginning of true amplification at high frequency, for it then became possible for the first time to take advantage of valves and tuned circuits of high efficiency. Much work was done at this time, both on valves and coils, coils especially coming in for a great deal of attention. Their importance was enhanced by the fact that the valves at that time in use would only give really satisfactory amplification when

the tuned circuit following them had the lowest attainable losses. Very carefully made high-frequency transformers, with secondaries of Litzendraht on formers of large diameter, were the order of the day. A gain of forty-five times in a single stage was attained in the "Everyman Four" receiver (1926), and later receivers of similar pattern gave stage-gains running up as high as sixty times, the increase being due to improvement in valve characteristics.

Advent of Ganged Tuning

The arrival of the screen-grid valve, in which the anode-grid capacity is reduced to trifling dimensions by the interposition of the screen, led, though not immediately, to the disappearance of the neutralised triode stage. At first the development of

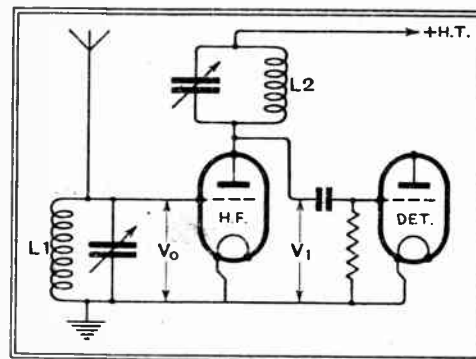


Fig. 3.—A practical interpretation, on 1924 lines, of Fig. 2. This is the "tuned anode" circuit. Note that H.T.+ is earthed for signal voltages so that the voltage V_1 exists across L_2 .

the amplifier proceeded on the old lines, tuned circuits of the customary very high efficiency being used, and yielding, with the new valve, unprecedented amplification. In some cases the resulting gain was so high that it was necessary to resort to neutralisation even when using a screen-grid valve, as in the "Record Three" receiver (1929), in which a gain of 500

times in a single stage was attained. Up to this time the use of more than two tuned circuits in a receiver had been exceptional, but the continually rising power of transmitters now began to make higher selectivity necessary. The increase in the number of tuned circuits required for this resulted in the appearance of sets with three, or even four, tuning dials, making them quite unfit for operation by

The H.F. Amplifier—

any but an expert. The next step, which began to be seriously considered early in 1930, was to link all the tuning condensers together on a common spindle and drive them from a single knob.

The Position To-day

As soon as this method of tuning became popular it was found necessary to abandon the high-efficiency tuned circuit, for these require a deadly accuracy of tuning that can only be attained with individual tuning dials. The earlier type of construction, in which large screening-boxes were used, each enclosing a complete stage with coil, tuning condenser, and wiring, was no longer necessary when coil efficiency was reduced, and it was found that coils individually screened in metal containers, though poor compared with the coils of neutrodyne days, could be made as efficient as is compatible with ganged tuning. The development of these led to the production of the multi-section gang condenser used to-day, and to the final emergence of the style of set-construction using screened components that now is almost universal.

Where do we stand to-day? What have we gained, and how much have we lost, in this complete metamorphosis of the high-frequency side of the receiver?

Quite evidently very much has been gained in convenience, both of construction and operation. One may say that selectivity, too, has been enhanced, because a receiver with three or four tuned circuits has become a practical proposition only since the introduction of ganging.

From the point of view of amplification per stage, modern practice is not particu-

used in all ambitious sets to provide the necessary coupling between the extra circuits. We use, in fact, two stages of amplification as against the single stage that would have been used a few years ago in a set of similar pretensions. Consequently, the gain between aerial and detector is more, not less, than in the receiver of earlier days; it is more, even, than could be squeezed out of a single stage to-day by the combination of the most refined tuned-circuit technique with the most efficient of modern valves.

A set designed on the lines popular in 1929, but equipped with modern valves, would contain one stage only. The gain between aerial and detector would probably be less than 350 times, and could hardly exceed 1,000 times even with construction of the most meticulous laboratory standard. The selectivity would be that of only two tuned circuits, which, though of high efficiency, would not give overall tuning so sharp as three less ambitious coils. Ganging would be so difficult as to be impossible, tuning less sharp, and sensitivity lower on the older design, while the saving of a valve and its associated components would certainly be insufficient recompense for the extra cost of the more elaborate screening required and

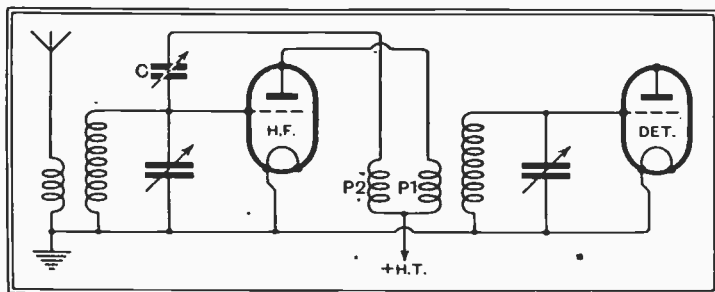
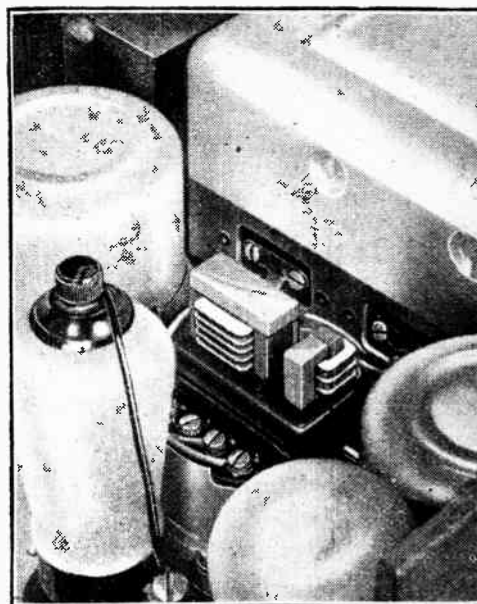


Fig. 4.—A typical neutralised stage. The voltage across P1 feeds energy back through the valve to the grid circuit, but this is balanced out by the energy fed from P2 through the tiny condenser C.

the vast amount of additional work in construction. In addition, the merely moderate selectivity of the older design, being due to two extremely sharply tuned circuits, would be accompanied by more loss of high notes than is involved in the higher selectivity of the modern set, with its three or four more heavily damped coils.

On balance there can be little doubt that the modern trend, which is to rely upon the valves for adequate amplification rather than upon the coils, and using two stages in preference to squeezing the last ounce of amplification out of a single stage, has everything in its favour. In this connection it must be remembered that the efficiency of modern valves is so high that the gain yielded by a screened-coil stage amounts, if tuned anode or tuned grid

is used, to well over 100 times in a mains set and some 60 to 70 times in a set using the less efficient battery valves. When a step-up transformer or tapped coil re-



Portion of Ferrocort III receiver lately described in this journal, showing iron-cored coils to which its high selectivity is due.

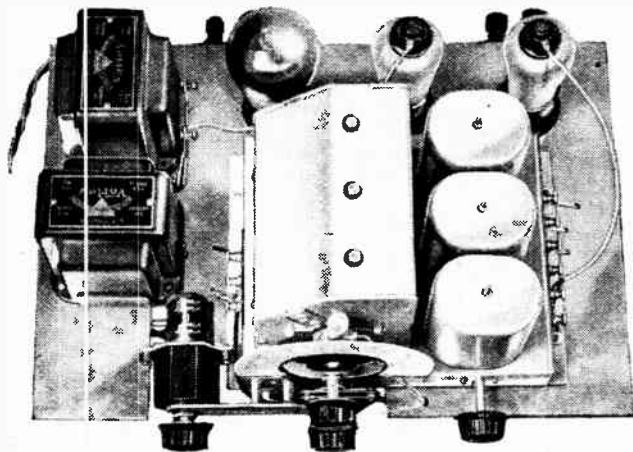
places tuned anode some amplification is deliberately sacrificed in the interests of additional selectivity, but the gain per stage that remains still exceeds that of which we were vastly proud only a few years ago.

In a word, the position is that in taking advantage of the efficiency of the modern screen-grid valve it has not been used as a means of pushing stage-gain up to record-breaking figures. Instead, we take our profits in the form of convenience and simplicity of construction, as ease of operation through ganging the tuned circuits, and as selectivity through the increased number of tuned circuits that can be handled in a ganged set.

Prophecy is notoriously dangerous, but it would seem that for sets demanding moderate gain and selectivity the high-frequency amplifier in its present form will continue to offer the best and cheapest design. For more ambitious sets the new iron-cored coils, as used in the Ferrocort III receiver, offer a means of enhancing amplification or selectivity very considerably indeed, though their characteristics inevitably require a high standard of accuracy in ganging. In the most ambitious sets of all the complexities of the tunable amplifier become so great that the fixed-tune amplifier of the superheterodyne provides the most practical solution.

In valves, present indications are that a drop rather than a rise in efficiency is the probable future trend, though the variable-mu screened pentode, now popular in America, may be introduced in this country, and may offer some modest improvement over the variable-mu tetrode.

We have seen two high-frequency stages used to do the work of one, and to do it both better and more conveniently. The future may perhaps find us using three quite low-gain stages where now we use two of moderate gain, leading to sets which will be at least as compact, rather more selective, decidedly more sensitive, and probably no more expensive than their counterparts of 1933.



A typical modern layout, with multi-section gang condenser and screened coils as a single unit.

larly impressive. Nor does it need to be, for the demands of high selectivity have necessitated extra tuned circuits, with the result that an extra screen-grid valve is

NEWS of the WEEK

Current Events in Brief Review

No Tax

THE adversaries of the wireless tax in France appear to have gained the first round in the contest, for the proposed taxes on crystal and valve sets no longer figure in the forthcoming budget.

After the Truth

WHAT caused amateur radio? What are its effects on the community as a whole? These questions form the substance of a survey now being carried out by the Sociology Department of the University of Minnesota in co-operation with the American Radio Relay League.

Indestructible "Mike"

A NEW microphone which will stand the assaults of the most temperamental artistes, which will come up smiling after being deliberately thrown on the floor or immersed in water, has been designed by the Brush Development Company of Cleveland, U.S.A. The sound element is a Rochelle Salt cell.

We now await a microphone which will *not* stand up to everything that is said to it.

Switzerland's "Italian" Studios

THE studios at Lugano, which are intended for use with the new Swiss regional station at Tesin for the Italian-speaking population, are already being employed for certain programmes from the two existing stations in Switzerland. This will explain why listeners may occasionally hear Italian spoken from either Beromünster or Söttons.

D.C. to A.C.: Compensation for Consumer

A JUDGMENT of special interest to wireless users in districts where the electricity supply is changed from D.C. to A.C. was given last week by Mr. Justice Goddard in the King's Bench Division.

Mr. Lakeman sought compensation from the Chester Corporation owing to the change over to A.C., which rendered his battery-charging plant useless. The Corporation, however, contended that they were called upon to pay only the cost of altering the consumer's apparatus, and that if, as here, the apparatus was one which could not be altered they were not obliged to pay anything, except perhaps the scrap value of the apparatus rendered useless. The Corporation had, in fact, offered the applicant £2 as the value of his old apparatus.

His Lordship, in giving judgment, read the Corporation's arrangement with the Electricity Commissioners as meaning that the Corporation must put the consumer into the position of having the same facilities for carrying on his business with the new alternating current as he had had with the old direct current.

The applicant was given judgment for £41 17s. 6d., including £7 due to interference to his business during the process of changing, together with costs.

New Long-wave Station

A 1-kilowatt broadcast transmitter has begun tests on 1,920 metres at Blaj, in Roumania.

Bach Interval Signal

LEIPZIG'S new interval signal is a gramophone record of the main theme of the great Bach fugue founded on the letters of the composer's name.

Mancunian Chats from Paris?

THE Manchester Chamber of Commerce is considering the question of advertising Manchester and its trades by means of talks from Continental radio stations.

New German Broadcasting Chief

DR. KRUCKOW, the successor to Dr. Bredow as Commissioner of German Broadcasting, has announced his intention of reorganising the service on a non-political basis. Apparently even the German Government is realising that too much official use may be made of the ether waves, the tendency being to lose listeners.

The Crystal Decline

SOME 97 per cent. of Germany's listeners vouchsafed particulars of their receiving apparatus for the purpose of the recent radio census. The results show that 74.8 per cent. of listeners use sets with from one to three valves, while 18 per cent. possess larger receivers.

Only about 7 per cent. now use crystal sets as compared with 16 per cent. two years ago.

Frankfurt's New Relay

TRIER, the new German 2-kW station on the River Moselle, is relaying the Frankfurt programmes on the same wavelength, namely, 259 metres. The fundamental frequency is generated at Frankfurt, and although both stations have valve-controlled tuning forks, that at Trier acts, not as a frequency producer, but simply as a check on the frequencies coming over the line from the main station, eliminating any noises from neighbouring lines. A new 5-kW station is shortly to be opened at Freilburg im Brosgau, and this, too, will be operated from Frankfurt in the same manner.

Vatican Tells the World

NOWHERE is modern radio more keenly studied than at the Vatican, where the Pope recently inaugurated the new ultra-short wave service to Castel Gandolfo. His Holiness has now been presented with a magnificent radio-gramophone by the Marzelli workers of Milan. In accepting the gift the Pope spoke of the great usefulness of radio in the conveyance of personal messages all over the world. Indeed, radio had made it possible for the proclamation of the Holy Year from the lips of the Pontiff himself to be heard in the most distant parts of the earth. Messages of thanks had been received at the Vatican from Peking, Shanghai, New Zealand and San Francisco.

"Ultra Shorts" in the Air

"GENERAL FERRIE" is the name of a new French airship which will shortly start from Le Bourget on a voyage of wireless research over Equatorial Africa.

The special problem to be tackled by this flying laboratory is the use of ultra-short waves in aerial navigation.

Empire Broadcasting on a Film

MR. M. A. WETHERELL, F.R.G.S., proposes to apply the acid test to Empire broadcasting during his forthcoming expedition through Nigeria and the Cameroons. The object of the expedition is to follow the route taken by Livingstone and to make a film entitled "Queen of the Okoyong." The explorer will take

How Inventors Work

ONE of the most impressive tableaux at the Daily Mail Ideal Home Exhibition will be that of Senatore Marconi at work in his cabin on his yacht *Elettra*. Visitors will also see Michael Faraday in his simple laboratory in Albemarle Street. These tableaux will form part of a special feature designated "Rooms of the Scientists."

The Exhibition opens at Olympia, London, W.1, on Wednesday, March 29th.

Nice Protests

ALL Nice, according to a correspondent, is indignant at the refusal of the French Postmaster-General to permit the use of a land line between the Juan-les-Pins station and a studio which has been established in the great Riviera re-



A THOUGHT FOR NEIGHBOURS? Violin practice which only the executant can hear is made possible with the Vierling electric violin, which can be played through a valve amplifier and headphones. Two magnetic pick-ups are used for the strings and another for harmonics. This instrument may shortly participate in an all-Europe electric music broadcast.

with him a standard Marconi-phone 255 portable superhet, and during the trip it is intended to make a sound film of a party picking up Empire broadcasting on the set, reproducing the signal on the sound track of the film.

This film, which should demonstrate very effectually the possibilities of reception in the African Zone, should help to bring home to English cinema audiences the thrills of picking up the Mother Country in the heart of the jungle.

Radio and the Music Trade

WIRELESS, which was to ruin the piano and organ industry, seems to have had an opposite effect in France, where M. Fernand Oury, president of the Piano Manufacturers' Syndicate, declares that wireless and the gramophone have benefited the music trades by their helpful propaganda.

The effect has been similar in this and other European countries.

sort. The P.M.G. recently forbade the use of a line for relaying the Nice Carnival through the Juan-les-Pins station and thence to Poste Parisien. The Deputy-Mayor of Nice, supported by full-page newspaper headlines, has sent a solemn protest to the French Government.

How They Listen

EXACTLY 16,809,562 homes in the United States were equipped with wireless sets on January 1st last, according to a special trade survey, constituting 56.2 per cent. of the total number in the country. There has been an increase of 4,760,800 in three years.

The District of Columbia claims the highest percentage of set owners, with 88.7, while New Jersey and Rhode Island follow with 83.1 and 82.1, respectively. New York can claim 79.4 per cent. of its homes as radio-equipped,

DETECTION

Yesterday and To-day

By M. G. SCROGGIE, B.Sc., A.M.I.E.E.

THE design of receivers has passed through so many changes during the last forty years (Yes, dear newcomer, *forty*) that only one element has remained common to all—the detector. Even tuning was not incorporated until Sir Oliver Lodge thought of it in 1898. The detector is of first importance.

The name detector is perhaps not quite the best that might have been chosen; that is to say, it does not in itself declare very clearly its purpose in life. So, first of all, let us consider what the perfect detector ought to do, so that we may be in a position to know how nearly perfect (or otherwise) are the detectors we happen to have got.

It is, of course, part of the ABC of radio that the sound waves to which the human ear is responsive must be borne on carrier waves of much higher pitch (or frequency, or shortness of wavelength) in order to be transmitted over great distances, and that at the receiving end something must be used to respond to the carrier waves

and to present them to our human sense in something approximating to the original form.

This process is accomplished, in practice, by rectifying the carrier wave; that is, suppressing one-half of every wave, so that the variations in height of, say, the upper halves, which carry the desired sounds, are not neutralised by the equal and opposite variations of the downward halves.

Some Antique Methods

There are very many types of rectifier, but some of them are, like our ears, unresponsive to radio-frequency waves, and are thereby ruled out. The ideal, clearly, is a rectifier which is like a turnstile; letting the approved positive half-waves through without any delay, deduction, alteration, or reluctance, and

presenting a complete and incorruptible barrier to each and every negative half-wave. This perfect separation of the sheep from the goats is never obtained in this imperfect world. The sheep are unable to get through without leaving a little of their fleece behind, and a certain amount of goat hair is found among the wool.

This would not matter so very much if the imperfection were consistent, because the resulting loss could (since the introduction of the valve) be easily compensated by a little extra amplification; but a common failing of rectifiers is a reluctance to operate the turnstile smartly when only weak applicants for admission appear, and the result is that when the carrier wave is feeble the rectified current is very feeble indeed, and when the carrier is strong the increase in rectified current is out of all proportion stronger. A "square-law" rectifier is of this type, but some are even worse still. The "straight-line" or "linear" detector is one in which the rectified

output is exactly proportional to the carrier-wave input.

In Fig. 1, A is a square-law characteristic, B is a fairly common type which begins badly but straightens out later, C is a perfect linear type, and D is also linear, but better than C because it is steeper, i.e., it introduces less resistance (loss) than C.

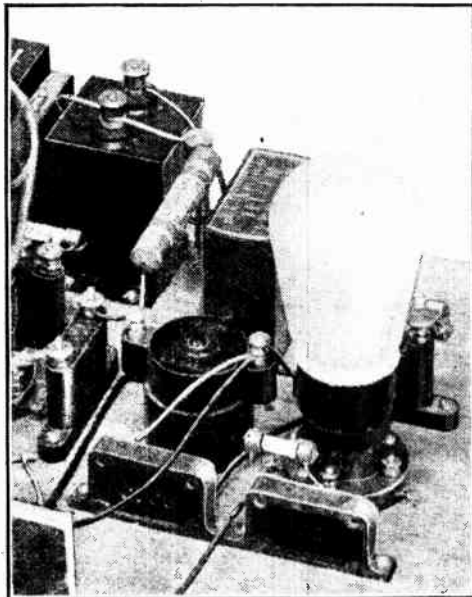
Leaving the more antique forms of detector unmentioned (but see Fig. 2), the crystal was very simple, cheap, and compact, but had curve A tendencies, and, moreover, was decidedly temperamental and moody in character. Hence the whisker-tickling that seemed inseparable from it. The first valve, the Fleming or diode type, now returning to popularity, was much more certain (after manufacturers had mastered the art of vacuum) and was a B-type detector, which could be made to give very good

THE history of the detector takes us back 40 years, and tracing its development to modern times makes interesting reading. The detector has passed through many vicissitudes, from the coherer to the Fleming diode and thence to the triode and tetrode. Strangely enough, the diode is returning to favour.

freedom from distortion by making the normal carrier strength run well up the straight portion. When introduced in 1904, however, people were not interested in quality of reproduction, but in being able to hear anything at all; so when De Forest put a third electrode in the valve, so that it could be used as a stage of amplification as well, it was adopted *nem. con.*, and ever since then we have been accustomed to expect from a detector not only detection, but amplification, too. A good deal of confusion of thought has resulted. Thus a valve which happens to have a high amplification factor is called a good detector, whereas it may be vastly inferior in that respect to another valve in which the rectifying properties are not so well boosted by the amplification. That is a parable of life.

Grid versus Anode Detection

The two competing types of valve detector-cum-amplifier—anode-bend and grid-leak—are so well known as hardly to need description. In the anode-bend type the grid is biased negatively so as to prevent grid current from flowing in any circumstances, and to make the anode current small until the carrier wave is applied. It is usually a close approxima-



A typical modern power-grid detector stage with associated components.

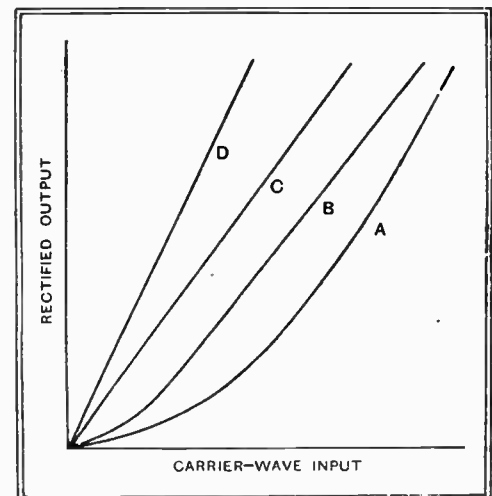


Fig. 1. Types of detector characteristic. A represents square-law, B is a common type which starts badly but ends up well, C is linear, as is also D.

tion to a square-law rectifier, though when used in the American fashion, with a very large input, it tends to curve B type. Rectification is not complete, nor is it free from distortion, but owing to the absence of grid current it was supposed

Detection—

that it introduced very little loss on the input side. It was found later that the advantage in this respect might often be nullified under working conditions by reflection from the anode circuit back through the interelectrode capacity of the valve ("Miller effect"). And when in the early days carrier waves were weak, this type was very insensitive, as one would judge from curve A.

So the grid-leak type in which the grid and filament forms a diode rectifier and the resulting output is amplified by the valve as a whole became popular, because it is linear almost from the start, and therefore sensitive to weak as well as to strong waves. Then, too, the conditions of operation lead to the amplifying action being more effective than in the anode-bend type.

Screen-grid Valve as Detector

But as stations became more powerful, and pre-detector amplifiers more effective, the grid-leak detector got a bad name for distortion. Actually it was a perfectly good detector all the time, but the amplifying department was failing to cope with the increasing rectified outputs.

Furthermore, the new need for selectivity found a weak spot in the grid-current loss, which damped the tuned circuits. So the anode-bend type swung once more into favour.

Then articles in *The Wireless World* explained clearly what was really wrong with the grid-leak type, where the causes of distortion lay, and how they could be eliminated, and in this country, at least, the anode-bend was finally thrust into outer darkness. It is now used in America.

The distortion due to overloading was overcome by seeing that the valve was given a generous supply of power, so that it could amplify under the somewhat restricted conditions imposed by the necessity for doing two jobs at once. And the distortion due to the grid leak and condenser not acting smartly enough at the high audible frequencies was even more simply overcome by selecting sensible values for them, which are now more or less standardised at 0.25 megohm and 0.0001 mfd, respectively.

For a time, and provided that things were so arranged that the mean carrier-wave amplitude applied was just right, it did (and still does) quite well under the name "power-grid" detector.

If the amplitude is too small it runs into the lower bend and distorts. If it is too large it demands impracticably large anode current and voltage to handle it without overloading. So it must be just right, like the middle-sized bear's bed.

Latterly the screen-grid valve has achieved some popularity as a detector; strictly speaking, it is not as a detector that it is judged, but as an amplifier. It may be used as an anode-bend, grid-leak, or power-grid detector, and as such is very much the same as an ordinary

triode. But the amplification may be very much greater. Whether this is worth the somewhat greater cost, and whether one can make any good use of the amplification when one has got it, depends on circumstances. What is an unquestionable merit is that the Miller effect is absent, thanks to the internal screening, and so the valve throws much less damping and mistuning on the previous tuned circuit—a valuable concession when selectivity is at a premium.

All this time the poor goats have been kept waiting outside. But some kindly disposed enthusiasts who can spare the cost of an extra valve turnstile adopt a method for turning the goats into sheep (by means of a centre-tapped coil) and pushing them in through a second turnstile, to swell the useful flock. This method is alluded to in technical circles

volume constant, whereas a volume control is used to vary the volume) is now a practical proposition, and hinges largely on the ability of the detector to feed back something like twenty or more volts to control the H.F.-amplifier valve grids.

Metal Rectifier Possibilities

This can be and is done by a diode (push-pull or full-wave, as in the Murphy superhet), but there are innumerable schemes, with and without special valves, many of which have been described in *The Wireless World* in past months.¹ The Wunderlich valve is an American idea with this in view, consisting of a double-diode and triode amplifier in combination, retaining the merits of them both.

But why keep talking about valves?

Thirty years is a long reign in the radio kingdom, where revolutions are constantly breaking out in the columns of the lay press, and our friend the metal-rectifier is already appearing as a possible rival.² He may take some time to establish his claim, so it would be unwise to withdraw loyalty to the valve dynasty

prematurely. But it has been shown that, by suitably modifying the construction of the metal-rectifiers with which we are familiar in power units and battery chargers, it is possible to overcome the disability which has hitherto confined them to very low frequencies. As far as the more elaborate superhets are concerned it may be expected that metal-rectifiers will score heavily in the near future. They have incontrovertible advantages for this particular work. But for "straight" sets and those of the less "powerful" types no extensive change in technique seems to be indicated at present, except, perhaps, the use of multiple valves which include a diode. Existing types are perhaps more numerous than ever, and a choice can be made to fit in with any set of conditions.

Whether diode- or metal-rectifier, we are now again able to judge detectors on the old basis, unmixing with amplification. And, according to the standards of perfection laid down at the start, we are nearer the ideal, both as regards efficiency and absence of distortion. The latter we certainly want; the efficiency need hardly be pressed further, because we have amplification enough and to spare. Perhaps the last word will be with convenience and cost.

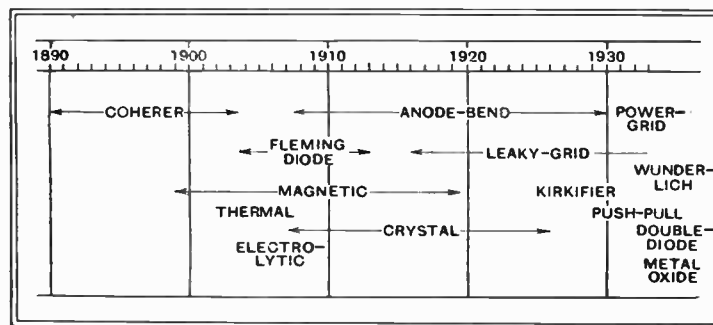


Fig. 2.—Chart showing approximately the periods during which various types of detectors flourished.

as push-pull detection, and, besides the advantage of doubling the output, it also renders largely unnecessary the usual filter or by-pass to waylay the residual H.F. currents left over after rectification has taken place.

The Birth of A.V.C.

And that is about where we stood until recently. Now there are again signs that important developments are afoot and that the old order perisheth. Valves are improving, so that the necessity for a large step-up between the H.F. amplifier and the grid of the power valve no longer exists. Any large amplification between these two, such as is given by the modern rectifier-cum-amplifier, may be a positive embarrassment. The H.F. amplifier can put out ten, twenty, thirty or more volts, whereas the output valve gives us its two or three watts in the loud speaker with very much less than this applied to the grid. So history repeats itself yet again in the thirty-year-old Fleming diode, which is very nearly a linear detector when worked at a sufficiently large amplitude.

This is rendered all the more essential because broadcasting stations now often modulate up to 100 per cent. or near it, and unless the curved portion of the characteristic is a very small part of the whole, serious harmonic distortion is introduced.

Then, again, automatic gain control (it should *not* be called *volume* control, because the very object is to keep the

¹ "Automatic Gain Control," Sept. 23rd and 30th, 1932; "Automatic Volume Control—Is It Worth While?" Aug. 12th, 1932; "Practical Automatic Volume Control," Jan. 6th and 13th, 1933.

² See "The Westector," *The Wireless World*, March 3rd, 1933.

BROADCAST

By Our Special Correspondent

BREVITIES

New Dance Band Scheme

"DANCES from the Shows" may be a forthcoming feature by the B.B.C. Dance Orchestra. I hear that Henry Hall is working on the idea following the enormous success of John Watt's "Songs from the Shows"—a feature which always brings an appreciative mail to Broadcasting House.

Famous dances from stage successes of the past decade should provide material for many programmes by the B.B.C. Dance Band.

Craigtantlet?

A CORRESPONDENT who has been watching the B.B.C. mobile transmitter, now seeking a site for the Ulster Regional transmitter, tells me that the vehicle is quite firmly entrenched on the Hollywood Hills close to Craigtantlet—the famous motoring test hill.

The news does not surprise me, for I happen to know that the B.B.C. engineers have been casting acquisitive eyes on this Craigtantlet site for a considerable time.

Secrecy Over Droitwich

Nothing, however, has been decided upon in regard to the Ulster site, and I can forgive the B.B.C. for reticence in the matter, but why the secrecy over the Droitwich site? Everyone knows that Wychbold, near Droitwich, was chosen for the new high power station, but we have yet to receive the official announcement that the site has been bought. Considering that the purchase was effected several days ago, the announcement seems overdue.

After all, you (if licensed) and I both helped to pay for it.

Hush-Hush Plans

The B.B.C. draughtsmen are now busy on the Droitwich plans. The general feeling is that something very much out of the ordinary in station design is called for to house the B.B.C.'s most powerful transmitter. Within the next few weeks the plans may be published, at least in part, but at the moment everyone is sworn to secrecy.

Home of Mystery

Broadcasting House is a home of secrets; everyone walks guiltily on tip-toe. As one man put it to me, "the place is like a dook's mansion with the dook dead upstairs."

Coming Shortly

Western Regional will probably disturb the ether before the end of the month with its initial tests, though the transmitter is not expected to begin a regular public service until June.

Then, and not till then, Western National will begin testing.

Will the Waves Clash?

I wonder whether there will be some mutual interference between the London and Western Nationals? Both will be using the same wavelength, viz.: 261.1 metres, and although the engineers are fairly confident that no heterodyning will take place,

I shall feel happier on the point when their theory has been proved in practice.

The argument is that London National sends a weak signal westwards. But suppose Western National sends a strong signal eastwards?

A Musical Play

"THE Castle on the Hill," to be broadcast on March 14th (National) and 15th (Regional) is a musical play by Denis Freeman and Martin Lubbock, based on the Bolshevik post-war rising in Hungary.

Robert Radford

ROBERT RADFORD, the famous bass singer, whose death occurred last week, was not a frequent broadcaster, but he did appear in studio opera. The last occasion was in November, 1929, when Radford sang at Savoy Hill in the opera "Louise."

The Men in the Tower

PEOPLE who work in the central tower of Broadcasting House are, I hear, beginning to envy workers in underground safe-deposits and other comparatively open-air spots. Not only do the B.B.C. music librarians and publishing department labour

B.E.B.C.

SOME months ago I suggested a new title for the B.B.C., viz., the British Empire Broadcasting Corporation, and when I hear recurring rumours that Mr. Gladstone Murray, the Information Chief, is being pressed to leave England and supervise Canadian broadcasting, the suggested name seems more and more appropriate.

Empire Posts

I believe it to be Sir John Reith's intention to find Empire posts for as many B.B.C. men as possible, and thus hasten the happy day when broadcasting throughout the Empire will conform to B.B.C. ideals even if it does not accept B.B.C. control.

Wait and see!

Sopranos in Musical Squabble

GORDON McCONNEL will give us more studio opera on March 17th (National) and 18th (Regional), the programme consisting of two miniature works by Mozart. The first, "Bastien and Bastienne," which was written at the age of twelve, is a simple pastoral. More sophisticated is "The Impresario," the second opera of the evening, which Mozart wrote eighteen years later. It is really a quarrel, set to music, between two jealous sopranos.

Talking by Numbers

"RADIOCRACY" has been much talked of recently, and its supposed horrors have been well aired in public places, but I am not sure that those who have laughed at the notion are the fellows who know best.

I write in this morbid strain after a glance at "Inquiry Pamphlet No. 3," published by the Central Council for School Broadcasting, and dealing with "The Evidence Regarding Broadcast Speech Training Collected by the English Speech Investigation Sub-Committee." (Price 6d.)

New Speech Outfits

The report tells of the "speech drill" to which groups of children were submitted after hearing the words pronounced B.B.C. fashion on the loud speaker.

Later, gramophone records were taken of words uttered by classes which had undergone the régime and by classes which had not. As Professor Cyril Burt records, "the main result of the experiment—a superior improvement in the class trained by wireless—was statistically reliable."

The aim of the courses is to give the children "new speech outfits"—a commendable aim, but is it really necessary that the B.B.C. should have a finger in the pie?

When all people talk alike it will be a short step to all thinking alike.



MAKING OUR FLESH CREEP. Scene in the B.B.C. "Effects" room at Broadcasting House, where sounds of clanking chains amid the whine of a sawmill are produced by specialists, who check up the results on headphones.

all day by artificial light, they also breathe only the specially prepared air which is pumped up from the automatic ventilators.

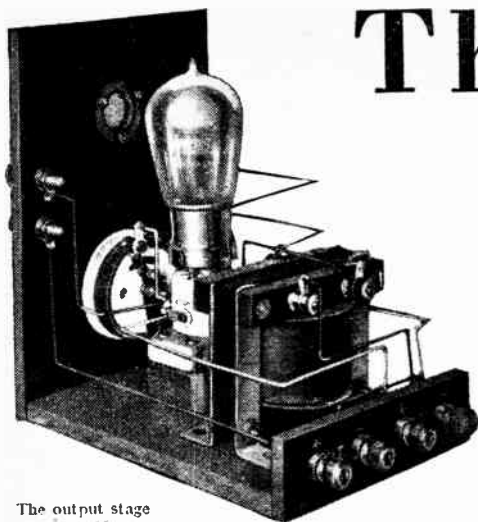
When Viscount Bridgeman, the new vice-chairman of the B.B.C., was making his recent tour of the building, he expressed concern at the conditions under which the "tower people" worked.

They will be released from this Tower of Babel only when the B.B.C. can find extra accommodation outside Broadcasting House.

The Output Stage

Have We Reached Finality?

By W. I. G. PAGE, B.Sc.



The output stage in 1925.

THE output stage crowns the set, and in this sense all other parts are subservient to it. The high-frequency stages, the detector, and perhaps the first L.F. valve are all engaged in providing the final stage with something to work upon; if this something is faulty the output stage can magnify the fault enormously. Alternatively, it is little use designing a linear detector if the output valve is either incapable of accepting its output or is not properly matched to the loud speaker. The last valve and its associated components are designed to deliver power, and thus differ from the other stages, all of which are voltage-operated.

Having a technique of its own, it is small wonder that the output stage has attracted the attention of the specialist, whose efforts have been rewarded by extraordinarily rapid developments in output-valve design, although, strange to relate, in the smaller type of receiver the circuit linking valve to loud speaker has not changed since the early days of broadcasting.

Feeding the Loud Speaker

In discussing the evolution of the output stage we need not consider any circuit more primitive than that of Fig. 1 (a), where the simplest possible arrangement is shown. The loud speaker is connected directly in the H.T. positive lead, and the results are satisfactory enough in battery sets where currents of only small value are flowing. This circuit, which has stood the test of time, is not likely to be superseded where low cost is of primary consideration and where no attempt is made to change from battery feed. However, if an electric lighting supply becomes available, there is a temptation to convert the set to all-mains operation in gradual stages—the first purchase being an H.T. eliminator.

The circuit of Fig. 1 (a) now becomes unsatisfactory, and the well-known choke-filter scheme must be pressed into service. This confers the advantage of isolating the speaker from D.C., and high voltages can be used with impunity. Furthermore, the

choke serves to decouple the output circuit, and motor-boating is prevented even when the H.T. source has a high internal impedance.

Up to a few years ago practically all the speakers on the market were of high resistance and matched the average output valve automatically; in fact, makers of speakers and valves arranged that the impedance of their respective products were mutually suited. But with the advent of the moving-coil instrument, which has come to be standardised with a robust low-resistance speech coil, matching transformers have become essential. The simple output circuit with which we started is now growing, and contains a choke-filter fed output transformer on the assumption that an H.T. eliminator and a moving-coil speaker have been pressed into service.

mains voltage always fluctuates, self-bias gives a measure of automatic compensation of anode current so that, apart from its convenience, this method of deriving grid potential has electrical advantages as well.

New Technique

Unfortunately, as soon as self-bias is included in the output stage there is a risk of loss of bass unless the grid circuit is decoupled. Here more complications arise as the majority of mains valves are liable to be short-lived if a resistance of appreciable value is connected in the grid-return circuit. A sudden loud passage of music or an atmospheric will cause an excursion into grid current, and the valve may be "triggered" into a state of self-oscillation. The greater the value of the

decoupling resistance the more pronounced the effect; we therefore have to be satisfied with some 50,000 ohms which is reasonably effective.

The efficiency of mains valves has increased at such a prodigious rate that it is now possible to obtain sufficient loud speaker volume for the largest of rooms when using a single output valve fed directly from the detector. A certain price has to be paid for such high sensitivity, and various precautions must be taken if no unwanted effects are to occur.

It is possible in the larger type of valve that the interelectrode capacities, together with the inductance of short leads to the grid and anode, may cause resonance at a wavelength as low as 3 metres. Parasitic oscillations at this frequency

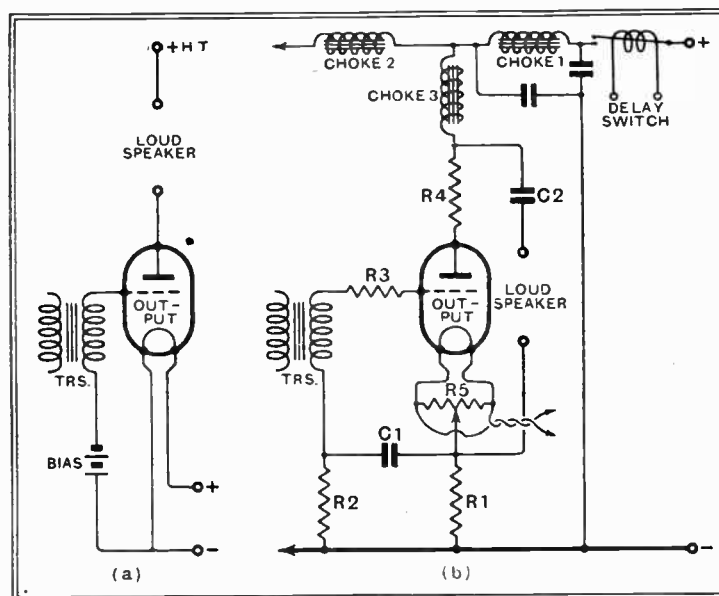


Fig. 1.—(a) The simplest output stage which has stood the test of time. A more elaborate circuit for a modern mains valve is shown on the right (b).

The next logical development is the replacement of the L.T. accumulator by a mains transformer to feed the filaments, but this would hardly be satisfactory unless mains valves and automatic bias were introduced simultaneously. As the

The Output Stage—

may completely paralyse the valve; non-inductive resistances should therefore be connected to the grid and anode terminals of the valve-holder.

The output circuit is now becoming more elaborate, and it is represented by Fig. 1 (b). Here R1 is the automatic bias resistor, R2 C1 the decoupling, and

saving would be shown over the more orthodox methods of amplification. But during talks there is only spasmodic modulation, and with the number of intervals that take place there is, of course, no rise in current; in fact, the *effective average* modulation over a long programme would probably not exceed some 15 per cent. It is this low figure

one bulb, there being pin connections to two anodes, two grids, and a single filament. These triodes, which, in any theoretical discussion, must be considered as separate entities, are used back-to-back in a push-pull circuit, and the signal voltage is allowed to encroach not only into the lower bend of the characteristic, but also into the grid current zone—an area which has hitherto been avoided at all costs in an amplifying valve.

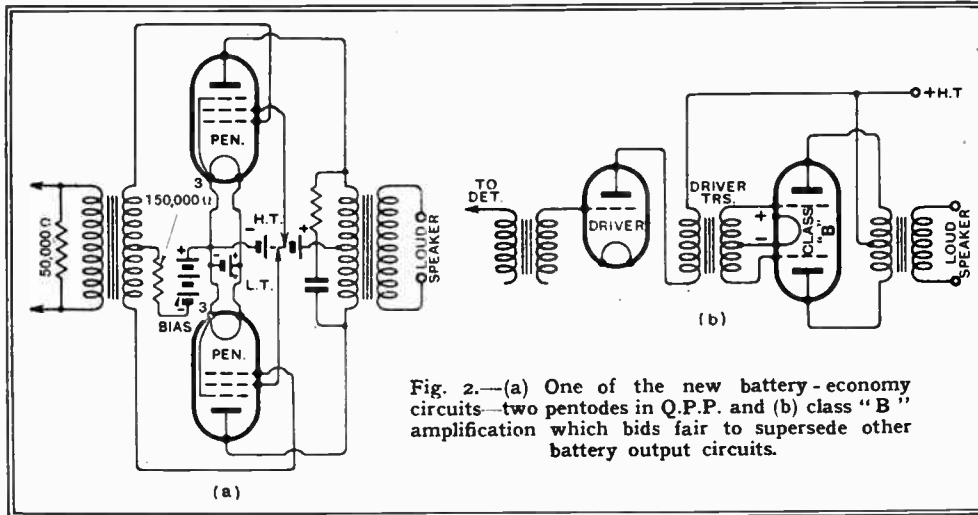


Fig. 2.—(a) One of the new battery-economy circuits—two pentodes in Q.P.P. and (b) class "B" amplification which bids fair to supersede other battery output circuits.

R3 and R4 represent the anti-parasitic resistances just referred to. There is choke-filter feed (CH3.C2) to the loud speaker, and the field coil of the latter is used to provide extra smoothing (CH2) for the H.T. supply. With the delay switch to safeguard condensers and other equipment from the effects of surge voltages when switching on, the modern output stage is now fairly complete.

The tremendous strides which have been made in output-valve efficiency are best shown by referring to Table A, which gives the figure of merit of a number of output valves starting with the DE5A valve. The measure of efficiency or sensitivity is defined as the watts energy delivered to the speaker for a given signal voltage applied to the grid.

And what of the future? Prophecy is always dangerous, but it can be stated without fear of contradiction that next season's battery sets will be equipped with one of the new "battery economy" circuits, an example of which has become so popular of late.

With the high cost of H.T. current, when mains are not available, the new systems are particularly attractive as there is practically no drain on the battery until a signal is received, and then the current is proportional to the volume of sound from the loud speaker.

TABLE A	
Valve	Sensitivity*
DE5A	0.9
DE5	1.8
P625	2.7
PX4	4.4
LP2	8.3
ML4	17
AC/Pen	40
41MP	51

*mW per volt² R.M.S. input.

which accounts for the startling economy claims made for Q.P.P.

This push-pull output scheme, the circuit of which is given in Fig. 2 (a), gives of its best when two pentodes of the Pen.220A class are used, and "mains output" can be obtained for a surprisingly low working anode current. There is, however, this disadvantage; not only is a large bias voltage required, but some arrangement must be made to discharge the bias battery in sympathy with the H.T. battery otherwise incorrect working conditions may result. The difficulties are not insuperable, and careful consideration of the total H.T. consumption of the set will dictate the best value of shunting resistance to use across the grid battery.

One advantage of Q.P.P. is that with nearly all the valves suitable for this class of amplification, the detector can feed the output stage through a high-ratio transformer without any intermediate valve.

A serious competitor to Q.P.P. in the form of a double output valve is about to find its way on to the market. It has already been extensively used in America, and has come to be known as Class "B" amplification. Here the elements of two triodes are mounted in

New Output Scheme

There is quite a lengthy part of the "curve" in the grid current zone which is straight, but until this new form of output stage was investigated no one dreamed that it would be put to any important use. Most intriguing of all is the type of triode used; owing to cancellation of the curvature effects it is found possible to combine in the single bulb small valves of the detector class, and thus we find ourselves in 1933 in the paradoxical position of reverting to valves which were beginning to be discarded for the output stage as long ago as 1924.

The undistorted output will be nearly twice that from Q.P.P., the double valve will be inexpensive, no grid-bias battery for the output stage is needed (as the valve operates at zero grid potential), and the majority of Q.P.P. components already on the market will be suitable. Thus one's prophecy of popularity in next season's sets seems to be on safe ground. In Fig. 2 (b) a skeleton circuit is given.

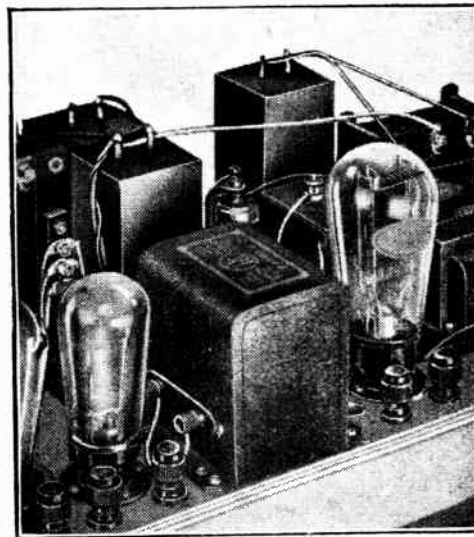
Class "B" amplification may find

application in mains sets, but in this case its qualities are distinctly less attractive, as H.T. current is so cheap. There is also the need for a special mains rectifying valve with better regulation than is possible with the vacuum type.

The advantages, however, of using a power stage where the H.T. current drain is proportional to the signal are so great that further valve developments are almost bound to take place sooner or later.

Before any striking advance

can be made in output-coupling arrangements we must wait for further loud speaker developments, for it is felt that output-valve technique has outstripped that of the reproducer. Let us leave further prophecy alone and take this opportunity of congratulating the British valve manufacturers, whose present range of output valves is unrivalled by that of any other country.



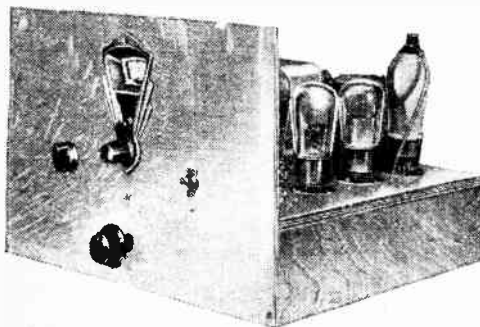
A modern output stage in a mains receiver. The thermal delay switch resembles a valve and is on the left of the main smoothing choke.

In Next Week's Issue:—

Adding A.V.C. to the MONODIAL SUPER

A Famous Set now Designed Complete with Automatic Volume Control, or with Instructions for Adding A.V.C. for those who have already Built the Original Model

PROBABLY no refinement in wireless receiver design has ever created so much interest as is being shown to-day in automatic volume control. The advantage of A.V.C. is of the utmost importance to any receiver designed for the reception of distant stations, for it provides constant signal strength on any distant station which formerly came in at varying strength due to the phenomenon of fading. There could be no better set in which to incorporate A.V.C. than *The Wireless World* Monodial Super, and this addition, which we shall describe in next week's issue, puts this receiver still farther ahead of any rival.



Receiver chassis of the Monodial A.C. Super fitted with A.V.C.

Below we publish a complete list of parts required for those who wish to construct the A.C. Monodial complete with automatic volume control, with a choice of either a 2.5 watts amplifier or a 5 watts amplifier. In addition, for the convenience of those who have already constructed the Monodial A.C. Super and wish to add A.V.C., a list of the additional parts required is included.

A.V.C. RECEIVER CHASSIS

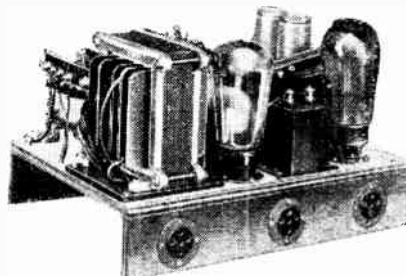
- 1 Fixed condenser, 4 mfd., 400 v., D.C. test Dubilier type BB
- 1 Fixed condenser, 2 mfd., 400 v., D.C. test Dubilier type BB
- 1 Fixed condenser, 1 mfd., 400 v., D.C. test Dubilier type BB
- 1 Fixed condenser, 0.1 mfd., 400 v., D.C. test Dubilier type BB (Ferranti, Formo, Peak, T.C.C., Telsen)
- 8 Fixed condensers, 0.1 mfd., 500 v., D.C. test non-inductive Dubilier type 5230 (T.C.C., Telsen)
- 3 Fixed condensers, 0.01 mfd., Dubilier type 620
- 1 Fixed condenser, 0.0001 mfd., Dubilier type 620
- 2 Fixed condensers, 0.0005 mfd., Dubilier type 620 (Ferranti, Loewe, T.C.C., Telsen)
- 1 Fixed condenser, 0.0001 mfd., Dubilier type 670 (T.C.C.)
- 1 Volume control, 250,000 ohms, taper! Claude Lyons P5-250A
- 1 Potentiometer, 5,000 ohms Watral (Colvern, Claude Lyons, Rothermel)
- 1 Semi-fixed condenser, 0.0005 mfd./0.002 mfd. (Formo) R.I. "Varicap"
- 1 5-way insulated connector Wilburn
- 1 Variable condenser, 0.0005 mfd., 3 gang, screened, superhet. type, with trimmers on the right British Radiophone
- 1 Slow-motion dial, for above British Radiophone
- 2 Metallised resistances, 250 ohms, 1 watt Dubilier
- 3 Metallised resistances, 1,000 ohms, 1 watt Dubilier
- 1 Metallised resistance, 2,500 ohms, 1 watt Dubilier
- 1 Metallised resistance, 4,000 ohms, 2 watts Dubilier
- 1 Metallised resistance, 6,000 ohms, 3 watts Dubilier
- 2 Metallised resistances, 10,000 ohms, 1 watt Dubilier
- 1 Metallised resistance, 30,000 ohms, 1 watt Dubilier
- 1 Metallised resistance, 50,000 ohms, 1 watt Dubilier
- 1 Metallised resistance, 75,000 ohms, 1 watt Dubilier
- 2 Metallised resistances, 100,000 ohms, 1 watt Dubilier
- 1 Metallised resistance, 250,000 ohms, 1 watt Dubilier
- 2 Metallised resistances, 1 megohm, 1 watt Dubilier (Colvern strip type, Erie, Claude Lyons)

- 3 I.F. transformers, 110 kc. Colvern "Colverdynes"
- 7 Valve-holders, 5-pin Clix chassis-mounting type
- 1 H.F. choke Wearite type HFO
- 1 H.F. choke McMichael Binocular Junior
- 1 Battery cable, 7-way Harhrs
- 1 Battery cable, 4-way Bulgin (Belling-Lee)
- 1 Set of B.P. canned coils Varley "Square Peak" BP10
- 4 Ebonite shrouded terminals Belling-Lee type B (Burton, Clix, Kalex, Igranic)
- 1 Change-over switch Claude Lyons B.A.T. 729
- 1 Switch Claude Lyons B.A.T. 728
- Metal screened sleeve Goltore (Lewcos, Harhrs)
- 1 Venesta board, aluminium faced, 12in. x 14in. x 2in. Pato-Scott
- 1 Panel, oak faced ply, 14in. x 9in. Pato-Scott
- 1 Screen, 2 1/2in. x 2 1/2in., No. 16 S.W.G. Pato-Scott
- Valves: 3 Marconi VM84, 1 Marconi MHL4, 1 Mullard 164V, 2 Mullard 354V.

2.5 WATTS A.V.C. POWER CHASSIS

- 5 Valve-holders, 5-pin Clix chassis-mounting type
- 1 Fixed condenser, 2 mfd., 1,000 v., D.C. test Dubilier type LSA
- 1 Fixed condenser, 4 mfd., 1,000 v., D.C. test Dubilier type LSA
- 1 Fixed condenser, 2 mfd., 500 v., D.C. test Dubilier type BC or LSB
- 1 Fixed condenser, 1 mfd., 400 v., D.C. test Dubilier type BB
- 2 Electrolytic condensers, 8 mfd. T.C.C. type No. 802
- 1 L.F. choke, 10 henrys Sound Sales (Ferranti B2)
- 1 L.F. choke, 50-20 henrys R.I. "Hypercore"
- 1 Mains transformer, 210-240 v., 40/100 cycles, 350+350 v., 100 mA, 4 v., 6 amps., centre-tapped, 4 v., 2 1/2 amps., centre-tapped, 1 v., 1 amp., centre-tapped, 1 v., 1 amp., centre-tapped, with screened primary Challis
- 3 Plugs, 5-pin Bulgin P3
- 1 L.F. transformer Ferranti AF5
- 1 Metallised resistance, 10,000 ohms, 1 watt Dubilier
- 1 Metallised resistance, 50,000 ohms, 1 watt Dubilier
- 1 Metallised resistance, 700 ohms, 2 watts Dubilier
- 1 Metallised resistance, 1,000 ohms, 2 watts Dubilier (Colvern strip type, Erie, Claude Lyons)
- 1 Venesta board, aluminium faced, 9in. x 12 1/2in. x 2in. Plywood 2in., screws, wire, systoflex, etc., etc.
- Valves: 1 Osram PX1, 1 Mazda UV120/359.

NOTE.—The type LSA condenser has had its voltage altered; therefore the original LSA or the present LSC type should be used.
NOTE.—If a non-energised speaker be used, a 2,500 ohms 60 henry choke will be needed.

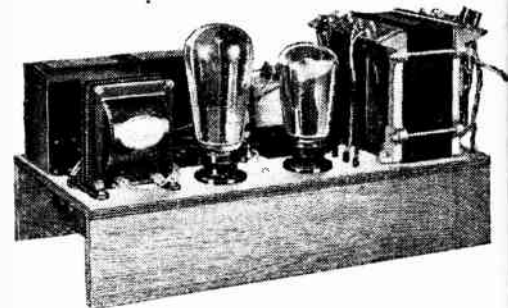


2.5 watts power unit for the A.V.C. Monodial.

5 WATTS A.V.C. POWER CHASSIS

- 1 Mains transformer, primary with earthed screen, secondary windings 400-0-400, 1 v., 6 amps., c.t.; 4 v., 3.5 amps., c.t.; 4 v., 2 amps.; 4 v., 1 amp., c.t. Parmeko (Rich and Bundy, Savage, Sound Sales, Tammy, Bryce, Trix)
- 2 L.F. Smoothing chokes, 28/14 henrys R.I. type DY11 (Varley, Bryce, Rich and Bundy)
- 1 L.F. Transformer, 3:1 to 1 Ferranti AF5
- 1 Thermal delay switch Varley type EP17 (Bulgin)
- 1 Potentiometer, 30 ohms Claude Lyons, Hum Dinger

- 1 Power resistance, 2,500 ohms, 10 watts, and holder Varley type EP38
- 1 Metallised resistance, 100 ohms, 1 watt Dubilier
- 1 Metallised resistance, 5,000 ohms, 1 watt Dubilier
- 1 Metallised resistance, 10,000 ohms, 1 watt Dubilier
- 1 Metallised resistance, 30,000 ohms, 1 watt Dubilier
- 1 Metallised resistance, 500 ohms, 3 watts Dubilier
- 5 Valve-holders, 5-pin, under-baseboard type EdJystona (Clix, W.B.)
- 4 Fixed condensers, 4 mfd., 1,500 v., D.C. test Peak
- 1 Fixed condenser, 2 mfd., 1,500 v., D.C. test Peak
- 1 Fixed condenser, 1 mfd., 500 v., D.C. test T.C.C. type 65
- 1 Fixed condenser, 2 mfd., 500 v., D.C. test T.C.C. type 65 (Dubilier)
- 1 Speaker cable, 4-way
- 3 Plugs, 5-pin Bulgin P3
- 2 H.T. Safety sockets Belling-Lee
- 1 Venesta ("Plymax" baseboard, 10in. x 8 1/2in. x 2in.) Pato-Scott



5 watts power unit for the A.V.C. Monodial.

Screws, wire, flex, sleeving, lamp-holder adaptor, wood, etc.
Valves: 1 UT120 500 (Mazda), or Cosmor 430BU, or Marconi U14, or Osram U14, or Mullard DW4, or Philips 4501, or SIX-SIXTY 88W130 500, 1 PPS 400 (Mazda), or Marconi PX25, or Osram PX25.

NOTE.—If a non-energised speaker be used, a 2,500 ohms 60 henry choke will be needed.

ADDITIONAL PARTS REQUIRED FOR CONVERTING AN EXISTING MONODIAL TO INCORPORATE AUTOMATIC VOLUME CONTROL

RECEIVER CHASSIS

- 1 Valve-holder, 5-pin Clix chassis-mounting type
- 3 Fixed condensers, 0.1 mfd., non-inductive Dubilier type 9200 (T.C.C., Telsen)
- 1 Fixed condenser, 0.0005 mfd., mica Dubilier type 620
- 1 Fixed condenser, 0.01 mfd., mica Dubilier type 620 (Ferranti, Loewe, T.C.C., Telsen)
- 1 Fixed condenser, 0.1 mfd., Dubilier type BB (Ferranti, Formo, Peak, T.C.C., Telsen)
- 1 Plug, 5-pin Bulgin type P3
- 1 Battery cable, 4-way Bulgin type BC2
- 1 Volume control, 250,000 ohms Claude Lyons type P5-250A
- 2 Metallised resistances, 250 ohms, 1 watt Dubilier
- 1 Metallised resistance, 2,500 ohms, 1 watt Dubilier
- 1 Metallised resistance, 1,000 ohms, 2 watts Dubilier
- 1 Metallised resistance, 6,000 ohms, 3 watts Dubilier
- 1 Metallised resistance, 10,000 ohms, 1 watt Dubilier
- 1 Metallised resistance, 30,000 ohms, 1 watt Dubilier
- 1 Metallised resistance, 75,000 ohms, 1 watt Dubilier
- 2 Metallised resistances, 100,000 ohms, 1 watt Dubilier
- 2 Metallised resistances, 1 megohm Dubilier (Colvern Strip type, Erie, Claude Lyons)
- 1 Screen, 2 1/2in. x 2 1/2in., No. 16 S.W.G. Pato-Scott
- Valves: 1 Marconi or Osram VM84, 1 Mullard 354V, or 1 Marconi or Osram MHL4.

2.5 WATTS POWER CHASSIS

- 1 Mains transformer, 4 v at 1 amp. C.T. Sound Sales
 - 1 Choke, 30 henrys, 400 ohms, 50 mA Bulgin LF14
 - 1 Valve-holder, 5-pin Clix chassis-mounting type
 - 2 Electrolytic condensers, 8 mfd. T.C.C. type 802
- NOTE.—If a non-energised speaker be used, a 2,500 ohm 10 watts resistance will be needed.

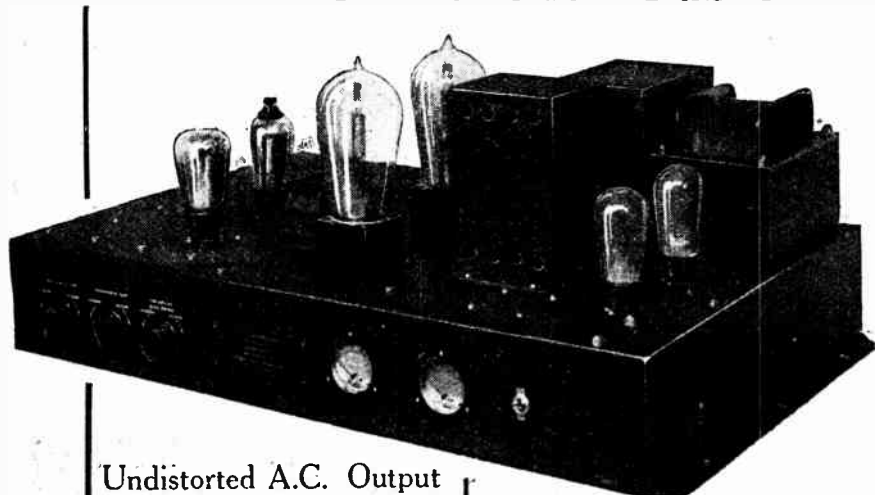
5 WATTS POWER CHASSIS

- 1 Mains transformer, 4 v at 1 amp. C.T. Sound Sales
 - 1 Valve-holder, 5-pin Eddystone type 921
 - 1 Fixed condenser, 4 mfd. (for use in receiver units, see text) Dubilier type BB
- NOTE.—If a non-energised speaker be used, a 2,500 ohm, 60 henry, 60 mA choke will be needed.



120 Watt Power Amplifier

A Powerful Public Address All-mains Equipment



Undistorted A.C. Output
24 Watts

Full particulars and prices sent on application.

B.S.R. Guaranteed Mains Transformers and Chokes are supplied for all requirements. Lists Free.

The B.S.R. AMPLIGRAM is a self-contained Portable All-mains Gramophone Amplifier, with Pick-up and Turntable. See "Wireless World" Test Report in last week's issue.

BIRMINGHAM SOUND REPRODUCERS, LTD., CLAREMONT WORKS, OLD HILL, STAFFS.

N.B.—U.K. Trunk Calls (up to 6 minutes) refunded on order being placed.

Phone: Cradley Heath 6370.
Grams: Electronic, Old Hill.

Designed for quality reproduction this Amplifier is a definite advance on anything hitherto achieved in P.A. sound equipment. Materials and Workmanship are of the highest order and the performance will satisfy the most critical. Every refinement is incorporated and operation is of the simplest character.

*Unsurpassed quality of
Reproduction*

SPECIFICATION

The Circuit comprises two stages of L.F. Amplification and two D.O.60 Power Valves in Pushpull. Two precision Moving Coil Meters in Power Stage. Mercury Rectifiers with Automatic Delay Switching. Microphone Input Transformers, Mains and Output Transformers are incorporated in the Chassis. Provision made for plugging in two Microphones and Pick-up with suitable Faders, also Main Volume Control. Mounted on Crystalline Steel Chassis 26" x 17½" x 12½" high. All wiring Sub-Chassis. Mains 190-250v. 50 cycles. Can be supplied in Dual Turntable Cabinet with suitable Heavy Duty P.A. M.C. Speakers.

OTHER STANDARD MODELS

11.8, 5.9, 3 and 2 watts undistorted A.C. Output. The B.S.R. Radio Chassis supplied for coupling to the above. Finest materials individually assembled and tested.

Special Treatment for Export without extra cost.

Holdens

HAYNES SERVICED DESIGNS

QUALITY RECEIVER

A.C. Model. 6 Watts output.

Kit of highest grade components of uniform finish, loud speaker and five valves, **£19 19s.**, carr. paid.
Extra for dual loud speakers, 30/-

HAYNES D.C. SUPERHETERODYNE

An easily assembled and hum-free receiver.

Kit with five valves and loud speaker, **£18 18s.**, carr. paid.

HAYNES A.C. SUPERHETERODYNE

2 watts output, with valves and loud speaker, **£18 18s.**

6 watts output with seven valves (diode detection) and loud speaker, **£23.** Extra for dual loud speakers, 30/-

Blue Prints for A.V.C. and other modifications supplied.

Complete Sets and Radiogramophones.



Complete Chassis at small extra cost.

London Office: (Sales)

57, HATTON GARDEN, E.C.1. Chancery 8023.

SAFEGUARDS THE CONSTRUCTOR.

Factory:

Enfield 2726.

QUEENSWAY, ENFIELD, MIDDLESEX

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.

HAYNES FERROCART RECEIVER

A.C. Model. 2 Watts output.

Generous specification for the discriminating constructor.

3 receiving valves and valve rectification, band-pass and H.F. Colvern Ferrocart couplings, cellulosed metal base plate, Rich & Bundy mains transformer and chokes, wire wound resistances. Parts finished in uniform blue-grey—a Haynes innovation. Set serviced.

Kit with 4 valves and loud speaker, **£16 16s.**

HAYNES FERROCART QUALITY RECEIVER

Alternative version of the Haynes Quality Receiver.

Kit with five valves and loud speaker, **£20 14s.**

Existing sets readily converted. Set of coils, circuit and large blueprint, 50/- post free.

Constructional Booklets

free and post free.

Full scale blue prints accompany all Haynes Sets.

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

THE CHARGE FOR ADVERTISEMENTS in these columns is 12 words or less, 3/- and 3d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

ADVERTISEMENTS for these columns are accepted up to **FIRST POST on SATURDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Tudor Street, London, E.C.4, or on **FRIDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 289, Deansgate, Manchester; 26n, Renfield Street, Glasgow, G.2.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed & Co. Notes being untraceable if lost in transit should not be sent as remittances.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

For particulars of **Box Number Advertisements and Deposit System** see previous issues

RECEIVERS FOR SALE.

- PYE K.** latest model, 7 weeks old; £7/10.—Frost, Ashford (Middlesex), 372. [1973]
- QUIESCENT** Push-pull Conversion Kit, including 2 Mazda P.E.N. 220A., Bryce specially matched transformers (5 years' guarantee), milliammeter, Leacos potentiometer, Eric resistors, Peak condensers, complete equipment for conversion with wiring diagrams; £3/5; lists and diagrams free.—Woods Radio, Holcombe Brook, near Bury. [1896]
- BURNDEPT** A.C. Mains Seven Chassis, complete, speaker, frame, less valves, £4/5; Burndept 7-valve battery superhet., with frames, excellent lock-up mahogany cabinet, all valves, less batteries, perfect, £4 10.—T. Sc.A.I., 108, Tantallon Rd., Glasgow. [2091]
- CLIMAX** Band Pass Three All-electric, 200.240 A.C. in walnut cabinet, with Rola M.C. speaker, list price £16/16, in original carton, unopened; £8/8, c.o.d., carriage paid.
- MACNAMARA** Golden Voice 3-valve A.C. Set, complete with moving coil loud speaker, in walnut cabinet, list price £15 15, in original packing, unopened; £8, c.o.d., carriage paid; in white cabinet, £7/7.—Kav, 167, City Rd., London, E.C.1. [2029]
- A.C. Monodial**, complete to specification but without cabinet, together with W.B. 6-guinea permanent magnet speaker and Ferranti output transformer; £20; demonstration after 7 p.m.—Hamilton, 9, Overdale Ave., Longside, Glasgow. [2083]
- "W.W."** Super Six, professionally constructed, 1932, little used, complete; bargain, 21 guineas.—Box 6290, c/o *The Wireless World*. [2024]
- COLUMBIA** Radiogram, A.C. model 662, c. 28 guineas, only used one month, perfect condition; accept £15.—Box 6284, c/o *The Wireless World*. [2053]
- CECOPHONE** 4v. Portable; £6; in new condition; spare accumulator; seen and heard N.W. London, Box 6278, c/o *The Wireless World*. [2350]
- MARCONI** Straight 8 Receiver, in perfect order, with improved output stage and choke condenser filter, complete with special Marconi A.C. power unit for same; £10.—Below.
- W.W. Long Range** 2 H.F. Receiver, all A.C. operated, built on large baseboard, complete with new valves; £3/10.—F. W. Smurthwaite, Ltd., Harmony Works, Wallington, Surrey. [2076]
- CLEARANCE** Line in Mains Receivers; stamp brings list.—Woods's Radio, Holcombe Brook, Near Bury. [2068]
- APPLEBY'S**, Central London Office, 46, Bloomsbury St., New Oxford St., London, W.C.1. Museum 8195. [1833]
- WHITELEY** A.C. Super Six, Magnavox speakers, list £21, brand new, £8/10; Zenith 8-valve superheterodyne, A.C., £8 10; American Five, A.C., 3 S.G., requires valves, 45.—94, Upper Sutton Lane, Heston. [2119]
- ADVERTISER**, having received present of Ultra Tiger Three Valve A.C. Console (list 18 guineas) (which unfortunately will not work from the domestic gas supply), will sacrifice at 11 guineas, carriage paid U.K.; in original carton.—Box 6502, c/o *The Wireless World*. [2125]
- KILO-MAG** Four, with moving coil, 130 volts wet H.T. Exide, B.T.H. pick-up; cost £43, perfect condition; particulars and offers.—Reuthe, Grant & Co. Farnborough, Kent. [2094]
- 1932** 5-valve A.C. Chassis, complete valves and speaker, variable Pentode, long and short waves, as new; £6/10. Also.
- 1932** 8-valve A.C. Receiver, 48.G. push-pull output, beautiful walnut console cabinet, long and short waves; cost £47/10, as new £17/10. After 7.—57, Clarissa St., Haggerston. [2102]
- RECEIVERS**, components, or valves accepted part exchange for 1933 products, liberal allowances.—Write Dept. R., British Radio Exchange Corporation, 26-27, D'Arbly St., London, W.1. [2040]
- FERRANTI** 7-valve Superheterodyne Receiver, 1933 model, new condition, A.C., list 24 guineas, accept 16 guineas; K.B. Pup battery set, complete as new, £3; also 3-valve A.C. short wave receiver, screen grid H.F., screen grid detector, exceptionally efficient, £15.—Gardiner, 45, Conduit St., W.1. Regent 4436. [2043]
- FOR** Sale, new, 1 5-watt test amplifier, with Rich and Bundy transformers and B.V.A. valves; offers.—Alpha Products, Wellington, Salop. [2045]
- MONODIAL** D.C. Super, exactly to specification, with valves, brand new, cancelled order reason for selling; £16/16, complete.—W. Flower, 623, Lea Bridge Rd., Leyton, Essex. [2047]

for "SOUND" EQUIPMENT

- Special P.A. Speakers suitable for all outputs.
- Power Amplifiers suitable for DANCE HALLS, SPORTS MEETINGS, FETES, ETC.
- The most up-to-date apparatus for outdoor or indoor sound reproduction and Radio reception.

TANNOY

PRODUCTS
DALTON ST., WEST NORWOOD, S.E.27
Manchester Branch:—
2, Whitworth Street West, Deansgate, Manchester
Scottish Agents:—
Messrs. Spensers (Scotland) Ltd., 119, George Street, Edinburgh

FIRST AGAIN!

"THE WIRELESS WORLD" AGAIN LEADS WITH THE **FERROCART III A.C. RECEIVER!** YOU, SIR, may require one of these amazingly selective high quality Sets, but may be too busy to build it yourself—similarly, your friend may not be able to construct it himself and will come to you for advice on where he may obtain one fully assembled and tested—

SCOTT SESSIONS

provide such a service, and for **£18-10-0** (or for 1st Deposit of £2-6-3) supply the **FERROCART A.C. III** built with first class workmanship, and including all Valves and Royalty and S.S. Mains Transformer and Choke.



SCOTT SESSIONS
Original FIELD REPLACEMENT CHOKES (Specially recommended for FERROCART III described in "Wireless World") **16/-** each.
All "W.W." sets constructed or repaired by our Expert Staff—**WRITE US NOW!**

SCOTT SESSIONS & CO.

RADIO ENGINEERS,
MUSWELL HILL, LONDON, N.10
Telephone No.: Tudor 5326.
Contractors to H.M. Government Departments, Crown Agents for the Colonies, Electricity Corporations, etc.

The Autocar EVERY FRIDAY FOURPENCE

CHARGERS AND ELIMINATORS.

- TANTALUM** for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool [1934]
- A.C. or D.C. Chargers** for 2 to 200 cells at Low Prices (state requirements); dynamo and rotaries in stock all sizes, Brown's Genometer battery superseders for H.T. for 2v. or 6v. input, 37.6 and 52.6; television and sewing machine universal motors, 25; lists.—Electradix Radio, 219, Upper Thames St., E.C.4. [059]
- R. A. ARNELL** Still Offers Eliminators to Exact Specifications, cheap; enquiries invited for any types.—6 Fishponds Rd., S.W.17. [2076]
- WESTINGHOUSE** 2-circuit Rectifier Set, A.C. 100, 200, 250v. D.C. 12 1/2v., 8.8 amps., new, in crate.—Write Box 6294, c/o *The Wireless World*. [2111]
- FERRANTI** Trickle Chargers, perfect condition, 25/- each.
- EKO** No. SF20 H.T. Unit for A.C. Mains, 3 positive tappings, 30/-; also Eko high power H.T. unit, 10 m.a. output, 3 adjustable taps and power, cost 16 gu., accept £4.
- M.L. Anode Converter**, 110v. D.C., 400v. D.C., 80 m.a., new condition; £5.
- A.L.** the Above Guaranteed Bargains from F. W. Smurthwaite, Ltd., Harmony Works, Wallington, Surrey. [2076]
- BROWN** and **SALTER**, Vortexion, Wimbledon, for the finest transformers made regardless of price; all models guaranteed 12 months, tested on full load and 2,000 volts between windings before despatch; all finishes in cast aluminium frames or shroudings.
- VORTEXION** Model Specified for the Modern A.C. Quality Amplifier, 400-0-400, 110 milliamps, 4v. 3a. (terminal type), 24/-.
- VORTEXION** Model for the Ferrocart III, 350-0-350v. 60 m.a., 4v. 2.5 C.T., 4v. 3.5 C.T., screened primary open type, 13/6; shrouded, 16/-.
- VORTEXION**—W5, 6, or 7 for Westinghouse H.T.5, 6 or 7, with 4v. 1-4a., C.T.; 11/6.
- VORTEXION**—W8, 9, or 10 for Westinghouse H.T.8, 9 or 10, with 4v. 1-2a., C.T., 4v. 2-5a., tagged leads; shrouded; 16/6.
- VORTEXION**—W11 for Westinghouse H.T.11, with 4v. 1-2, 4v. 1-6a., all C.T., shrouded; 40/-.
- VORTEXION**—250-0-250, 60 m.a., 4v. 1-2, 4v. 2-4a., all C.T., open type tagged leads; 11/6.
- VORTEXION**—350-0-350, 120 m.a., 4v. 2-5, 4v. 1-5, 4v. 2-4, all C.T., shrouded type tagged leads; 16/6.
- VORTEXION**—400-0-400 or 450 or 500-0-500, 120 m.a. open type; 4v. 2-4a., 4v. 2-5a., 4v. 2-5a., all C.T. 19/-; tagged leads.
- VORTEXION**—500-0-500, 150 m.a., or 450-0-450, 150 m.a., or 400-0-400, 150 m.a., 4v. 2-5a., 4v. 4a., 4v. 2a., 4v. 2a., all centre tapped, any input, 50 G. beautifully shrouded, core size, 2 1/4 x 1 1/4, screened primary, and strips, a 45 model, 35/-.
- VORTEXION**—30h, 50 m.a. chokes, 5/6; 20h, 120 m.a. 8/6; 15h, 350 m.a., excellent for rough D.C. shrouded, 15/-.
- VORTEXION** for Helsey Condensers, 750 D.C. working, 6 mfd.; 5/6, list price 21/6.
- VORTEXION**—Transformers made to your specification.
- VORTEXION**—Brown and Salter, 182, The Broadway, Wimbledon. Tel.: Liberty 2814. [2033]
- N.P.** Battery Chargers for A.C. Mains; stamp for trade lists and terms.
- N.P.** Trade Price Lists and Photographs of Battery Chargers for Stamp; Senior One will do 1 to 12 2-volt cells at once, 75/-; Senior Two, 1 to 36 2-volt cells; H.T. 120 volts at 1 amp., 105/-; H.P. terms; Westinghouse rectifiers.
- N.P.** Valve Chargers are Supreme, from 65/- to £27, up to four circuits; lists for stamp.
- N.P.** Specialise in Battery Chargers of All Sizes for A.C. and D.C. Mains; keen prices.
- N.P.** Have a Few Soiled Instruments; bargains, trade lists for stamp.—Nash Products, Ltd., Stetchford, Birmingham. [2063]
- SERADEX** Smoothing and Output Chokes, guaranteed one year, fitted heavy clamps.
- SERADEX** C.A. Choke, 20h., constant up to 100 m.a., carry 120 m.a., 200 ohms, weight nearly 3lb.; 12/6.
- SERADEX** C.B. Choke, as reviewed in *Wireless World* 8/732, 36h., at no D.C., 16h., at 20 m.a., carry 30 m.a., 3/6; type C.B.S., as above, but cased, 3/11.
- SERADEX** C.C. Choke, 40h., at 50 m.a., 12/6; C.C., PEN, pentode type, 14/6.
- SERADEX** C.D. Choke, 30h., at 70 m.a., 12/6; C.I., 10h., carry 200 m.a., 120 ohms, 12/6.
- SERADEX** C.L. Speaker Field Replacement Choke, 70h., carry 50 m.a., 2,500 ohms, 12/6; as specified for the Ferrocart Three.
- SERADEX** Special Pentode Choke for Ferrocart Three, 35h., carry 35 m.a., giving ratios 1 to 1, 1.6 to 1, 2.5 to 1; with leads 8/6, with terminals 9/-.
- SERADEX** Q.P. Choke for Quiescent Push-pull, tapped, giving 1 to 1, 1.6:1, and 2.8:1; 10/-.
- SERADEX** C.G. Choke, 40h., at 120 m.a., 350 ohms, 17/6; stripped type, 16/6.
- SERADEX** Transformer for Ferrocart III, screened primary as specified, terminal type 19/6; stripped type, 16/9.
- SERADEX** Mains Transformer for Modern A.C. Quality Amplifier, primary (screened), 200 to 250 volts 50 cycles, sees, 400-0-400v., 120 m.a., 4v. 2 1/2a., 4v. 1a., 4v. 3a., and special 4v. 3a. winding for H.F. and detector valves required; terminal type, 32/6; stripped type with leads, £1 9 6.
- SERADEX** Transformer and Choke Lists now Ready.—Traver Peppet, 48, Wake Green Rd., Birmingham 13. [2977]
- MAINS** Transformers.—Input, 110v. to 240v., output 300-300, 100 m.a., 4v. 2 amps., C.T., 4v. 4 amp., C.T., guaranteed 12 months; price 17 9.—Exelsior Radio, 9, Carthew Villa, Hammersmith, W.6. [2123]
- TRICKLE** Chargers, 1/2 amp., with Westinghouse rectifiers, complete, 2-6v., 11 9; trickle chargers, 1 1/4 amp. ditto, 19 11.
- TRICKLE** Chargers, with Tantalum rectifiers, 7/6; 3 days' approval; postage 6d.—Arlan Agency, Wollaston, Wellingborough. [2110]

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

CABINETS.

RADIOGRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon, [1686]
WE Can Supply Brand New Complete Gramophones. London made cabinets, at less than the cost of cabinets; ideal for converting to radiograms; 28 models to choose from; £2 6 to £10; illustrated list free.—Radley's, Ltd., Canal Rd., Bradford. [1786]
CLEARANCE Lines in Cabinets for Radiograms, mains or battery sets, loud-speakers, gramophones, etc., endless variety, lowest prices (no catalogues).
H. L. SMITH and Co., Ltd., 287-9, Edgware Rd., W., or at all associated shops; Charles and Co., 27, Lewisham High Rd.; Burt and Co., 49, Broadway, Deptford; Wright and Co., 367, High St., Stratford; G. E. Smith, 25, Queen's Rd., Watford. [1961]
39/6.—Radio gramophone cabinet; 28/6, wireless cabinets; satisfaction guaranteed.—Harrington, 9, Nelson St., Southend-on-Sea. [2031]

DYNAMOS, ETC.

1 h.p. Motors, as new, all voltages, 110-250, A.C. or D.C.; 16 15/- each.—Gardiner, 45, Conduit St., W.1. Regent 4436. [2044]
ROTARY Converter, nearly new, latest type G.F.C., 200-240 D.C. in, 200-240 A.C. out, 100-150 watts, complete with transformer, filter unit, auto. cut-out, etc., in metal soundproof cabinet; accept £8, cost nearly £30; seen working here.—Johnson Engineering, 86, Great Portland St., W.1. [1891]
"HAMS" New Crypto 1/2 h.p. Induction Motor, 250v., 50 cycles, coupled 1,000v. D.C. generator, £6/10; also new 1/2 h.p. ditto, coupled 30-watt D.C. generator, £4/10; will separate.—G., 600, George St., Bridlington. [2057]

REMARKABLE Offer of Liberty Engine Dynamos, 6 volts 15 amps., suitable for charging or lighting; 4, 9 each, carriage forward.—Wickham, 18a, Hercules Rd., Lambeth, S.E.1. [2055]

GRAMOPHONES, PICK-UPS, ETC.

GRAMOPHONE Motors, 30—super A.C. induction type, 100 to 250 volts, with auto stop, speed control, 12 in. turntables, all heavily nickelled; list price £5 5.—Pugh Bros., Ltd., 95-101, Holloway Rd., London, N.7. [2032]

LOUD-SPEAKERS.

B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' original prices, 6 guineas, highly sensitive and wonderful tone response, will handle up to 10 watts output, available for 6v., 100v., 200v., 30—also A.C. models, £2 10; carriage paid, cash or cash with order; send for list of other unused bargains. Seekamp, 46, Farringdon St., London, E.C.4. [1425]

HARTLEY TURNER M.C. Speaker, suitable 200-250 volts D.C. or A.C., rectifier included, all as new; genuine bargain, £4.—Doblie, Balvonia, Skelmorlie, [2085]

A. ARNELL Still Has a Few Magnavox Speakers (renewed) at Ridiculous Prices; inquiries invited.—8, Fishponds Rd., S.W.17. [2071]

BAKER'S Super Power 6v., 75 amp., 9-inch cone, 45—Lawrence, Bereferrers, Devon. [2065]

SUPER Bargains.—Unusl Magnavox 144, with transformer, 2,500 ohms, 14 6; 2-gang condensers, 4 6; list for stamp.—102, Torrington Park, N.12. [2117]

1933 New British Tested, guaranteed P.M. or M.E. moving coil speakers, £1 (list 39 6); "Classic" model, 25—(list 50—); 20 m.a. eliminator, D.C., £1; A.C., 30—; 120v. H.T. batteries, 6 6; new, half-price bargains; speaker units, 2 6 and 5—; Amplion, 21—; cone speakers, 10—; oak or walnut cabinet speakers, 15—; cash or c.o.d., carriage paid; cash refunded if not approved; trade enquiries invited.—Collins, Riversley Rd., Nuneaton, Warwick. [2124]

SET Manufacturers' Brand New Surplus Roles (3 each only), F.6 75, cones, all voltages, with transformer, list 35—, 18—; F.9-9 in, cones, list 46 6, 25—; permanent magnets, F.6 P.M., 75 cone, list 49/6, 28—; model F.9 P.M.-9 in, cone, list 60—, 32—; Mullard P.M. 8 in, cones, with transformer, list 49 6, 26—; Rola dual compensated speakers (3 sets only), state requirements, 2 F.6, list £3/10, £2; (1) F.6 and (1) F.9, list £4 5, £2 10; (2) P.M., list £5 2 6, £3; cash with order or c.o.d. (carriage paid).—Chat-Electric, 6, Conduit St., W.1. [2109]

30/—!—B.T.H. R.K. moving coil speakers, 6 in, cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; weight 30 lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C. 27/6—, as above, for 100-250 A.C. [2115]

CARRIAGE Paid, cash with order, or c.o.d.—Ward, 12, Tredgar Rd., B.4, E.3. [2115]

30/——Amplion Q.P.P. or standard; Lamplugh Silver Ghost, Senior 30—, Junior 20—; film industries P.A.C. type, 30—; Lamplugh 20—, Junior 18—; all permanent magnet moving coil, perfect, used for comparison tests only; Blue Spot 1001, inductor, 18—; Spencer, 43, Walsingham Rd., Colchester. [2100]

PICTURE RECEIVER APPARATUS.

BAIRD Television, as new, £12; also H.T.11 rectifier for amplifier for above, 25/—; "Glenrose," Old Mill Rd., Uddington, Glasgow. [2108]

TRANSMITTERS.

QUARTZ Oscillating Leases, 2 6.—Smith, Bryn Bodyn, Colwyn Bay. [2054]

VALVES.

NEW Large Purchase of a Set Manufacturer's Stock of Valves, guaranteed as new, all latest types, and any valve differing from the maker's characteristic exchanged free.

210H.L.s, 210H.F.s, 210I.F.s, P.M.I.H.F.s, P.M.I.L.F.s, H.L.210s, H.210, H.E.H.210s, L.210s, 3 9; 215P.s, 220P.s, L.P.2s, P.215s, H.E.P.215s, P.M.2s, P.220s, special, matched P.M.2A, for Quietest push-pull, 12/— pair; D.H.s, 41M.H.L.s, 41M.H.s, M.H.4s, A.C.H.L.s, A.C./2H.L.s, 354V.s, 904V.s, D.C./3H.L., 7/—; 41M.P.s, M.L.4s, A.C./P.s, 7/6; P.T.4, P.T.41, P.E.N.4V., M.P./P.E.N.s, 12/—; latest metallized S.4V.B.s, M.S.4B.s, M.S.G./H.A., A.C./B.G.s, 9/—; Cosmo M.V.S.G., 12/—; 442B.V., 1307s, 7/9; 1821s, 7/—; 620T., 15/—.

2,000 Valves are Always in Stock for Immediate Dispatch, prompt attention, for cash or c.o.d.—Newman, 309, Roman Rd., E.3. [1659]



FERROCART III IMMEDIATE DELIVERY

KIT "A" Author's Kit of FIRST specified Parts complete down to the last screw, including READY DRILLED Peto - Scott Panel with assembled and drilled Peto-Scott PLYMAX CHASSIS but less valves and cabinet. CASH or C.O.D. Carriage Paid.

12 GNS.

or 12 monthly payments of 23/- Set of 4 Specified Cossor Valves £3.7.6 or add 6/2 to each Kit "A" monthly payment.

KIT-BITS Selected C.O.D. items for the Ferrocart III. You pay the post-man. We pay post charges on orders over 10/-.

- 1 PETO-SCOTT Plymax Chassis 14" x 12" x 3" assembled and ready drilled ... 9 6
1 PETO-SCOTT Oak-faced Ply panel ready drilled ... 2 6
1 British Radiophone 3-gang Condenser, 0005 mfd. with right-hand trimmers, and 1 British Radiophone Dial and Dial light assembly ... 1 13 0
1 Set of Colvern Ferrocart Coils, gauged and mounted on metal chassis ... 2 10 0
1 Telsen Pentode Output Choke, Power Type W172 ... 10 6
1 Sound Sales 2,500 ohm Speaker Field replacement choke type CH4 ... 16 0
1 Bryce Mains Transformer, screened primary 350-0-350v 60 m.a.; 4v. 2.5 m.a. C.T.; 4 v. 3.5 amp. C.T. ... 1 8 6
13 Graham Farish "Ohmrite" Resistances, As specified by the Author ... 19 6
1 Colvern Metal Chassis ... 10 6

DELIVERY PER RETURN COLVERN FERROCART COILS AS SPECIFIED

BY special arrangement with Messrs. Colvern Ltd., we hold stocks of their FERROCART COILS for immediate delivery. Order now—the demand will be enormous. FIRST COME—FIRST SERVED. All orders in strict rotation. Set of 3 Coils, gauged and mounted on metal chassis, as specified: CASH or C.O.D. Carriage Paid £2-10-0 or 12 monthly payments of 4 7. TRADE SUPPLIED CASH OR C.O.D., BEST DISCOUNTS

Finished Instrument: Ready built and Aerial tested. Including Valves but less Cabinet. Cash or C.O.D. Carriage Paid, £17-10-0 or £3-10-0 Deposit and 11 monthly payments of 28 -.

Readers desiring to purchase any items separately can order with confidence from the EDITORIAL LIST OF PARTS for delivery against CASH or C.O.D. Orders over 10/- Carriage Paid, or C.O.D. Post charges Paid. Components or Part Kits value over 50/- by EASYWAY if preferred.

PETO-SCOTT CO. LTD. 77, CITY ROAD, LONDON, E.C.1. Telephone: Clerkenwell 95097. West End Showrooms: 62, High Holborn, London, W.C.1.

Valves.—Contd.

WRITE for Details of Our Unique Valve Exchange Offer.—Dept. V., British Radio Exchange Corporation, 26-27, D'Arbly St., London, W.1. [2041]
6-VOLT Valves, D.E.II.610, D.E.LI.610, many others, best makes, all tested O.K.; to clear, 1/- each.—Gradiner, 45, Conduit St., W.1. [2042]
R. A. ARNELL Still Offers Valves (used for Testing, Fishponds Rd., S.W.17, Streatham 8209. [2069]
THE Following Valves are Guaranteed as New, and any valve differing from the maker's characteristics will be exchanged; all latest types.
A.C. Pens., A.C.S.I. V.M.S., M.P.T.4s, D.C.2 Pens., V.M.4V.s, Pen.4V.s, D.C.28.G., V.M.s, 11/—; M.S.4s, M.S.4B.s, A.C.S.G.s, S.4V.A.s, M.S.G./L.A.s, D.S.B.s, A.C.S. 2s, D.C.2/S.G.s, 9 6.
M.L.4s, A.C.P.s, 41M.P.s, P.M.24s, 8/—; A.C.H.L.s, A.C.2 H.L.s, 354V.s, 41M.H.L.s, U.10s, U.U.60/250s, M.H.4s, 7 6; P.T.2s, V.S.2s, 215S.G.s, P.M.22As, 9/—; D.C.311.L.s, D.W.3s, 8 -
A.L.L. Types of Brand New American Valves in Stock; A.247, 235s, 224, 236s, 237s, 12/—; 227s, 226s, 280s, 245s, 232, 10 6.
U.X.250, 7 watts output, 16/—; 282M, mercury vapour rectifiers, 11/—; for quickest delivery send telegraph to new order.
OVER 2,000 Valves are Always in Stock for Immediate Dispatch; carriage paid, cash with order or c.o.d.—Ward, 12, Tredgar Rd., B.4, E.3. [2124]
ONE P.M.12, 6 6; 1 S.4V., 9/—; 1 M.H.L.4, 7/6; 2 L.S.5A.s, 8/— each; 1 Ferranti A.F.3C, 14/—; Anderson, Kenmore House, Willslow, Cheshire. [2101]

COMPONENTS, ETC., FOR SALE.

WESTON Moving Coil Milliammeters (301), 0.15 up to 22 6; Turner ditto, 17/6; Turner thermo couple ammeters, 0.15, 25/—; 3-range moving coil meters, 0.5 m.a., 6 and 120 volts, 22/6; electrostatic and moving coil voltmeters 0-2,000, 32/6; moving coil milliammeters, 10 6; alterations and repairs of every description.—The Viola Electrical Co., 47, High St., Battersea, S.W.11. [10555]
CONDENSER Blocks 6d. per mfd., 650-volt test, in blocks of 6 mfd. upwards, wired in 2 mfd. units; 2 years' guarantee; send by return of post on 7 days' approval, cash with order.—Butlers Radio, Ltd., 191, F.4, Rd., Walthamstow, E.17. Phone, 5134. [10396]
CHASSIS and Screen Panels, constructed to any design, aluminium sheet supplied; estimates free.—Minns, 19, Worlthorne Rd., King's Heath, Birmingham. [1848]
FERRANTI Ltd., Hollinwood, Lancashire, offer brand new stock of discontinued lines at enormous reductions.

A FEW: B3 chokes, 7 m.a., 20-40 henries, 6/- each; O.P.M.2C push-pull output transformers (royalty paid), 12 6 each; type No. 3 anode feed units, each containing 3 2 mfd. condensers, complete with 3 wire wound cartridge type resistances, 7/6 each; 2 mfd. condensers, 1,700 v.l.t.s. test, 2— each; 2 mfd. condensers, 750 volts test, 1/- each; 0.1-0.1 mfd. condenser, 500 volts test, 6/— each; 3 mfd. condensers, 750 volts test, 5/- each; 0.001 mfd. fixed mica condensers, 6/— each; 0.0004 mfd. fixed mica condensers, 6/— each; A.C. mains speaker chassis—super cinema type, large output, 200-250 volts, also 100-150 volts, £3 10 each; D.C. mains speaker chassis, 200-250 volts (1 only), £2 10.
A.L.L. Perfect.—Send cash with order to Ferranti, Ltd., Hollinwood, Lancashire. [2035]

PEDESTAL Telephones, 7/6; telephone magnets, 4/—; microphones, 1/-, 2/-, and 4 6; transformers, 2/6; automatic dials, 2/-; 5-line automatic telephone relay, 35 - Below.
3-A.V.C. Transmitters, with valves, 15/-; small portable Morse transmitters, 15/-; 2-valve receivers, no valves, 8/-; table telephone, 15/-—Below.
PLATING Dynamo, large size, 6 volts 30 amps, slow speed, £5 10; H.T. dynamo, 500 volts, 100 milliamps, 17/6; 12 in. spark coil, as new, complete, £3/10.—Below.

ROTARY Converter, input 6 to 12 volts D.C., output 30 volts 1 amp. A.C., the A.C. can be very easily re-wound to higher voltages; 15/- each.—Below.

A.C. Motors, 1/2 h.p., repulsion motors, 220 volts, 50 cycles, single phase, 20/—; 3/4 h.p. induction motor, A.C., 220 volts, 50 cycles, single phase, £2; 1/2 h.p. induction motors, 200 to 240 volts, 50 cycles, single phase, as new, £3 15; all self starting.—Below.

ALSO Charging Dynamos, regulators, meters, resistances, A.D.C. motors, switches, transformers, galvos, experimental sets, etc.; send for list.—Below.

GALPIN, 23, Tyrwhitt Rd., Brockley, London, S.E.4 (nearest station St. John's, Lewisham). All goods cash with order or c.o.d. (charges extra). Three days approval from date of delivery; all goods guaranteed. [2048]

WESTINGHOUSE Rectifiers, H.T.9, H.T.10, H.T.11, L.T.2, L.T.4, photo-electric coil, Garrard A.C. motor, Davenset power transformer, Bowyer-Lowe Beta pick-up, Celestion D.C. M.C. Utility 2 and 3-gang condenser, Cameo cabinet, all as new; £6 lot.—Woods, 92, Netheraven Rd., W.3. [2064]

PEPPER Offers the Following Under Usual Money Back Guarantee; post extra or orders under £2.

VALVES, P.M.14, P.M.16, P.M.24, 7/6; Cossor S.G.215V.M., 9/6; P.P.5, 400, 16 6; Tunggram, P.414, P.614, etc., boxed, 3/6.

COILS.—Colvern K.G.C., 4/11; British general aerial C/ tuners, 6 9; ditto Band-pass units, aerial or anode, 6/3; Wearite 0.2s, Lewcos O.S.C.4s, 4 11 each.

TRANSFORMERS.—A.F.6, 17 6; A.F.6r, 18/6; T.Hypermus, A.F.3, O.P.M.1, O.P.4c, etc., 9/11; Varley heavy duty, 10 6.

CONDENSERS.—Ormond twins, fully screened, 7/—; J.B. polar tubs, 2 gangs, 8/6; Ormond, 4-gang, 13/6; J.B. chassis-mount, 3 gangs, 10/—; Telexors, boxed, 5/11.

EIGHT-PAGE List Now Ready.—Pepper, 48, Wake Green Rd., Birmingham. [2078]

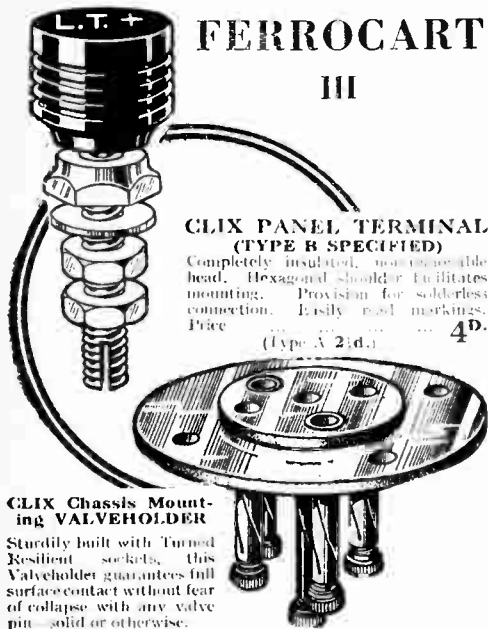
MAINS RADIO'S Usual Guaranteed Set Manufacturers' Surplus, as new, carriage paid or call.

T.C.C. 500v. Test Blocks, 8x2x2x1x1, 6/6; Dubilier 2 mfd., 250 working, 1/6.

PLESSEY New 5-pin chassis valve holders, 1/3 half dozen; Radiophone 10,000 ohm potentiometers, mains switch, 4 6.
M.R.D. Mains Transformers, 200-250 tapped primary, centre tap L.T., all guaranteed 6 months.
200—200, 60 m.a., 4v. 1a., 4v. 2a., 9 3; 250—250, 60 m.a., 4v. 1a., 4v. 2a., 10/6; 350—350, 120 m.a., 4v. 2a., 4v. 1a., 4v. 2a., 16 9.—Mains Radio Development Co., 4 6, Muswell Hill Rd., London, N.6. [2073]
A Hypermus Filter-type have been Devised to Stop Interference: a Rejelectostat aerial eliminates inductive interference pick-up.—R. E. Blakey, A.B.R.I., Bull's Head Chambers, Manchester. [2059]

CLIX... Specified to ensure reliable contact for the

FERROCART III



CLIX PANEL TERMINAL (TYPE B SPECIFIED)

Completely insulated, non-corrosible head. Hexagonal shoulder facilitates mounting. Provision for solderless connection. Easily read markings. Price 4d.

CLIX Chassis Mounting VALVEHOLDER

Sturdily built with turned resilient sockets, this Valveholder guarantees full surface contact without fear of collapse with any valve pin—solid or otherwise.

5-Pin Model - 9d. 4-Pin Model - 8d.

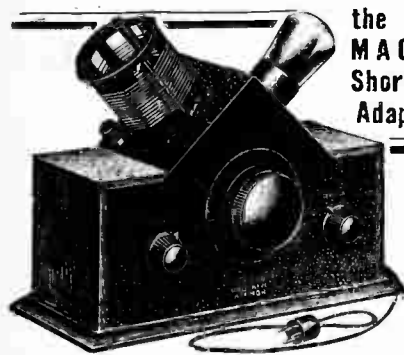
Write for the Clix Folder 'W.10.'



ELECTRO LINX LTD., 79a, ROCHESTER ROW, S.W.1

ENJOY Short Wave RECEPTION—with

the latest MAGNUM Short Wave Adaptor



FOR A.C. MAINS AND BATTERY SETS.

Model T. For sets using British Valves. Model T.A. For sets using American Valves. Model T.S.G. For sets using British S.G. Valve as detector. Model T.A.S.G. For sets using American S.G. Valve as detector.

Price, including coil 40/80 metres Corl and Plug 39/6 Extra if Coil required 18/40 metres 3-

SUPERHET ADAPTOR MODEL T.S.H.

For all British and American A.C. Mains and Battery sets employing a tuned high-frequency stage.

Price: Adaptor only, including 2 coils 18/40 and 40/80 metres 45/- Complete with special valve, H.T. and L.T. Batteries 63/-

Send at once for full particulars with a list of Short Wave Stations and free trial offer.

BURNE-JONES & Co., Ltd., "Magnum" House, 296, Borough High Street, London, S.E.1. Telephone: 110p. 6257 & 6258.

Scottish Agent: Mr. Ross Wallace, 54, Gordon St., Glasgow, G.1

Components, etc., for Sale.—Contd.

R. SELECTED Parts for Sale, as new, any e.o.d. or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take all risk of change in transit to customers; all goods tested for callers and guaranteed, however low priced. Notes: Payment by cheque, no goods despatched until these are cleared. We refund cost of telegrams received on Friday only on orders of 7s. or over. B.T.H. Universal Senior Gramophone Motors, A.C. or D.C., brand new, complete with auto stop and all fittings, 55/-; Radiophone 4-gang condensers, 12/6; Kolscher-Brandes A.C. or D.C. motors, now complete, 30/-; TRANSFORMERS, Ferranti A.F.5, 18/6; A.F.7, 10/6; A.F.8, 10/6; A.F.6, 18/6; A.F.7, 18/6; O.P.M.2, 16/6; O.P.M.2, 15/6; O.P.M.4, 14/6; Ignis 7-I, G type, 7/6; R.L. Pentomite choke, C.T., 10/6; Telen 10-1 coupling units, 6/6; B.I. choke, new, 14/6. P. COCK K25 A.C. Unit, 45/-; Pifer multi meter, 50/- plus post, as new, 50/-; Cassar A.C. 2v. set, without speaker, 50/-; Tunwell H.P.6 transformer, 15/- with two 44, see series; Ferranti H2 D.C. speaker, 17/6; Magenta D.C. 7,500 ohm, 12/-.

Advertisement for BELLING-LEE terminals and terminal mounts. Includes image of a terminal and text: 'WALNUT or BLACK', 'BELLING-LEE FOR EVERY RADIO CONNECTION', 'Cambridge Arsenal Road, Enfield, Mds.'

Advertisement for RADIO-GRAMPHONE CABINETS. Includes image of a cabinet and text: 'Write for Illustrated Catalogue of RADIO-GRAMPHONE CABINETS', 'GILBERT Cabinet Maker - SWINDON', 'Est. 1866'.

Advertisement for CRESSALL RESISTANCES. Includes text: 'CRESSALL RESISTANCES', 'Please write for Lists.', 'CRESSALL MANUFACTURING COMPANY, 31-32, TOWER STREET, BIRMINGHAM.'

Advertisement for GRIPSO MIDGET WANDER PLUG. Includes image of the plug and text: 'GRIPSO MIDGET WANDER PLUG', 'EACH 1 1/2', '28 VICTORIA ST. LONDON, S.W.1'.

Advertisement for JUNIIT SYNCHRONOUS ELECTRIC CLOCKS. Includes text: 'JUNIIT SYNCHRONOUS ELECTRIC CLOCKS', 'Write for the new Complete Catalogue including models to match Pye, Ultra, etc., radio receivers.', 'Junit Mfg. Co., Ltd., Junit Works, Steele Rd, Chiswick, London, W.4'.

Advertisement for RYALLS RADIO. Includes text: 'RYALLS RADIO, 33, CHANCERY LANE, LONDON, W.C.2', 'accepted used radio parts, or sets, in part or full payment for brand new, at list prices. Only good quality components accepted, accumulators and very small items cannot be taken. Goods bought for cash from callers, up to one-third of list price paid, parcels by post by arrangement only.'

Advertisement for 10,000 GRAMO-MOTORS FROM STOCK. Includes text: '10,000 GRAMO-MOTORS FROM STOCK', 'MAKE A GRAMOPHONE OR RADIOGRAM AT BIG CASH DISCOUNT.', 'THE ROBEY FITTINGS CO., (W.9.), 120, OLD STREET, LONDON, E.C.1'.



Graham Farish says:—

“I created a NEW STANDARD with the

NEW OHMITES,

because of their undoubted efficiency. They filled the urgent needs of the technicians, who were quick to recognise their reliability. Absolutely non-inductive they cannot create hum, built with a big margin of safety they withstand mains ‘surge’ and heavy electrical stresses, and because of their easy handling are ideal for the experimenter. The fact that they are specified for the FERROCART A.C.3 is a sufficient testimony.”

The popular and efficient resistances for all general purposes. All values 50 ohms to 5 megohms. 1/6 each.

For those who prefer interchangeability and convenience in mounting, holders are available, vertical and horizontal, 6d. each.

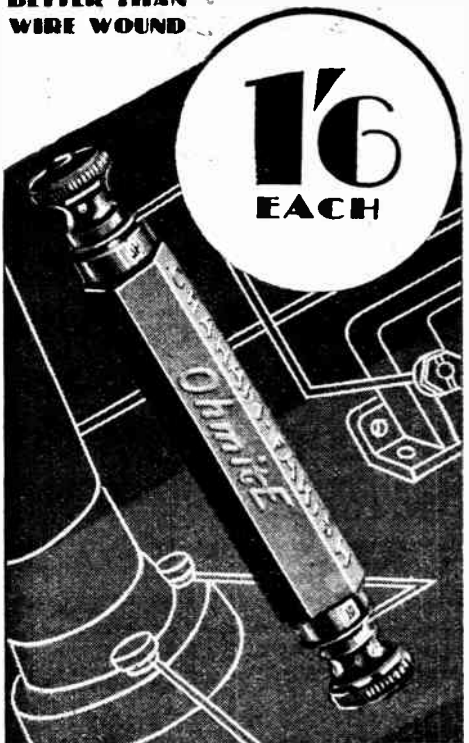
SAFE MAXIMUM CURRENT-CARRYING CAPACITY OF “OHMITES”

100° F. Temperature rise.

Ohms	Milliamps	Ohms	Milliamps
100,000	3.5	10,000	12
80,000	4.24	5,000	20.25
60,000	5	4,000	24
50,000	5.5	3,000	29
40,000	6	2,000	35
30,000	6.75	1,000	40
20,000	8		

HEAVY DUTY TYPE APPROXIMATELY DOUBLE THE ABOVE RATINGS, PRICE, 2/3.

BETTER THAN WIRE WOUND



GRAHAM FARISH, LIMITED, MASONS HILL, BROMLEY, KENT. Expert Office: 11, 12, Fenchurch Street, London, E.C.3.

Components, etc., for Sale.—Contd.

PREMIER SUPPLY STORES Offer the Following Brand New Goods at a Fraction of the Original Price; all goods guaranteed perfect; carriage paid over 5/- under 5/- postage. 6d. extra. (Ireland carriage forward.)

PREMIER Mains Transformers, all guaranteed, terminal connection—input 200-250 volts 40-100 cycles, output 135 volts 80 milliamps, for voltage doubling, 8/6; 4 volts 4 amps, C.T. low tension, 2/- extra; Westinghouse rectifier for above, 180 volts 30 milliamps, 8/6.

PREMIER Mains Transformers, output 250-0-250 volts 60 milliamps, 4v. 1a., 4v. 2a., and 4v. 3-4a. (all C.T.), with screened primary, 15/-.

H.T.8 Transformers, with 4v. 3.5a. L.T. (C.T.), with screened primary, 15/-; with Westinghouse rectifier, 25/-.

H.T.9 Transformers, output 230 volts 200 milliamps, with 4v. 4a. (C.T.), with screened primary, 15/-; with Westinghouse rectifier, 26/-.

H.T.10 Transformer, with 4v. 4a. L.T., 15/-; with rectifier, 27/- (smoothed output 200v. 100 m.a.).

PREMIER Mains Transformers, 12 volts 1 amp., 7/6; 9 volts 1 amp., 7/6; 4 volts 4 amps. and 4 volts 2 amps., 8/6; 14 volts 4 amps., 12/6; 4 volts 3 amps., 7/6; 4 volts 5 amps., 8/6; 22 volts 1 amp., 10/-; 6 volts 2 amp., 7/6.

MAJNS Transformers, output 350-0-350 volts 90 milliamps, 4 volts 3 amps. (C.T.), 4 volts 2 amps. (C.T.); 12/6.

AMPHION Mains Transformers, input 100-250 volts, output 350-0-350 volts 120 milliamps, 4v. 5a., 4v. 2a., 6v. 1a. (all C.T.); 17/6.

SPECIAL Offer of Mains Transformers, manufacturers' type, any input, output 250-0-250 volts 60 m.a., 4v. 1a. (C.T.), 4v. 3a. (C.T.), 8/6; 180-0-180 volts 40 milliamps, 4v. 1a., 4v. 2a., 4/6; 175 volts 50 m.a., 4v. 3a., 4v. 1a., 5/6; H.T.B. with 4v. 3-4a., 8/6; with rectifier, 18/6.

MULTI Ratio Output Transformers, 15 different ratios, 7/6; Pye chokes, 20 or 32 henries, 4/-.

PREMIER Chokes, 40 m.a. 25 henries, 4/-; 65 m.a. 30 henries, 6/-; 150 m.a. 30 henries, 10/6.

SMOOTHING Chokes for Series Connected Filaments from D.C. Mains, carry 1 amp.; 7/6.

KOLSTER BRANDES 80 milliamp 30 henry Chokes, tapped one-third and two-thirds; 7/6.

AMPHION High Inductance Chokes, resistance 2,500 ohms, 80 henries, 60 m.a.; 5/6.

PREMIER Eliminators, input 200-250 volts 40-100 cycles A.C., incorporating Westinghouse metal rectifiers, output 250 volts 60 milliamps, 80 and 120 volt taps, 42/6; with 4 volts 4 amps. L.T. (C.T.), 7/6 extra.

PREMIER Eliminators, output 150 volts 30 milliamps, 80 and 100 volt taps, with 4 volts 3-4 amps. (C.T.), L.T., 37/6; with trickle charger, 42/6.

PREMIER Eliminators, output 120 volts 20 milliamps, 80 and 100 volt taps, 27/6; with L.T. trickle charger incorporated, 35/-.

D.C. Eliminators, output 20 volts 20 milliamps, 80 and 100 volt taps, 15/-; larger model, output 200 volts 50 milliamps, 80 and 120 volt taps, 25/-.

ACCUMULATOR Chargers, 200-250 volts A.C., all incorporating Westinghouse rectifiers, 2, 4, 6 volt 1 amp., 17/6; 2, 4, 6 volt 1 amp., 22/6; up to 12 volts 1 amp., 27/6; up to 6 volts 2 amps., 35/-; up to 6 volts 3 amps., 47/6; larger outputs to order.

S. G. BROWN Power Units, consisting of tapped mains transformer, Westinghouse rectifier, and T.C.C. electrolytic condenser, output 6 volts 1 amp., for charging and energising; 21/- (listed £3/15).

T.C.C. Condenser Blocks, 250 volts working, 8x2x2x1 1/2 mfd., 5/6; 375 volts working, 6x4x2x2 1/2 mfd., 10/-; 250 volts working, 3x2x0.5x0.5 mfd., 3/6.

CONDENSER Blocks, 400 volts working, 3 separate 4 mfd. condensers, 2/6; with 2 separate 1 mfd. condensers, 2/- extra.

WESTERN ELECTRIC, 400 volts working, 0.01x0.01 mfd., 1/-; blocks, 4x2x2x2 1/2x0.09 mfd., 400 volts working, 6/-.

FERRANT Condenser Blocks, 300 volts working, 2x4x2x2 mfd., all entirely separate; 10/-.

T.C.C. Condensers, 750 volts working, 2 mfd., 4/-; 750 volts working, 4 mfd., 6/-; 400 volts working, 4 mfd., 4/-; 4 mfd. electrolytic condensers, 440 volts working, 5/-; 8 mfd., 3/3.

WESTERN ELECTRIC Condensers, 250 volts working, 1 mfd., 6d.; 2 mfd., 1/-; 400 volts working, 1 mfd., 1/-; 2 mfd., 2/-.

POLAR 3-gang Variable Condensers, tub type, fully screened, split vane and disc drive, 0.0005; 12/6.

ORMOND All-brass 2-gang Condensers, semi-shielded, 0.0005, 5/-; Ormond all-brass 0.0005 slow motion condensers with knob and dial, 3/6; Polar 0.0005 and 0.00035 bakelite dielectric condensers, with knob, 1/-.

BBRITISH Radiophone 4-gang Condensers, with trimmers, 12/6; fully screened, 16/-.

SPECIAL Offer.—Wire-wound resistances, 4 watts, any value up to 10,000 ohms, 1/-; 8 watts, any value up to 15,000 ohms, 1/6; 15 watts, any value up to 50,000 ohms, 2/6; 25 watts, any value up to 50,000 ohms, 3/6; 50 watts, any value up to 50,000 ohms, 5/-.

WIRE-WOUND Potentiometers, 15,000 ohms, 1/6; Centralab potentiometer volume controls, 50,000 ohms, 2/-; Colverstat logarithmically wound potentiometers, 6,000 ohms, 1/9.

HEAUVY Duty Variable Resistances (slider type), wound on porcelain, 2,000 ohms, 1 amp., 5/-; 500 ohms, 1/2 amp., 5/-.

B.T.B. R.K. Minor Moving Coil Speaker, 2,500 ohm field, with output transformer, 15/-; A.C. model (200-250 volts), 25/-.

MAGNATON D.C.144, 2,500 ohms field, 15/6; ditto, 200-250 volts A.C., 25/6; Pola 2,500 ohms and C.500 ohms, type F.6, 17/6; Pola P.M.5 permanent magnet, 20/-; F.6 permanent magnet, 31/- (all with output transformers).

AMPHION Moving Coil Speakers, type E.M. 644, dual fields, 2,500 and 5,000 ohms (100 or 200-250 volt), with output transformer, 12/6; ditto, 200-250v. A.C., 22/6.

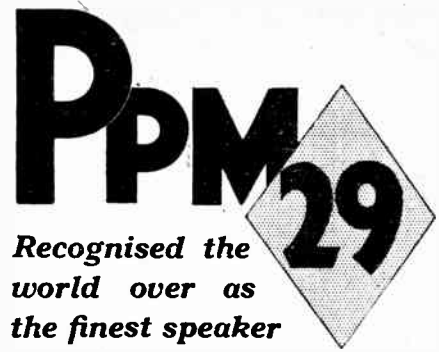
B.T.H. Electric Gramophone Motors, 100-250v. A.C. and D.C. (distal 6 grs.), our prices complete, 45/-; B.T.H. induction type, A.C. only, 120-250 volts, 30/-, complete; double spring gramophone motors, with 12in. turntable, 15/-, complete.

SPECIAL Offer of Kolster Brandes Electric Gramophone Motors, all complete with turntables, list price £5; No. 1, super A.C., 100-250 volt, induction type, 35/-; No. 2, super universal, 100-250v. A.C. or D.C., £2; No. 3, clockwork motor, electrically wound, £2 5.

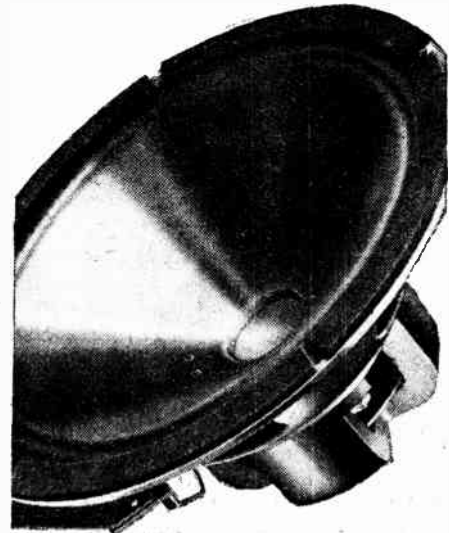
AMPHION Pick-up and Arm, with volume control, 17/6; Amphion permanent magnet speaker, M.C.22, 30/-.

EKCO Microphones, complete with transformer, a really fine job, 18/6; wire-wound Clarostat potentiometer, 50,000 ohms, 2/6.

(This advertisement continued on next page.)



Recognised the world over as the finest speaker in its class.



INCLUDING UNIVERSAL TRANSFORMER

The sensitivity of the P.P.M. 29 Speaker is greater than ever before attained. Its quality of reproduction and ability to handle tremendous volume are remarkable achievements. It employs an extra large Hyflex diaphragm and a massive magnet. Ask your local dealer to demonstrate. When you hear it you will appreciate the extraordinary life-like tonal quality and sensitivity of this Celestion Speaker.

Price including universal transformer - - 77/6



FOREMOST NAME IN SOUND REPRODUCTION

CELESTION Ltd., London Rd., Kingston-on-Thames
London Showrooms: 106, Victoria St., S.W.1

FERROCART

"SMURTHWAITES" are now manufacturing a range of high quality Receivers including "THE WIRELESS WORLD FERROCART III" incorporating these revolutionary coils. We build receivers to suit customers' individual requirements, and a "Smurthwaite built" Receiver is an individual handmade production. For guaranteed workmanship and "Wireless World" quality let Smurthwaites build your Ferrocart III.

Q. P. P.

We are also producing Q.P.P. receivers incorporating the new Ferrocart coils and other Q.P.P. receivers with or without H.F. stages. Radiograms in de luxe walnut cabinets from 22 Guineas.

For full particulars of our individual and hand made sets write to—

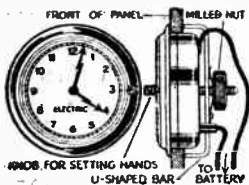
F. W. SMURTHWAITE, LTD.
Harmony Works, Ross Parade,

Phone: Wallington 1982. **WALLINGTON, Surrey.**
(Wireless contractors to the London County Council and other important buyers of wireless receivers.)

THE BRITISH RADIO INSTITUTION

Founded 1930; membership steadily increasing. Objectives: closer technical co-operation between, and subsequent advancement of, its members. Office-bearers honorary and elective. Associateship by examination or approved qualifications. Subscription Membership open to all at 5/- per annum (plus 2/6 on entrance). Balance Sheet published annually. Explanatory brochure post free from Hon. Sec.:—J. D. Fox, 25 Kingswood Drive, King's Park, Cadbury, Glasgow. London Branch Chairman, J. J. Denton, 25 Lisburne Road, Hampstead, N.W.3. Read its chief organ,

The British Radio Annual, 1932, which will be publicly available March 18th. Contents: Heaviside layers, band-pass filters, tone correction, I.F. amplification, frequency multipliers, sound-film operation, echo sounding, writing technical articles, etc. Price 2/- net; obtainable through W. H. Smith & Son, Ltd. (England), John Menzies & Son, Ltd. (Scotland), or direct from the Hon. Sec. Order now.



FIT THIS ELECTRIC CLOCK TO YOUR SET!
NO MAINS NEEDED!
KEEPS CORRECT TIME!
NO WINDING!

Works off small battery lasting 12 months, or can be plugged into G.B. Battery without affecting reception. Uses practically no current. Fits into hole 3 1/2" dia. in any panel up to 1/2" thick. Easy to fix—no screws required. Only 1/2" from front of panel to back of case. Swiss movement. Hands set from front. Nickel plated bezel. Useful addition to any set.
RIVERSIDE MFG. CO., LTD., Dept. 20, Crisp Rd., Hammermith, W.6. Telephone: Riverside 6392.

12/6
COMPLETE WITH BATTERY
POSTAGE 6D

WHAT IS "ENGINEERING" OPPORTUNITIES?

"ENGINEERING OPPORTUNITIES" is a 250-Page Handbook that has been prepared after years of patient search into the possibilities of various Engineering careers. It shows clearly and definitely the way in which you may carve out a successful career in your chosen branch of Engineering, irrespective of your age, education or experience. Among a host of other things, it outlines Home-Study Courses in all branches of Civil, Mech., Elec., Motor, Aero., Wireless and "Talkie" Engineering, and shows the easiest way to pass A.M.I.C.E., A.M.I.Mech.E., I.E.E., A.M.I.A.E., H.I.M.S., G.P.O., Matriculation, Civil Service and other Examinations. "ENGINEERING OPPORTUNITIES" is a unique Handbook that you should most certainly read. Send for your copy to-day—FREE of any cost.
BRITISH INSTITUTE OF ENGINEERING TECHNOLOGY, 387, Shakespeare House, 29-31, Oxford Street, London, W.1.

SPEED IN DESPATCH FOR THE TRADER
PERSEUS SUPPLIES ALL MAKES KITS OR PART KITS, or any components, valves or Speakers, at best Trade Discounts. **BIG REDUCTIONS IN PRICES OF MAINS RECEIVERS**
Latest information 120 p.p. illustrated catalogue. 6d. Stamps **LATEST W.W. and OTHER KITS.** First in delivery
Personal attention of the proprietor.
PERSEUS RADIO, Burton-on-Trent

PATENT AGENTS.

PATENTS and Trade Marks, British and foreign.—Gee and Co. (H. T. P. Gee, Member R.S.G.B. and A.M.I.R.E.L.) 51-52, Chancery Lane, London, W.C.2. Phone: Holborn 1525. [0001]
KING'S PATENT AGENCY, Ltd. 146a, Queen Victoria St., London, E.C.4. Phone: Central 0682. 45 years' experience. Advice Handbook free. [0381]
A. MATHISEN, B.Sc. (Elect. Eng.), specialist, patents for radio inventions.—First Avenue House, 114, Holborn, London. [1232]

REPAIRS.

REPAIRS to Loud-speakers, transformers and head-phones, 4/- each; Blue Spots or Wufa's, 5/-; mains eliminators, etc., quoted for; prompt service; satisfaction guaranteed; terms to trade.—Loud-Speaker Repair Works, 2, Shipka Rd., Balham London. Streatham 6618. [0394]
CONSULT Alexander Black about Set Repairs.—55, Ebury St., S.W.1., Sloane 1655. [0397]
R. A. ARNELL, Now Undertakes to Repair Any Type of Set, especially all-mains models; quotations free; prices reasonable.—8, Fishponds Rd., S.W. Phone: Streatham 8209. [2072]
ANY Loud-speaker or Radio Receiver (American receivers particularly) Repaired or Reconditioned.—Radio Service Laboratories, 41, Southampton Rd., London, N.W.5. Gulliver 3569. [1071]
GUARANTEED Repairs by Experts; specialists for repairs to S.G. Brown and Amplion radio apparatus, also loud-speakers, headphones, pick-ups, Blue Spots any type rewound, reimaginised and adjusted; 4/-; post free; mains transformer repairs; terms to trade.—Howell, 91, Morley Hill, Enfield, Middlesex. [9716]
LOUD-SPEAKERS, headphones any type, rewound and overhauled, 3/6; Blue Spots, 4/-; post free; 24 hours' service guaranteed; terms to trade, Devon Radio and Loud-speaker Repair Dept, 57, Treville St., Plymouth. [2105]

WANTED.

NEW or Second-hand Wireless Parts Wanted for Cash, any amount, any condition; send yours, stating reasonable price; cash by return; top prices paid for 1932 parts; also meters, etc.; will call London districts.—Mildmay Radio Exchange, 24, Mildmay Grove, London, N.1. [1637]
WANTED, Avometer.—Full particulars, price, etc. to Joyce, 31, Ransgate Rd., Margate. [2037]
SET of "Wireless Worlds," April 1932, onwards.—Lewin, 8, Gainsborough Gardens, Hampstead. [2038]
SPOT Cash for Components, etc.—Economic Radio Co., 56-98, South Lambeth Rd., S.W.8. [1923]
WANTED, Harle belt drive A.C. gram. motor, complete.—Rumary, 54, Greyfriars, Bedford. [2053]
WINDING Machine Wanted, suitable intervalve transformer winding.—Jollys, Aston Lane, Witton, Birmingham. [2051]
A.C. Mains Energised M.C. Speakers and Valves, 8/4; Det. Pen. twin and triple gang condensers, screened, I.F. chokes, and transformers, urgently required in part exchange for new receivers and components; allow 60-80% on reputable goods, acceptable up to one-third of order.—Wood's Radio, Holcombe Brook, Near Bury. [2067]
WANTED, all types of A.C., D.C., and battery valves; also A.C. and D.C. receivers, and any other components, in quantities for spot cash.—Ward, 12, Trelegar Rd., Bow, E.3. [2116]
H.M.V. Auto Playing Desk, A.C., as new essential; quote lowest price.—Tupper, 84, Queen Victoria St., York. [2099]
PYE 350H Choke, new preferred.—Cramp, Lansdowne Place, S.E.19. [2097]

TUITION.

WIRELESS as a Career.—Whether you are engaged in the radio industry and wish to improve yourself, or if you wish to obtain employment in this profession, we can help you. Our students are engaged in responsible positions in the majority of the large wireless firms in England. Booklet describing Home Study Course, post free.—Northern Counties Wireless School, Preston. [0373]

SITUATIONS VACANT.

IF You Wish to Enter the Wireless Profession with a Thorough Training, or if you wish to improve your present position, you will need the certificate issued by Britain's leading wireless college. This is not a correspondence college. Apparatus of all leading makes installed for instructional purposes. Boarders accepted. Training fee can be paid after appointment. Prospectus free.—Wireless College, Colwyn Bay. [0388]
IMPORTANT Firm of Radio Manufacturers Requires a First Class Radio Engineer to control the Technical Department, must be thoroughly acquainted with modern receiver design, testing and production methods, and capable of acting in an executive manner on all technical matters.—Reply, giving full details in strict confidence, Box No. 23, Osborne-Peacock Co., Ltd., 11, Piccadilly, Manchester. [1977]

AMBITIOUS Men should Apply for Free Particulars of Training or Appointments in Radio or Talkie Engineering; valuable introductions.—Radio Training Institute, St. John St., Newcastle-on-Tyne. [1907]

RADIO ENGINEERS.—Practical and theoretical knowledge is required to secure posts in the radio industry; our short intensive course of training includes instruction on all types of modern receivers (day and evening classes).—Apply Principal, British Radio Engineering College, 179, Clapham Rd., London, S.W.9. Tel.: Brixton 0215. (The College is recognised by the leading manufacturers, and its Employment Service is free to students who gain our Certificate.) [2066]

SITUATIONS WANTED.

DO You Want Skilled, Certified Service Engineers and Salesmen? Then consult the Principal, The Wireless College, Colwyn Bay Phone: 2407. [0392]
KEN Amateur Constructor, age 18, desires accommodation and apprenticeship to radio.—Write from any locality to D. Cockings, Pinchbeck, Lincs. [2046]
A MATEUR (37), 10 years' experience, requires situation; salary £450; available March 31st.—Box 6270, c/o The Wireless World. [2049]
A CAPABLE Buyer Requires Appointment, also fully experienced in costing, stores, and factory management.—Box 6259, c/o The Wireless World. [2036]

SCRAP THAT DUD

That cheap pocket "any ohms per volt" iron meter, taking 30 m/a to give a reading, that has ruined your H.T. battery.

GET A DIX-ONEMETER

The ideal of multi-range moving coil meters. Micro-amps to 20 amps, milli volts to 1,000 volts. 50 ranges on one meter. Two clear scales with mirror and knife edge pointer.

ONLY

60/-

A remarkably low price for a meter worth £10. For Novice or Expert. Test Booklet Free.



The High-grade Radio Tester. Low Price. High Value.

INSTRUMENT IN CASE, 60-MULTIPLIERS, EACH, 8/6. COMPLETE RADIO OUTFIT £4:19:6

ELECTRADIX RADIOS

218, Upper Thames Street, E.C.4

EPOCH

MOVING COIL SPEAKERS
The Finest in The World in Each of Their Price-classes.

Ask your dealer or call for a demonstration at Exmouth House.
Send for New Booklet W.S.5a. It is free.
EPOCH RADIO MANUFACTURING Co. Ltd.
Exmouth House, Exmouth St., London, E.C.1
At the junction of Rosebery Avenue and Farringdon Road.
Phone: Clerkenwell 6666 (4 lines).

EVERY PART EVERY CIRCUIT
LEONARD HEYS
For all standard makes of COMPONENTS, KITS, PARTS etc., as advertised in this JOURNAL and elsewhere. All used Sundries. SPEEDY & PAINSTAKING SERVICE. Personal Attention to All Orders. Write for Cat. enclosing trade card (Retailers only).

LEONARD HEYS: FARADAY HOUSE
HENRY STREET, BLACKPOOL.
ELEVEN YEARS' EXPERIENCE IN THE WIRELESS TRADE

FOR VOLUME & TONE
IGRANIC
ALONE

Hear **PERFECT** radio through a **PERMAG** REPRODUCER.
CHASSIS ONLY 38/6
CABINET MODEL 49/6
Ask your dealer or write to:
BAKER'S SELHURST RADIO
75 & 77, Sussex Road, Croydon.
Phone: Croydon 3441/2.

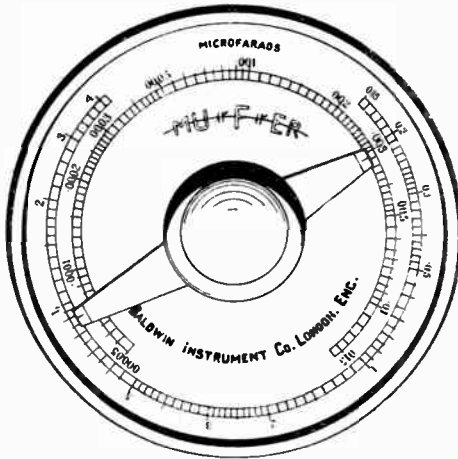
ERIE
Write for NEW Technical Brochure
THE RADIO RESISTOR CO
1, Golden Sq., Piccadilly Circus, London, W.1

SHORT WAVE BARGAIN

SHORT WAVE PLUG-IN COILS, Nos. 2 to 9 Turns
AIR DIELECTRIC. STANDARD SIZE 8d. Each. Unusual Price 1/6
4 for 2/4, 9 for 4/6, all Post Paid. No. 12 for 8/6, band 17- Base-board Coil Holders 6d.
SCIENTIFIC SUPPLY STORES (WIRELESS), LTD.
Dept. W., 126, Newington Causeway, Elephant and Castle, Southwark, London. Hop 4177

BALDWIN BRIDGES FOR

THE MEASUREMENT
of CAPACITY and
RESISTANCE.



THE MU-F-ER CAPACITY BRIDGE

has a self-contained,
mechanically silent
oscillator and measures
Capacities from .00005
mfd. to 4 mfd. on a two-
range Logarithmic scale.

MU-F-ER CAPACITY BRIDGE. PRICE 75/- Carr. Paid.
Size: 6" x 6" x 3 1/8". Weight: 1 1/2 lb.

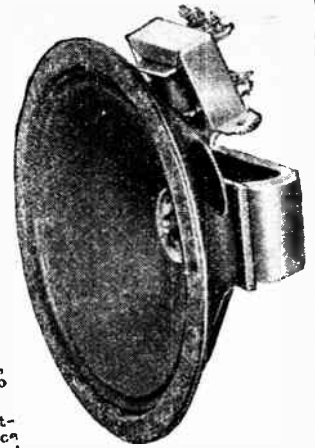
THE LOGOHM RESISTANCE BRIDGE IS MADE IN TWO PATTERNS.

- MARK I. For use with a separate Galvanometer,
PRICE 70/-
- MARK II. Complete with Galvanometer and Battery,
PRICE 110/-

Both these Instruments have double-range Logarithmic
Scales reading from .5 to 40,000 ohms.
Loading resistances can be supplied for Mark I to
multiply the high range by ten.

THE BALDWIN INSTRUMENT CO.,
91 BELLE GROVE, WELLING, KENT. 'PHONE: BEXLEY HEATH 1320.

YOU CAN HAVE BOTH!!



The old story of "You can't have
good quality at low price" is out
of date and amply disproved.
Look at British cars or British
aircraft, for instance. Better still,
look at Goodman's speakers—also
British.

Goodman's speakers are the out-
standing high quality low price
example of the radio market. And
as with every similar achievement
it is the result of intensive technical
research and use of the most mod-
ern manufacturing methods.

Price of itself is no indication of
quality. Test the article first and
then compare the price—that is the
wise way. Do this with Goodman
speakers. We urge you to, because
we know there can only be one
result.

"RENOWN"
P.M.M.C.

Chassis Model **27/6**
Cabinet Speaker (Real Walnut) **42/-**

YOU WILL CHOOSE A GOODMAN

For QUIESCENT PUSH-PULL 5/- extra.
Send for fully descriptive leaflet NOW

GOODMANS

69, ST. JOHN ST., LONDON, E.C.1.
Clerkenwell 3838-9.

Mr. EXPERIMENTER—

Follow the lead of the manufacturers and
make your connections and nuts positively
secure with—

"SHAKEPROOF" LOCK WASHERS



AND LOCKING TERMINALS.

British Patent 191287.
The twisted teeth bite
into the metal and pre-
vent "slacking off." The
more the vibration, the
tighter they grip.

ASK YOUR DEALER
FOR "SHAKEPROOF."

Manufactured by
BARBER & COLMAN Ltd., Brooklands, Manchester
Dealers and for lists enquire to—
WM. CLARK (Spare Parts) Ltd., 5, Marshalsea Rd., London, S.E.1.

COLLARO COMBINED PICK-UP AND MOTOR UNIT

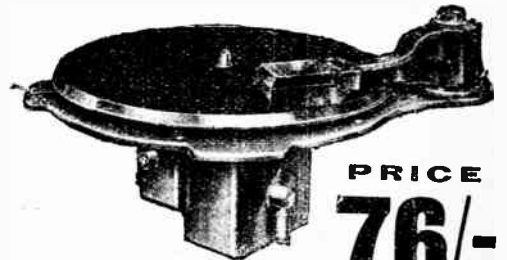
A complete self-contained unit compris-
ing "32" model Induction Motor, suitable
for 100-130 Volts and 200-260 Volts,
40-60 Cycles. (Can also be supplied for
25-40 and 60-100 Cycles.)

Automatic start and stop, combined
with "Collaro" Pick-up; all that is required
for the Gramophone side of a Radio-Gram.

The "Collaro" Pick-up can be used in
conjunction with all receiving sets and
amplifiers. The built-in wire wound
Volume Control will show no signs of
deterioration or crackling in use.

The Pick-up base, head and arm are Bakelite
mouldings and the general outline is designed to
harmonise with the clean lines of the modern Radio-
Gramophone.

Obtainable from all Radio Factors and Dealers.
COLLARO LIMITED.



PRICE
76/-

Starts automatically
Stops automatically

WITH BUILT-IN
VOLUME
CONTROL
80/-

INDEX TO ADVERTISEMENTS.

	PAGE
Alton Battery Co., Ltd.	Inside back cover
Apollon Gramophone Co., Ltd.	v.
Atwater-Kent (G. A. Britain, Ltd.)	Inside front cover
Baker's Sellhurst Radio	20
Baldwin Inst. Co.	21
Barber & Colman, Ltd.	21
Belling & Lee, Ltd.	16
Birmingham Sound Reproducers, Ltd.	13
Britannia Batteries, Ltd.	22
British Institute of Eng. Technology	20
British Pix Co., Ltd.	v.
British Radio Institution	20
British Radiophone Co., Ltd.	12
British Rola Co., Ltd.	1
British Thomson-Houston Co., Ltd.	2
Bryce, W., Andrew & Co.	8
Bulgin, A. F., & Co., Ltd.	8
Burne-Jones & Co., Ltd. (Magnum)	16
Burton, C. F. & H.	18
Celestion, Ltd.	17
Clarke, H., & Co. (M. Cr.), Ltd.	7
Cole, E. K., Ltd.	Front Cover
Collaro, Ltd.	21
Columbia Gramophone Co., Ltd.	Back Cover
Colvern, Ltd.	11
Cosson, A. C., Ltd.	11
Cressall Manfg. Co.	16
Darwins, Ltd.	22
Dubilier Condenser Co. (1925), Ltd.	3

	PAGE
Eastick, J. J., & Sons	9
Edison Swan Electric Co., Ltd.	7
Electradix Radios	20
Electro Dynamic Construction Co., Ltd.	6
Epoch Radio Manfg. Co., Ltd.	20
Ferranti, Ltd.	2
Forno Co.	4
Gilbert, J. C.	16
Goodmans	21
Grubb Parsons, Ltd.	17
Gramophone Co., Ltd.	10
Gripco Co.	16
Haynes Radio	13
Heys, Leonard	20
Igranic Electric Co., Ltd.	20
Jackson Bros. Co., Ltd.	Inside Front Cover
Kendall Manfg. Co., Ltd.	16
Leetco Lux, Ltd.	16
Lever, Eric J. (Trix), Ltd.	18
London Radio Supply Co.	9
Longley Radio Manfg. Co.	6
Lyons, Claude, Ltd.	Front Cover
McNill, F., & Co., Ltd.	6
Ogilham & Son, Ltd.	12
Parina Manfg. Co.	18
Partridge, Wilson & Co.	4
Pepper, Trevor (Scradox)	18

	PAGE
Peipers Manfg. Co.	20
Peter-Stoll Co., Ltd.	15
Phono, Ltd.	4
Postlewhite Bros.	18
Prich Manfg. Co., Ltd.	4
Pye Radio, Ltd.	5
Radio Resistor Co.	20
Reformers Rubber Works, Ltd.	6
Regent Fitting Co.	16
Reproducers & Amplifiers, Ltd.	Front Cover
Riverdale Manufacturing Co., Ltd.	20
Retax, Ltd. (M.L. Equipment)	3
Ryalls Radio	16
Savage, W. Bryan	19
Scientific Supply Stores (Wireless), Ltd.	20
Scott Sessions & Co.	14
Sifam Electrical Inst. Co.	18
Simpsons Electricals, Ltd.	vi.
Smith, S., & Sons (Motor Accessories), Ltd.	2
Southwaite, F. W., & Co.	20
Sonochordic Reproducers, Ltd.	8
Standard Battery Co.	14
Tannoy Products	18
Telsen Electric Co., Ltd.	Front Cover
Tunnidge & Partners, Ltd.	18
V.G. Manufacturing Co., Ltd.	6
West End Electric	8
Westinghouse Brake & Saxby Signal Co., Ltd.	Inside Back Cover

**FOR REALLY
CLEAN CURRENT
HIGH VOLTAGE
AND LONG LIFE!**

Fit

PERTRIX
TRADE MARK

**NON SAL-AMMONIAC
H.T. BATTERIES**

- THEY ARE MADE UNDER A PATENT PROCESS.
- Their zincs do not corrode: because there is no sal-ammoniac.
- They do not deteriorate when not in use.
- They recover power overnight—every night for months and months.
- They give cleaner current and higher voltage for a longer time.
- They are superior in every way to the common sal-ammoniac battery.

● For long, trouble-free service and clear radio rendering, the patent Pertrix is obviously the only high tension battery a discriminating person will use.



**AND
PERTRIX ACCUMULATORS**

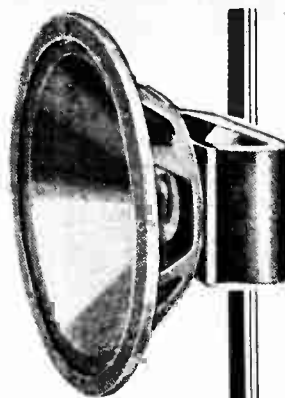
To complete the equipment use Pertrix Accumulators—they are built on clean engineering lines. There is a suitable model for every set.

Pertrix Batteries are obtainable from all Dealers.

BRITANNIA BATTERIES LTD

233 SHAFTESBURY AVENUE, LONDON, W.C.2

Works: Redditt



**If it
has
a**

Darwin

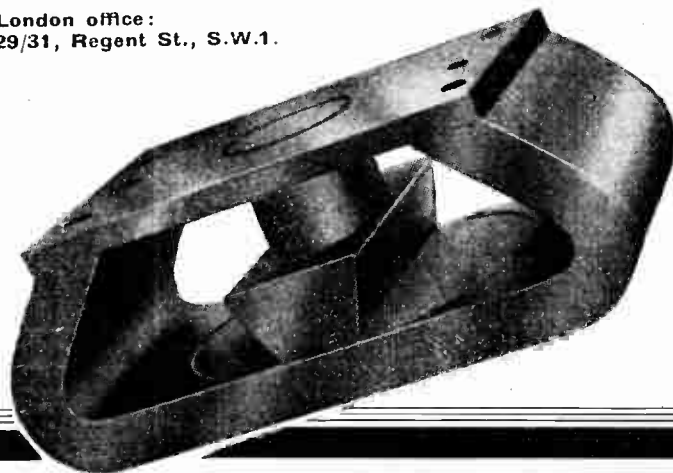
**COBALT STEEL
PERMANENT
MAGNET**

**It is a
High-class Speaker!**

SO decided is the superiority of DARWIN Magnets, that one out of every two speakers on the market is so fitted. This is a striking tribute to the efforts of our Research and Manufacturing Departments in their increasing endeavours to produce the perfect magnet. Definitely, you have a speaker of the highest class if it is fitted with a Darwin Magnet.

Darwins Ltd
CORRECT MAGNET DESIGN

Head Office: Fitzwilliam Works, SHEFFIELD.
London office:
29/31, Regent St., S.W.1.



ALGIERS

363.3 metres; 13 kW.—7.10 p.m., Shipping Notes, 7.15, Weather Forecast and Agricultural Report, 7.20, Songs from Opera: (a) The Mastersingers (Wagner), (b) Joseph (Mehul), (c) Werther (Massenet), (d) L'Africaine (Meyerbeer), (e) Boris Godunov (Missoulsky), 7.55, News, 8.0, Time signal, 8.2, Concert by the Station Orchestra, conducted by Hubert Guillet, and Soloists. In the intervals at 8.30, 9.30, and 9.55, News Bulletin, 10.0 (approx.), Close Down.

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres. 1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records, 6.0, Popular Music on Gramophone Records, 6.15, Programme for Children, 7.0, Popular Music on Gramophone Records, 7.20, News Bulletin, 7.30, Time Signal, 7.31, Gaelic Talk, 7.45, German Lesson, 8.0, Military Band Concert, conducted by Colonel Fritz Brase, 9.0, Contralto Solos by Florence Howley, 9.15, Pianoforte Recital by Madie McCullough, 9.35, Baritone Solos by Sam Joy, 9.45, Barbara—Play (Jerome K. Jerome), by the Seven Players, 10.15, Light Music on Gramophone Records, 10.30, Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJI, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert, 7.0, Request Gramophone Records, 7.30, Exchange Quotations and Relay from the Ayuntamiento, 8.0, Popular Music on Gramophone Records and News, 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations and Market Prices, 9.5, Concert by the Station Orchestra: Pasodoble, Faraón (Tabucena); Selection from El Barquillero (Chapí); Oriental March (Leemans); Gavotte (Dreyer); Procession of the Grail from Parsifal (Wagner); Overture, Semiramis (Rossini), 10.0, Recitations, 10.15, Sextet Concert, relayed from the Granja Royal, 11.0 (in an interval), News, 12 Midnight (approx.), Close Down.

BARI

269.8 metres; 20 kW., 7.0 p.m., Agricultural Notes, Tourist Talk and Dopplavoro Notes, 7.20, Giornale Radio and Weather, 7.30, Time and Announcements, 7.35, Concert of Chamber Music, Soloists: Ita Lombardo D'Angelo (Pianoforte), Enza Motti Messina (Soprano), Luigi De Grandi (Tenor) and Nilda Pignatelli (Violin), Overture, Iphigenia in Aulis (Gluck); Pianoforte Solos; Extracts from the Italian Concerto (Bach); Arias (Pascuini): (a) Con tranquillo riposo, (b) Aria with Violin Obligato, Ermia alle rive del Giordano; Violin Solos: (a) Sogno (De Guarnieri), (b) Spanish Dance (Granados-Kreisler); Pianoforte Solos: (a) Moment musical (Schubert), (b) Tambourin (Rameau), (c) Capriccio (Scriabine); Violin Solo: La bella addormentata (Giacca); Three Soprano Arias from Figaro (Mozart); Third Movement from the Concerto in F (Nardini-Ponte); Soprano Aria, Ah perfido! (Beethoven); Pianoforte Solos: (a) Arabelle (Schumann), (b) Seguidilla (Albéniz), In the interval, Talk, 9.30, Popular Music on Gramophone Records, 9.55, News, BASLE.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.8 kW., 3.0 p.m., Orchestral Concert: Overture, Le fils du Mandarin (Cui); Lyric Suite (Lindner); Selection from Madame Butterfly (Puccini); Homage March (Grieg), 4.0, Medical Talk, 5.55, Time and Programme Announcements, 6.0, Talk, 6.30, Recital of Yugoslavian Songs, 6.0, Popular Music on Gramophone Records, 7.30, See Vienna, 9.30 (approx.), News, followed by Light Music from the Ratnicki Don.

BERLIN

KÖNIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin, 1.0, Gramophone Concert from Berlin (Witzleben), 1.45, Four Boys help each other (A Radio Play for Young People (Peter Matthous), 2.30, Weather and Exchange, 2.45, Talk by Dr. Herbert Ubricht, 3.0, Review of Educational Books, 3.30, See Hamburg, 4.10, Talk: Modern Systems of Defence—Russia and Italy, 4.30, Talk: Prospects for those leaving School, 5.0, Chamber Music—Old Lute Music of the Sixteenth and Seventeenth Centuries, 5.25, Topical Talk, 5.40, Wireless Technical Talk, 5.55, Weather and Announcements, 6.0, English Lesson, 6.30, A Poem, 6.35, Song Recital by Jürgen Bendix: Die beiden Grenadiere (Wagner); Knabe mit dem Wunderhorn (Schumann); Frühlingsnacht (Schumann); Aria from Rigoletto (Verdi); Prologue to I Pagliacci (Leoncavallo), 7.0, See Breslau, 8.20, Talk on Races and Achievement, 9.0, See Frankfurt, 9.20, Weather, News, and Sports Notes, 9.45, Weather Report for Shipping, 10.0, Dance Music from Berlin (Witzleben), 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—6.15 p.m., Concert of Light Music from the Café Corso at the Zoo, 7.20, Topical Talk, 7.40, Announcements, 7.45, The Ninth Symphony in D Minor, Op. 125 (Beethoven), relayed from the Philharmonie, The Berlin Philhar-

WEDNESDAY MARCH THE FIFTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Sir Oswald Mosley: "Fascism," Symphony concert from Queen's Hall. LONDON REGIONAL "Castle on the Hill," feature programme by C. Denis Freeman, Military Band. MIDLAND REGIONAL "Mainly Incidental Music," orchestral concert. WEST REGIONAL Orchestral concert from the National Museum of Wales. SCOTTISH REGIONAL Gaelic choral concert, "The Clan of Lochnann," a play by B. McArthur. BELFAST Orchestral concert from Stramillis.

ABROAD

BRUSSELS (No. 1) 8.45 p.m. Concert from the Conservatoire. HAMBURG 6.30 p.m. Opera: "Tannhäuser" (Wagner), from the Municipal Theatre, Kiel. PRAGUE 7.5 p.m. Concert from the Smetana Hall, conducted by Prof. Jivak. RADIO PARIS 9 p.m. Lamoureux concert from the Salle Gaveau. REYKJAVIK 10 p.m. Acts 1 and 2 of "La Tosca" (Puccini). ROME 7.45 p.m. Opera: "Kovantchina" (Moussorgsky), from the Scala. STRASBOURG 8 p.m. Orchestral concert, conducted by M. de Villers. STUTTGART 8 p.m. Delius concert from Frankfurt.

monic Orchestra, conducted by Eugen Jochem, with the Bruno Kittel'scher Choir Soloists, 9.0, Weather, News, and Sports Notes, followed by Dance Music, 11.0 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender. BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News and Exchange, 7.40, Tourist Talk, 7.55, Lottery Results, 8.0, Agricultural Report, 8.15, News and Weather Report, 8.30, Vocal and Orchestral Concert.

BRATISLAVA

279 metres; 11 kW.—5.0 p.m., Hungarian Programme: Talk, Book Review, and Sonata in G Minor for Violin and Pianoforte (Debussy), 6.0 till Close Down, See Prague, 9.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 60 kW., Relay by Gleiwitz, 253 metres.—12.10 p.m., Gramophone Concert, 12.45, Time, Weather, News, and Exchange, 1.5, Gramophone Concert (contd.), 1.45, Programme arranged by the Post Office, with Gramophone Records, 2.10, Agricultural Prices, 2.35, Talk arranged by the Post Office, 3.0, Talks for Parents, 3.30 (from Gleiwitz), Pianoforte Recital of Jazz Music by Georg Richter: The Jazz Master (Mayerl); White Heather (Mayerl); Have you forgotten? (Suess-Mayerl); The Wedding of the Painted Doll (Brown); Cuban Love Song (Stothart-Hugh-Fields); The Three Musketeers (Riesenhell-Benatzky), 4.0, Talk: Experiences of an Actor on Tour, 4.20, Market Prices, followed by Reading, Johannes von Capistrano in Breslau (Anna Bernard), 4.40, Concert of Light Music by Emil Gliednick and his Band, with Song Refrains by Ruth Puls: March-Foxrott, Heut reiss' ich die Welt zuammen (Strauss-Grün); Waltz, Kikiki (Toucheat-Evans); Three Roses (Niels); Intermezzo, Alle Hampelmänner tanzen (Lindemann); Song Potpourri, Servis Wien (Dostal), 5.20, Talk: Smuggling and Smugglers, 5.40, Concert (contd.); Foxrott, Lustiges Wien (Jessel-Löhr); Song from Morg'n geht's uns gut (Benatzky); Viennese Song, Ich halt' einst ein süßes Mädel (Schumkalla); Melody from The Flower of Hawaii (Abraham); Russian Fantasia (Grotte-Kieselstein); Mein Glück (Gilbert); Potpourri, Zum Tanz (Kernbach), 6.35, Weather and Market Prices, 6.40, Talk: The People and Landscape of Upper Silesia, 7.0, Upper Silesia—a Radio Cantata (Gerhard Ströcke), by the Silesian Philharmonic Orchestra, the Station Choir and Soloists, 8.20,

News, 8.30, Concert of Old-Time Dances by the Station Orchestra, conducted by Franz Marszałek, 9.30, Time, Weather, News, Sports Notes, and Programme Announcements, 9.50, Answers to Correspondents on Legal Questions, 10.0, Dance Music from Berlin (Witzleben), 11.0 (approx.), Close Down.

BRNO

342 metres; 25 kW.—5.25 p.m., German Transmission: News, Talk on Gardening and Talk for Workers, 6.0 till Close Down; See Prague, 9.15 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW., 12 Noon, Concert conducted by André Fellemann, relayed from the Grand Hotel, Antwerp, 1.0 p.m. (in the interval), Le Journal Parlé, 5.0, Concert by the Little Station Orchestra, 6.0, Talk: Strolls through Belgium—Mons, 6.15, Symphonic Variations (Franck) on Gramophone Records, 6.30, Concert by the Station Orchestra, conducted by P. Leemans, Soloist: M. Marié (Tenor), Overture, The Secret Marriage (Cimarosa); Intermezzo and Aria from The Czar's Bride (Rimsky-Korsakov); Songs: (a) Ständchen (Schubert), (b) Ständchen (R. Strauss), (c) Si mes vœux avaient des ailes (Hahn), (d) Chanson de Peiret (Delmas); Nocturne (Brenta); International Suite (Tchaikovsky), 7.15, Talk: Party Politics in England and the Scandinavian Countries, 7.30, Medical Talk, 8.0, Germal—Radio Play (Hubermont), with Music by the Riga Choir and Soloists, 8.45, Pilsen Concert, relayed from the Royal Conservatoire, The Chamber Orchestra, Soloists: Mme. Persin-Desfontaines (Organo), Mme. Liebart (Songs), M. Anstach (Tenor), and M. De Groot (Bass), Sinfonia from the Cantata No. 29 (Bach); Duets for Tenor and Bass (Rameau); Organ Solos (Bach), 9.15, Talk and Readings: Leopold Leveaux, 9.30, Concert (contd.); Selection from La serva padrona (Pergolesi-Gavanti), 10.0, Le Journal Parlé, 10.10, Hot Jazz, with Commentary by André Vebé, 10.30, Light Music on Gramophone Records, 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW., Programme in Flemish, 12 Noon, Light Music on Gramophone Records, 1.0 p.m., Le Journal Parlé, 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans, 5.0, Concert by the Radio Orchestra, conducted by Franz André: Marche des petits soldats de plomb (Pierné); La boîte à jonjou (Debussy); Potpourri of Popular Flemish Songs (Hullebroeck); Russian Potpourri, Dubinushka (Schirmer); Suite algérienne (Saint-Saëns); Dances from Nell Gwynn (German), 5.45, Programme for Children, 6.30, Gramophone Records: Overture, Semiramis (Rossini);

Concerto in A Minor (Schubert-Cassado); Overture, Egmont (Beethoven), 7.15, Talk on Folklore, 7.20, Talk on Syndicalism, 7.30, Theatre Review, 8.0, Concert by the Radio Orchestra, conducted by Franz André: Turkish March (Mozart); Waltz, Pomona (Waldteufel); Lying in the Hay; Russian Dances (Tchaikovsky); Valse triste (Sibelius); Three Dances (Zimbalist), 8.45, Talk on Van de Woestijniana, 9.0, Concert (contd.): Phaëton (Saint-Saëns); Dances (German); Valse caprice (Saint-Saëns—Vsaye); Flemish Melodies (Brusselmans); The Blue Danube (Joh. Strauss); Selection from Cendrillon (Massenet), 10.0, Le Journal Parlé, 10.10, Gramophone Records: Overture, Le Maschere (Mascagni); Harlequin (Popper); Toto déguisé en suisse d'église (de Sévère); Mimi se déguise en marquise (de Sévère); Masques (Debussy); Arlequin (Lalo); Mimet No. 1 (Paderewsky); Neptune's March (Ivory); The Gingerbread Horse (Ivory); Serenade (Schubert); Suite, Mosearade (Lacôme), 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra: Viennese March (Müller); Waltz, Op. 34 (Chopin); Overture, Rosamund (Schubert); Selection from Faust (Gounod); Selection from La belle Hélène (Offenbach), 5.0, News and Time Signal, 5.10, Talk, 5.25, Concert (contd.): Violin Solo: Reverie (Vieuxtemps); Symphonic Potpourri, Hallo Romania (Michaelov); Abendlied (Schumann); Italian Serenade (Schibek), 6.0, Talk: The Historical Development of Romania, 6.40, Popular Music on Gramophone Records, 7.0, Violin Recital by M. Bobesco: Sonata in D (Handel); Havanaise (Saint-Saëns); Spanish Dance (Falla), 7.30, Talk, 7.45, Song Recital, 8.5, Whistling Solos, 8.15, Pianoforte Recital by Elvira Loche: Variations in F Minor (Haydn); Sonata in E, Op. 109 (Beethoven), 8.45, News, 11.0, Dance Music from the Grand Hotel Restaurant.

BUDAPEST

550 metres; 18.5 kW., Also relayed on 840 metres from 6.25 to 11.0 p.m.—3.0 p.m., Concert by the Sini Kurim Cigány Band, 4.0, Talk: The Hungarian War of Independence, 4.30, Songs of the Time of the Hungarian War of Independence by the Band of the First Regiment of the Royal Hungarian Infantry, conducted by R. Friesay, 5.50, Talk: Ludwig Kossuth, 6.30, Bink Bán—Opera in Three Acts (Erkel), followed by News and Music by the Inre Magyar Cigány Band from the Hotel Hungaria, 11.0 (approx.), Close Down.

CASSEL.—See Frankfurt

COPENHAGEN

231 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—11.45 a.m. to 1.0 p.m., Concert from the Wivex Restaurant, 2.0, Gramophone Concert of Popular Music, 2.30, Concert by the Radio Orchestra, conducted by Emil Reesen: Overture, Der Waffenschmid (Lortzing); Selection from Romeo and Juliet (Gounod); Two Pieces for Strings from Acunelas Valencianas (Chayarrí); (a) Cancion, (b) Danza; Waltz, España (Waldteufel); Allegro and Tarantella from the Gipsy Suite (E. German); Bulgarian March from The Chocolate Soldier (O. Straus); Selection from Monsieur Beaucaire (Messager); Intermezzo from Tiefland (d'Albert); Air de ballet and Fête bohème from Scènes pittoresques (Massenet); Dance from Wayland the Smith (Fini Henriques); March from the Music to Sigurd Jorsalfar (Grieg). In the interval at 3.15, Talk for Women, 4.40, Exchange and Market Prices, 4.50, Talk: Björnson and Drachmann, 5.20, French Lesson, 5.50, Weather Report, 6.0, News and Report of the Danish Radio Club, 6.15, Time Signal, 6.30, Agricultural Talk, 7.0, Town Hall Chimes, 7.2, Talk and Recital of Songs, 7.50, Four Movements from the Divertissement in E Flat for Violin, Viola, and Cello (Mozart), 8.15, Talk: Questions of the Day, 8.45, Recital of Danish Songs (Niels Glade) by Per Knudsen, 9.0, News Bulletin, 9.15, Concert of Popular Danish Music, by the Radio Orchestra, conducted by Emil Reesen: Overture, Elica (Kuhlau); Ballet Music from Elverhøj (Kuhlau); Overture, Et Eventyr i Rosengård Have (Weyse); Fantasia, Drømmebilleder (Lambye); Overture, Youth and Madness (Dupuy); Tarantella from Napoli (Paulli), 10.0, Dance Music from the Scala Salen, 11.0 (in an interval), Town Hall Chimes, 11.30 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—12 Noon, Light Music on Gramophone Records, 12.30 p.m., News Bulletin, 12.45, Concert of Opera and Operetta Music, 6.0 to 7.0 p.m., Programme in English by the I.B.C., C. Danvers Walker, R. Chene and B. McNabb announcing, 6.0 p.m., Orchestral Concert for Portsmouth and Southsea Listeners, Overture, Tancréd (Rossini); Prelude to Carmen (Bizet); Two Dances from the Nell Gwynn Suite (German); (a) Country Dance, (b) Merry-makers' Dance; Overture, Alessandro Stradella (Plotow); Ballet Music from Sylvia

MARCH 15th

WEDNESDAY

continued

(Delibes). 6.30, Concert for Isle of Wight Listeners. The Capricious Musical Box (Fresco); Songs: (a) My Song (Brown), (b) Lolita; Violin Solos: (a) La Chasse (Cartier), (b) Die Biene (Schubert); Love in Cloverland (Peter); Songs: (a) Song of Love, (b) Home (van Steeden); Waltz, Acclamations (Waldteufel). 7.0, Local News and Popular Music on Gramophone Records, 7.30, Radio Gazette. 8.0, The Listeners' Half Hour and News Bulletin. 8.30, Variety Concert. 9.0, Cabaret Programme relayed from Le Tréport. 10.0 till Close Down. Programme in English by the I.B.C. 10.0, Variety Music: Cheerful Little Earful; Every day away from you; Fire in my Heart; Hurt; Just Two Hearts and a Waltz Refrain; You call it madness; Lonely Troubadour; You're the one I care for; My Mystery Girl; You're lucky to me; My Marguerita; Moonlight-Saving time; Thoughts of you; The Wedding of the Birds; Tie a little String around your Finger; When it's Sunset on the Nile. 11.0, Welsh Music; Welsh Medley (arr. Souers); Songs: (a) Y Bugail, (b) Allodia; Chorus: March of the Men of Harlech; Songs: (a) Y Gwew ar y Fedwen, (b) My Little Welsh Home, Breilodda (Humphries). 11.30, Trios: Evansong (Easthope Martin); Friend o mine (Sanderson); Salut d'amour (Elgar); Love's Old Sweet Song (Molloy); Angel's Serenade; Cavatina (Raff); Ave Maria; Pearl of mine. 12 Midnight, Songs: Wishing and waiting for love; Just plain Folk (Gilbert); Am I blue? (Aks); The Heart of the Sunset (Nicholls); Sleep, Baby, Sleep (Tucker); I'll never ask for more (Ahlgert); Take your love to-morrow (Razof); Hello, Sunshine (Murray). 12.30 a.m. (Thursday), Concertina Solos: Lopeziana (Alter); Irish Medley (arr. Dale); Marilyn (Alter); Scottish Reels (arr. Dale); Hornpipe Medley (arr. Dale); Bonnie Lass o' bon accord (Skinner); Orange and Blue (arr. Dale); The Road to the Isles. 1.0, American Songs: Can't we talk it over? Hallelujah, I'm a Bum; Dinah; I don't work for a living; Fortunes galore; Minnie the Moncher; The Railroad Boomer; Khapsody in Love. 1.30, Concert of Light Music: Pianoforte Solo: Selection from The Big Pond (Fain); Songs: (a) Absent-minded (Summers), (b) Memories of you (Blake); Pianoforte Solo: One Night alone with you (Jeffreys); Songs: (a) Girl of a Million Dreams (Gay), (b) The Kid Next Door (Leslie), (c) My kind of love (Alter); Pianoforte Solo: The Squirrel Dance (Elliott Smith). 2.0, Dance Music: Looking on the Bright Side; Marta; Please don't mention it; Shadows on the Window; Just hummin' along; What makes you so adorable; The King was in the Counting House; Don't tell a Soul; Hummin' to myself; We will always be Sweethearts; Night shall be filled with Music; What would you do; Moonlight on the River; How are you? Song of the Harp. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.
FLORENCE.—See Turin

FRANKFURT

259.3 metres; 17 kW.; and CASSEL, 245.9 metres; and TRIER, 259.3 metres.—6.15, Time, Programme Announcements, Weather, and Exchange. 6.30 to 8.0, See Stuttgart. Zinkenist Schabhardt—Scenes from Swabia's Historic Past (Carl Anton Feuerbächer), with Music of the Period. 8.0, Delius Concert by the Station Orchestra, conducted by Hans Rosband; Two Scenes from Fenimore und Gerda; Two Scenes from A Village Romeo and Juliet. 9.0, Talk: The Great Silence and the People on the Frontier. 9.20, Time, News, Weather, and Sports Notes. 9.45, Brahms Recital on Two Pianofortes by Hans Rosband and Erich Hor Kahn; Variations on a Theme by Haydn, Op. 56b; Sonata in F Minor, Op. 34. 11.0 (approx.), Close Down.

FREDRIKSTAD.—See Oslo.
FREIBURG.—See Stuttgart.
GENEVA.—See Radio-Suisse Romancé.
GENOA.—See Turin.
GLEIWITZ.—See Breslau.
GOTEBORG.—See Stockholm.
GRAZ.—See Vienna.
HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hannover, 566 metres; and Kiel, 232.2 metres.—3.30 p.m. (from Kiel), Wind Instrument Concert, conducted by L. Hacker: March, King Albert (Philipp); Overture, 1813 (Weber); Waltz, Estudiantina (Waldteufel); Selection from Faust (Gounod); March, Deutschlands Waffenhre (Blankenburg); Intermezzo, Rose mousse (Bose); Fanfare Marches for Herald's Trumpets: (a) Kreuzritterfanfare (Henriou), (b) Hee guet Brandenburger-sallewee (Henriou); Potpourri, Mit Feuer und Schwert (Petras). 4.30 (from Kiel), Talk: The Months of the Year in Folk Customs and Superstitions. 4.55, De Diwelint Volkslewen—Radio Sequence (Westerich and Quistorf), by the Station Choir and Soloists. 5.25, Concert by the Hermann Erdlen Chamber Orchestra; Sonata from Musikalische Frühlingsfrüchte (Becker); Concerto for Violin and Strings (Telemann). 5.50, Market Prices. 6.0, Discussion be-

tween Two Unemployed Men. 6.25, Weather. 6.30 (from Kiel), Tamhäuser—Opera in Three Acts (Wagner), relayed from the Municipal Theatre; Introductory Talk by Dr. Bernhard Engelke. In the intervals, Announcements. 7.20, Ice Report. 10.25, Time, Weather, Announcements, Sports Notes, and Police Report. 10.35, Concert, relayed from the Reichshof Hotel.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW., and DANZIG, 453.2 metres.—12.5 p.m., Gramophone Concert of Light Music. In the interval at 12.20 p.m., News. 1.30, Programme arranged by the Post Office, with Gramophone Records. 2.0, Exchange and Market Prices. 2.20, Practical Hints for the Housewife. 2.30, Programme of Songs and Recitations for Children by Children. 3.5, Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Ballet Music from Hamlet (Thomas); Suite from Lakmé (Delibes); Ballet Music from La Gioconda (Ponchielli); Ballet Music from Faust (Gounod). 4.45, Talk for Parents. 5.15, Market Prices. 5.20, Ice Report. 5.30, Talk: The German Populations outside Germany. 6.0, Bridge Lesson. 6.25, Weather Forecast. 6.30, Hans Sachs—A Radio Sequence on the German Mastersinger and Poet (Dr. Carl Hagemann). 7.30, Part Relay of the Master Bakers' Festival Concert from the Stadthalle, Königsberg. The Master Bakers' Male Voice Choir, directed by Konrad Opitz, Schaulich in eure Augen (Carl Weidt); Folk Song of the Sixteenth Century, Siegleicht wohl einem Rosenstock (Neumann); Folk Song of 1824, Da drumten im Tale (arr. Reinhold März); Holla, gut G'sell (Joh. Schein, arr. Kretschmar); Sixteenth Century Folk Song, Der Untank (N. Rost, arr. Fried. Hegar); Im Herbst da muss man Trinken (Marschner). 7.55, News Bulletin. 8.0, Concert by the Königsberg Opera House Orchestra, conducted by Karl Hrubetz; Sport Marsch (Karl Hrubetz); Overture, Der Generalkonsul (Heinrich Reinhardt); Waltz, from the Operetta Warum geht's denn jetzt? (Eysler); Potpourri, Eine Sängerfahrt nach Wien (Bert Silving); Waltz from Frauenherz (Jos. Strauss and Reiterer); Selection from Die geschiedene Frau (Fall); Overture, Venus auf Erden (Lübecke); Song, Das Herz ist nur ein Uhrwerk (Zichner); Quick Polka, D'Helenebader (Konczak); Song from Frühlingsstürme (Weinberger); March, Knabenhort (Rudolf Raimann). In an interval at 9.0 p.m., Weather, News and Sports Notes. 10.0, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

HILVERSUM

Announced HILVERSUM, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Christian Radio Society (N.C.R.V.). 10.40 a.m., Organ Recital. 11.40, Police Announcements. 11.55, Quintet Concert: Fantasia on Nearer my God to Thee (Ruh); Choral (P. E. Bach); Harre meine Seele (arr. Ruh); Neerland's Zangboek; Gramophone Records: Potpourri of Marches (Roland); Suite orientale (Poppy); Helvetia (Leopold). 1.10 p.m., Light Music on Gramophone Records. 1.55, Quintet Concert (contd.); Potpourri, Dividenden (Morena); Plnie d'or (Waldteufel); Potpourri, From A to Z (Geiger); Radetzky March (Strauss). 2.40, Concert by a Children's Choir with Gramophone Records. 3.40, Variety Music on Gramophone Records. 4.10, Interval. 4.40, Programme for Children. 5.40, Stories for Frisian Children. 6.10, Advanced English Lesson. 6.40, Talk. 7.10, Police Announcements. 7.25, Religious Information. 7.40, Organ Recital by M. K. v. Verron. 8.10, Talk. 8.30, Organ Recital (contd.). 9.0, News. 9.10, Variety Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW. 11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Concert by De Notenkrakers, conducted by D. Wins. 1.40 p.m., Programme for Women. 2.40, Programme for Children. 5.10, Organ Recital by Johan Jong; Potpourri, Aus Mozarts Reich (Fuchs); Selection from Les Saltimbanques (Ganne); Miternachtszocken (Heinberger); Selection from A Waltz Dream (O. Straus); Komms ins kleine Pavillon (Léhar). 5.55, Hebrew Programme, Talk and Songs. 6.40, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot; Soloists: Mm. Jan and Jo van Helden (Violin and Viola); Nachtmusik, Op. 5 (Brand); Sonatina for Two Violins (Honegger); Sommer auf dem Lande (Honegger); Concerto for two Violins and Orchestra, Op. 49 (Holst). 7.25, S.O.S. Announcements. 7.30, Variety Music on Gramophone Records. 7.40, Programme in commemoration of Karl Marx; The V.A.R.A. Orchestra, conducted by Hugo de Groot; Overture, Prometheus (Beethoven); Organ Solos by Johan Jong; Recitations; Organ Solos by Johan Jong; Recitations; Organ Solos by Johan Jong; Karl Marx—Radio Play (Johannsen); Trauer Symphonie

(Haydn). 10.10, Announcements and News. 10.25, Talk. 10.30, Popular Music on Gramophone Records. 11.40 (approx.), Close Down. INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.15 p.m., Announcements and Gramophone Records. 6.30 to 9.20, See Warsaw. 9.20, Dance Music on Gramophone Records. 9.40, See Warsaw. 10.0, Answers to Correspondents in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres, 40 kW., and HELSINKI, 368.1 metres.—6.45 p.m., Concert by the Radio Orchestra. 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert, conducted by Eysoldt: March, In Treue fest (Töweke); Waltz, Deutsche Lieder (Weinberger); Overture, Il Seraglio (Mozart); Friedmann-Bach Suite (Lenschner); Fantasia on Brahms Music (Morena); Minnet (Moszkovsky); Schlümmliedchen (Lilling); Rocco Dance and Romantic Dance (Derksen); German Dances (Schubert). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Exchange and Time Signal. 2.50, Programme for Children. 3.20, Talk: The Animal World—The Sleep of Animals. 3.40, Talk: A Trip down the Dambue. 4.8, See Munich. 5.20, Talk on Handicraft in West Germany—The History of the Development of Skilled Trades. 5.45, Weather, Time, Exchange, and Sports Notes. 6.0, Talk: Cultural Films and the Public. 6.20, Talk: Health before Everything—How to organise the School Children's Day. 6.35, Review of Books. 6.55, First General News. 7.0, Concert, conducted by Wolf; Overture, Hunyadi Laszlo (Erkel); Suite (Holzner); Ein Operabend (Mainfred). 7.25, Programme by the Station Choir and Orchestra, conducted by Zimmermann. Soloist: Kläre Hansen (Soprano); Morgengegung—Cantata for Four-Part Male Choir. Three-Part Women Choir, and Soprano (Hildebrand); Morgenhymnus for Mixed Choir and Orchestra (Hugo Wolf). 7.45, Concert (contd.); Waltz from The Little Dutch Girl (Kälman); Perpetuum mobile (Strauss). 8.0, The Discovery of the Blue Grotto—Romantic Play (Georg Goldschlag). 9.5, News and Sports Notes. 9.45, Serenade from Stuttgart. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres, 120 kW.; and DRESDEN, 319 metres.—11.5 a.m., Orchestral Concert, followed by Exchange Quotations. 1.0, Talk for the Unemployed. 1.30, Unfamiliar Authors of Central Germany—a Literary Sequence. 2.10, Talk: The German Post Office. 2.35, Economic Notes. 3.0, A Radio Play for Children (J. Bruno Dittrich). 4.0 (approx.), Concert by a Girls' Choir: Wacht auf! (Wachsman); Folk Song, Wir sind jung; Folk Song, Wohlauf in Gottes schöne Welt; Folk Song, Auf der Lüneburger Heide; Folk Song, In schönsten Wiesengrunde; Es steht ein Lind in jenem Tal (arr. Jöde); Canon, Ha, ha, ha (Cherubini); Ringelreih (Frey); Canon, Auf-See (Hering); Wenn alle Brünnlein fließen (arr. Jöde); Regen, Regen (Stephani); O wie wohl ist mirs an Abend; Guten Abend, gut Nacht (Brahms); Folk Song, Ade zur guten Nacht. 4.30, Economic Notes. 4.50, Weather and Time. 5.10, Book News. 5.35, Italian Lesson. 5.50, Talk: The Thousandth Anniversary of the Wars in Hungary in 833. 6.30, Concert by the Dresden Philharmonic Orchestra, conducted by E. Gottlieb-Hellmesberger; Soloist: Gerhart Schilling (Pianoforte); Eine kleine Nachtmusik; Pianoforte Concerto in G Minor, Op. 50 (Mussorgsky); Fantasia in F Minor (Schubert-Mottl); Spring Overture (Goetz); Bilder aus Osten, Op. 66 (Schnamm); Spring Song, Op. 16 (Sibelius); Gesang und Reigen des Geister, Op. 47 (Busoni). 9.5, News. 9.15 (approx.), Acts Two and Three of Tamhäuser—Opera (Wagner) on Gramophone Records.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 25 kW.—5.0 to 5.30 p.m., Programme in English by the I.B.C. Concert of Light Music: On the Mall; Honest, really, truly; Duet: When It's Moonlight in Killarney; Poschale; Thunder and Blazes; Three Little Times; Duet: I travel the Road; Czardas. 5.30, Light Music on Gramophone Records. 6.0, Russian Lesson. 6.30, Literary Programme. 7.0, See Vienna. 9.0, Time, News, and Light Music on Gramophone Records.

LWOW

381 metres; 16 kW.—6.30 p.m., See Warsaw. 9.15, Dance Music, from the Bristol Palais

de Danse. 9.40, Talk on Esperanto. 9.55, See Warsaw. 10.30 (approx.), Close Down.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—10.30 p.m., Popular Concert. 10.45, Radio Chronicle. 11.0, Popular Concert (contd.). 11.25, Talk. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Literary Talk and Request Gramophone Records. 7.30, Agricultural Talk, followed by Request Gramophone Records (contd.). 8.25, News Bulletin and Political Review. 8.30 to 9.30, Interval. 9.30, Chimes, Time Signal and Political Review. 9.45 (approx.), Confessions before the Microphone by M. Sanchez de Palacios with Loretta Prada, Enrique Chicote and Carlos Arnieles, followed by Song Recital by Paquita Alvarez and an illustrated talk on Polish Music. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—5.25 p.m., Viola Recital by Stepan Schleichhorn; Sonata in G (Hammer); Pavane (Ravel); Album Leaf (Busoni); Sarabande and Allegretto (Corelli); Gavotte (Mehul); Two Andantes (Handel); Romance (Bosini); Medley (Dudziarz). 6.0 till Close Down, See Prague. 9.15 (approx.), Close Down.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—4.30 p.m., Carmen—Opera in Four Acts (Bizet). 8.0, Talk in English: Two Divorces.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—6.5 p.m., Talk: Max Reger and his Art. 6.30, Military Band Concert. 7.30, Talk: The Film Style of Various Nations. 7.50, Gallische Hörner—A Radio Play (Count Clairon d'Haussonville and Ludwig von Wolff). 9.0, Variety Music on Gramophone Records. 9.20, Time, Weather, News, and Sports Notes. 9.45, See Stuttgart. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 53.2 metres; and Rjukan, 447.1 metres.—4.20 p.m., Light Music on Gramophone Records. 5.0, French Lesson. 5.30, Programme for Girls. 6.0, Announcements, Weather and News. 6.30, Educational Talk: The Discoveries at Tr. 7.0, Time Signal. 7.1, Concert by the Station Orchestra, conducted by Hugo Kramm; Overture, The Barber of Seville (Rossini); Selection from Il Travatore (Verdi); Air from Mephistopheles (Boito); Selection from Tosca (Puccini). 8.0, M. Finn Hilversen reads from his own Works. 8.30, Agricultural Report, Weather, and News. 9.0, Topical Talk. 9.15, Song Recital by M. Herberth. 9.45, Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

537.6 metres; 3 kW.—7.0 p.m., Dopplero Notes, Tourist Talk, Agricultural Notes and Giornale Radio. 7.20, Popular Music on Gramophone Records. In an interval at 7.30, Time and Announcements. 7.45, Variety Concert. Soloists: Carducci (Tenor) and Kirner Wigley (Soprano). A Night on the Bare Mountain (Mussorgsky); Tenor Solos: (a) La gondola nera (Rotoli), (b) Aria from Louisa Miller (Verdi); Adagio (Telaikovskiy); Soprano Solos: Tre giorni son che Nina (Pergolesi); (b) Ninna nanna (Ferrucci Ferrighi); Two Tenor Solos from Resurrezion (Alfano); Danse macabre (Saint-Saëns); Soprano Solos: (a) Du bist die Ruh' (Schubert), (b) Marinetta (Dalcroze); Selection from The Italian Girl in Algiers (Rossini). 9.0, Songs. 9.55, News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45, Le Journal Parlé. 7.20, Weather Report. 7.30, Programme for Children. 8.5, News Bulletin. 8.15, Concert by the Symphony Orchestra, conducted by Edouard Flament; Soloists: M. Marchisini (Cello) and M. Cantrelle (Violin); Selection from Der Orloff (Granichstaedten); Berceuse sur l'eau (Bourinwood); Syncope (Kreisler); Cello Solo, Sur le lac (Godard); Violin Solos: (a) Salut d'amour (Elgar), (b) Minuet from Le bourgeoise Gentilhomme (Lully); Dance (Danse).

MARCH 15th

WEDNESDAY

continued

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Paris. 7.0, Gramophone Concert of Light Music. 8.0, Tourist Talk. 8.15, Interval. 8.30, Sponsored Concert. 9.10, Recital of Love Songs of the Time of Louis XIII, by Louis Vannois and Lieette Limozin. Que servent tes conseils. Amour? Il faut partir (Boesset). Mes belles amourettes, brunière; Ma bergère est tendre et fidèle (Lusbert); Amaryllis (Louis XIII); Dansez devant ces beaux yeux (Tessier); Broutez, les musettes (Tessier); Philis, vous avez tant d'appas (Boesset); Divine Amaryllis (Boesset); Beaux yeux, les deux vainqueurs (Guedron); Hé, pourquoi n'oserai-je dire (Guedron). 10.10, Dance Music by the Lido Orchestra.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW. 6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd). 7.45, Gramophone Records: Symphonic Poem, Til Eulenspiegel (R. Strauss). 8.0, Press Review and Weather. 12 Noon, Talk: The Schools and Morality. 12.15 p.m., Concert by the Radio Paris Orchestra: Minuet from the Quintet No. 11 (Bocherini); Ballet Music from Armide (Gluck). 12.30, Organ Recital relayed from the Gaumont Palace: Overture, Alessandro Stradella (Flotow); Danse macabre (Saint-Saëns); Song (Clutman); One Hour with you (Whiting). 1.0, Exchange, News and Weather. 1.5, Orchestral Concert (cont'd). Une Fête à Bruges (Blémant); Le Carnaval d'Atléens (Bourgauff Ducoudray) Cortège burlesque (Chabriat); Valse romantique (Debussy); L'entrée des soldats (Février); Au Champagne (Gillet); Le bal du métierier (Rompertz); Danes (Brahms). 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk, Market Prices, Weather, Agricultural Report and Exchange. 6.40, German Lesson. 7.0, Medical Talk. 7.20, Offenbach Music: Selection from Une Nuit blanche and Les Bavards. 7.45, Commercial Prices and News. 8.0, Literary Talk: Pierre Louys. 8.30, News and Weather. 8.40, Fashion Reviews. 8.45, Gramophone Records of Variety Music. 9.0, Concert by the Lamoureux Society, conducted by Charles Münch, relayed from the Salle Gaveau, Soloist: Lotte Lehmann (Contralto); Concerto grosso in A Minor (Handel); Symphony in D (Mozart); Aria from Fidelio (Beethoven); Two Arias from Tannhäuser (Wagner); Prelude and Death of Isolde from Tristan and Isolde (Wagner). In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Workday Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Blue Ridge Buddies. 9.57, David Lawrence's Dispatch. 10.0, KDKA Orchestra. 10.15, Programme to be announced. 10.30, The Singing Lady. 10.45, Little Orphan Annie, from New York. 11.0, Booth Tarkington's Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Tamberly Sport Review. 11.22, Press News Reeler. 11.27, KDKA Orchestra. 11.45, Today's News, by Lowell Thomas, from New York. 12.0 Midnight, Amos 'n' Andy, from New York. 12.15 a.m. (Thursday), Programme to be announced. 12.30 to 3.15, New York Relay. 12.30, Five Star Theatre—Dramatisation of Short Stories. 1.0, Eno Crime Club. 1.30, Time Signal and Harriett Lee and her Leaders. 1.45, The Country Doctor. 2.0, Adventures of Sherlock Holmes. 2.30, Woodbury Programme with Morton Downey and Donald Novis. 3.0, D. W. Griffith's Hollywood. 3.15, Around the Cracker Barrel. 3.30, Bridge School of the Air, by E. Hall Downes, and Around the Cracker Barrel. 3.45, Bradley Kincaid. 4.0, Time Signal. 4.1, Tamberly Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Smith Ballou and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, College Inn Orchestra, from New York. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., Symphony Concert by the Station Orchestra conducted by Miroslav Kabela. 4.0, Talk: The Tatja Mountains. 4.10, A Mariouette Play (Sofjka) with Music by Isu Krejci. 5.5, Agricultural Report. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Talk: Engemis and Schools and Report for Workers. 6.0, Chimes. 6.1, News. 6.10, Newly-released Gramophone Records. 6.55, Talk on the following Transmission. 7.5, Concert by the Czech Philharmonic Orchestra conducted by Karel Jirak, relayed from the Smetana Hall. Soloist: Karel Hoffmann (Violin). Overture, Iphigenia in Aulis (Gluck); Symphony for Violin and Orchestra (Karel); Symphonic Poem, Venice (Kalik); Symphony No. 7 in A Op. 92 (Beethoven). In the intervals, Talk, and at 8.0: Time

Signal. 9.0, Time Signal. 9.1, News. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS; 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—6.0 p.m. (from Lausanne), Weather Forecast, News Bulletin, and Announcements. 6.30 (from Lausanne), Talk on the Liquor Trade. 7.0 (from Lausanne), Chamber Music. 8.0, (from Lausanne), Cabaret Programme. 9.0, News and Weather. 9.10 (from Geneva), Talk: The Work of the League of Nations. 9.30 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW. 8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Acts I and II of Tosca—Opera (Puccini).

RIGA

525 metres; 15 kW.—5.30 p.m., Silva Operetta in Three Acts (Källmån), relayed from the National Opera House. In the intervals, News. 8.0, Weather. 8.2, Dance Music. 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 441 metres; 50 kW. Relayed by Naples, 319 metres, and 2RO, 25.4 to 89 metres. 6.45 a.m., Gymnastics. 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Orchestral Concert: Barcolonita (d'And); Bianca Inna (Nissino); Intermezzo (Anna Alce); Song (Whiting); Selection from Gipsy Love (Lelauri); Melody (Gonnie); Carnival (Armandoda); Spanish Song (Valdes); A Mediterranean Cruise (Jallowicz); Vanna (Clare); Madrilena (Tadinaferri). In the interval at 12.30, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30 to 5.15, Song Recital by Dora Damar, Anna Maria Laudisa (Soprano) and Lorenza Ferri (Baritone). Three Spanish Songs: (a) Triguñita (Brito); (b) Karabali (Ernesto Leonora); (c) La neta del Caribe (Rodrigo Prats); Three Songs for Baritone: (a) Lassolo canta (Santoliquido); (b) Ohio (Sgambati); (c) Ballata (Mascagni); Soprano Solos: (a) Donne vaghe (Paisiello); (b) Aria from Lucia di Lammermoor (Donizetti); (c) Frauour Variations (Proch). 6.0 (Naples), Shipping and Sports Notes. 6.30, Agricultural and Dopolavor Notes. 6.20, Giornale Radio. 7.0, Time, Announcements and Light Music on Gramophone Records. 7.15, Medical Talk. 7.30, Sports Notes and Tourist Report. 7.45, Koyantelima—Opera in Three Acts (Moussofsky), relayed from the Scala. In the intervals, Talk and News.

SALZBURG.—See Vienna.

SCHENECTADY

CENTRAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XF on 31.48 metres, and by W2XD on 19.56 metres.—7.30 to 12.15 p.m. (Thursday), New York Relay. 7.30, Westminster Choir. 8.0, Two Seats in the Balcony. 12 Midnight, Mischa Weisbord (Violin). 12.15 a.m., Stock Report. 12.30 to 2.0, New York Relay. 12.30, Soloist Programme. 12.45, The Goldbergs. 1.0, Royal Vagabonds, with Ken Murray. 1.30, The Shadow—Mystery Drama. 2.0, Ulica Club Programme. 2.15, Three Shades of Blue—Male Trio. 2.30, Supper Club Orchestra. 3.0, Programme Re-ésumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres; 10 kW.; BASEL, 244.1 metres; and BERNE, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather Forecast and News Bulletin. 11.40 (from Berne), Ballet Music from Faust—Opera (Gounod), on Gramophone Records. 11.55 (from Berne), Extracts from Faust, Werther, Le Roi de Lahore, Le Cloches de Corneville, and Le Roi d'Ys on Gramophone Records. 12.20 p.m. (from Berne), Bolero (Ravel), on Gramophone Records. 12.35 to 12.45, Weather and Exchange. 2.30 (from Basle), Chamber Music and Descriptive Pieces on Gramophone Records. 3.30 (from Basle), Programme for Children. 4.0 (from Basle), Folk Songs and Children's Songs, on Gramophone Records. 4.30 to 4.35, Weather Report. 5.30 (from Zurich), Educational Questions. 6.0, Time Signal, Weather Forecast, and Market Prices. 6.15 (from Zurich), English Lesson. 6.45 (from Zurich), Programme by School Children: (a) School Life—Song Cycle, with Commentary (Gottfried Angerer); (b) Doktor Schlimmerfingert Play for Children (Traugott Vogel). 8.30, Weather and News. 8.40, Concert by the Radio Orchestra, conducted by Hermann Hofmann. 9.15 (approx.), Close Down. SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.5 p.m., Songs to the Lute, by Erik Billerstedt. 4.30, Talk on Hygiene. 4.45, Popular Music on Gramophone Records. 5.35, Talk. 6.30 (from Göteborg), Talk on Manchuria. 7.0, Romanza and Allegro alla Zingara, from the Violin Concerto No. 2 in D Minor (Wieniawski), by Nora Duesberg-Baranowski. 7.15, The White-headed Boy—Comedy (Lunox Robinson). 8.0, Dance Music. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Opera Music on Gramophone Records: Selection from (a) The Prophet (Meyerbeer); (b) Lakmé (Delibes); (c) Cavalleria rusticana (Mascagni); Gavotte and Duet from Manon (Massenet); Pourquoi me reveiller? from Werther (Massenet); Arias (Puccini) from (a) La Bohème; (b) Madame Butterfly; Aria from Louise (Charpentier); Arias from (a) La Juive (Halévy); (b) Werther (Massenet); Serenade from I Pagliacci (Leoncavallo); Aria from Thaïs (Massenet); Song of the Flea from The Damnation of Faust (Berlioz); Overture, Mirella (Gounod); Duet from Le roi d'Ys (Lalo); Selection from La Bohème (Puccini). 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Gramophone Concert: A Midsummer Night's Dream (Mendelssohn); First Peer Gynt Suite (Grieg); Spanish Rhapsody (Ravel); Bachelarie from Sanson and Delilah (Saint-Saëns). 2.0 to 4.45, Interval. 4.45, Talk in French: The Electric Kitchen. 5.0, Jazz Music conducted by M. Roskam. 6.0, Trio Concert, relayed from Lille (265.4 metres). 7.0, Legal Talk in French. 7.15, Popular Music on Gramophone Records. 7.30, News. 7.45, Lottery Results. 8.0, Orchestral Concert, conducted by M. de Villers. 10.0, Orchestral Concert, relayed from the Café Moll in Mulhouse: Overture, Tutti in Maschera (Pisloti); Waltz, La Gitana (Biondosi); Suite Pastorale (Scassola); Introduction and Tarantella for Piano and Violin (Saraste); Selection from Manon (Massenet); Polonaise No. 2 (Liszt). 11.0, Concert relayed from Radio Coloniale, Paris (256.3 metres). Soloists: Cruque and Curan (Cellos). Overture, Manfred (Schumann); Sonata for Two Cellos and Orchestra (Handel). Danes from La vida breve (Falloy); Cinq Saudades de Brazil (Milhaud). 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—12.30 p.m., Concert from Langenberg. 1.0 to 1.15, Musical Programme arranged by the Post Office. 1.15 to 1.30 (from Mannheim), Musical Programme arranged by the Post Office. 3.0 (from Mannheim), Programme for Children. 4.0, Concert from Munich. 4.50, Hugo Herrmann Song Recital by Gertrud Hepp (Mezzo-Soprano), the Composer at the Piano-forte; Der Schlüssel Davids; Emmanuel; Geburt des Königs; Als leis das Morgenrot; Sterne meiner Morgenfrühen; Vor meinem Haus künkt ein Frühlingsgärtchen; Der Abend sinkt; Nun wird es Nacht; Wenn ich in Nächten wandre; Lulu-lein, du mein kleiner Sohn. 5.15, Time, Weather, and Agricultural Report. 5.25, Talk by Käthe Stocks. 5.50, Talk: Ancient Ruins in the Amazon Forests. 6.15, Time and News. 6.30 (from Mannheim), Mandoline Concert: Die kleinen Soldaten (Marks); Fantasia, Annchen von Tharau (Fries); Overture, San Giusto (Bitelli); Unter der Dorfbinde (arr. Ritter); Adlerflug-Marsch (Blumenburg-Walter). 7.0, Schmahardt, the Bugler—Radio Play (Carl Fenechbacher), with Music by Willy Kipp. 8.0 to 9.20, See Frankfurt. 9.20, Time, News, Weather, and Programme Announcements. 9.45, Serenade by the Stuttgart Philharmonic Dance Band, conducted by Harry Risch. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Sound Film Music. 6.30, Popular Orchestral Music. 6.50, Instrumental Music: Cavatina (Raff); Minuet (Mozart). In an interval, Talk. 7.15, Racing Results, Market Prices and News. 7.25, Local News Bulletin. 7.30, Ais from Opera: (a) Sappho (Massenet); (b) Le Roi de Lahore (Massenet); (c) Rigoleto (Verdi). 7.45, Light Orchestral Music. 8.0, Operetta Music: Selection from (a) La fille de Madame Angot (Leocq); (b) Les Saltimbanques (Ganne); (c) Le Comte Obligado (Moretti). 8.15, Music by an Argentine Orchestra. 8.30, Symphony Music: Ballet Music from Platée (Rameau); Sérénade (Féroul); Selection from Maritana (Wallace). 8.45, Opera Music: Ais from (a) Boris Godunov (Mussorgsky); (b) The Bartered Bride (Smetana); (c) The Twilight of

the Gods (Wagner). 9.0, Concert of Light Music by the Palladienne and the Vieille Chanson Musical Societies, conducted by M. Cantenys. In the interval, Viennese Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco: Prelude to the Third Act of Louise (Charpentier)—Two Ais from Les Noces de Jeannette (Massé); Selection from Les Millions d'Arlequin (Drigo); Chez le tailleur (Bach and Laverne); The Sleeping Beauty (Dieker); 11.0, Violin Solos: Wiegand (Schubert); Schön Rosmarin (Kreisler); Melody (Langer); Lughetto (Handel). 11.15, Popular Melodies. 11.30 to 12 Midnight, Programme in English by the I.B.C. H. K. Hitchcock announcing. 11.30, I.B.C. Half-Hour: Hungarian Rhapsody (Liszt); Medley of British Songs; Harry Lauder Launders; Selection from Faust (Gounod); Waltz, The Blue Danube (Joh. Strauss); The Battle of Waterloo. 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Thursday), Accordion Music. 12.15, Military Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.0 to 6.0 p.m., See Turin. 6.0, Light Music on Gramophone Records. 6.20 to 6.35, See Turin. 6.35, Light Music from the Café Dante. 7.0 (approx.), till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—4.0 to 6.0 p.m., Song Recital. 5.35, Giornale Radio; Agricultural and Dopolavor Notes. 6.0, Gramophone Records of Light Music. 6.20, Giornale Radio. 6.30, Time; Announcements and Gramophone Records (cont'd). 7.0, Giornale Radio and Weather. 7.15, Medical Talk. 7.30, A Comedy in Three Acts. 9.0, Gramophone Concert of Italian Music: The Dream from William Ratcliff (Mascagni); Aria from Turandot (Puccini); Aria from Lucia di Lammermoor (Donizetti); Aria O Divine Aida from Aida (Verdi); Aria from André Chénier (Giordano); La campanella (Paganini); Ciclo e mar from La Gioconda (Ponchielli); Aria, Un'urtiva lagrima, from L'Elisir d'amore (Donizetti); On with the Motley, from I Pagliacci (Leoncavallo); Aria from Norma (Bellini); Overture, The Barber of Seville (Rossini). 10.0, Giornale Radio. 10.5, Dance Music from the Rajola, Florence. 10.30 (approx.), Close Down.

VATICAN CITY

19.84 metres (Morning), and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in Spanish. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—6.0 p.m., Talk: Catherine II. 6.25, Time, Weather, and Programme Announcements. 6.35, Part Relay of the Brahms Concert by the Vienna Singakademie and Symphony Orchestra, from the Musikvereinsaal; Conductor, Leopold Reichlewin; Soloist, Vasa Priloda (Violin): Schicksalslied; Violin Concerto in D, Op. 77. 7.40, Rudolf Hans Bartsch reads from his own works. 8.10, Gold Diggers—Radio Play in Two Acts (Hedwig Rossi). 9.10, Announcements in connection with the Austrian Musical Festival. 9.20, News, Weather, and Announcements. 9.35, Dance Music by the Heinz Branca Band, relayed from the Café Padouf; Soloist, Walter Branca (Songs).

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.30, Boy Scouts' Report. 2.35, Programme for Children. 3.0, Variety Music on Gramophone Records. 3.20, Educational Talk. 3.40, Talk in Ukrainian. 4.0, Talk for Music Teachers. 4.15, Announcements. 4.20, E. Morini (Violin) and A. Rubinstein (Piano-forte). Gramophone Concert. 4.40, Talk on Economics. 4.55, Programme Announcements. 5.0, Literary Talk. 5.20, Current Events. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Correspondence. 6.30, Book Review. 6.45, Radio Journal. 7.0, Concert by a Mandoline Orchestra, conducted by S. Snieckowski. March (Snieckowski); Blumengartner (Blon); Berceuse (Järnefelt); Dance (Blon); Love Serenade (Sulima); Japanese Dance (Yoshitomo); Minuet (Bocherini); In a Chinese Temple Garden (Ketelbey); Air from Polenblut (Nedbal); Gnomoparade (Blon); Mazurka (Namyolski). 8.0, Sports Notes. 8.5, Radio Journal. 8.10, Piano-forte Recital by Alfred Hoehn. 9.0, Topical Talk. 9.15, Dance Music. 9.40, Talk. 9.55, Weather Forecast for Aviation, and Police Notes. 10.0, Dance Music.

ZURICH.—See Schweizerischer Landessender.

ALGIERS

363.3 metres; 13 kW.—7.10 p.m., Shipping Notes. 7.15, Agricultural Notes and Weather Forecast. 7.20, Talk: Curiosities and Recreations. 7.35, Cello Solos: (a) Allegro appassionata (Saint-Saëns), (b) Legend (Cop-pola). 7.55, News. 8.0, Time Signal. 8.2, Legal Talk. 8.15, Une fêre ouverte—Comedy in One Act (Fayard). 8.30 (in an interval), News. 9.0, Chamber Music: Concert Piece for Cello and Piano (J. de la Presle); Trio (Arensky). In the intervals at 9.30 and 9.55, News. 10.0, Concert of Oriental Music. 11.0 (approx.), Close Down.

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.10, Dublin Cattle Market Report. 7.20, News Bulletin. 7.30, Time Signal. 7.31, French Lesson. 7.45, Literary and Dramatic Talk. 8.0, The Station Orchestra. 8.30, Baritone Solos by A. J. O'Farrell. 8.40, Traditional Music by John Devlin (Flute). 8.50, Contralto Solos by Doris Hill. 9.0, The Station Orchestra. 9.20, Baritone Solos by A. J. O'Farrell. 9.30, Traditional Fiddle Music by T. J. Small. 9.45, The Station Orchestra. 10.0, Light Music on Gramophone Records. 10.30, Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA; Call EAJ1; 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations and Talk on Hygiene, followed by an Educational Talk in Catalan. 8.0, Light Music on Gramophone Records, and News. 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations and Market Prices. 9.5, An Opera relayed from the Gran Teatro del Liceo. 11.0 (in an interval), News.

BARI

599.3 metres; 20 kW.—7.0 a.m., Agricultural Notes, Tourist Talk, and Dopolarvo Notes. 7.20, Time and Announcements. 7.25, Military Band Concert, conducted by Salvatore Rubino; Overture, The Force of Destiny (Verdi); Selection from La Wally (Catalini); Scene abruzzesi (De Nardis); Prelude, Dance and Finale from Act III of La Gioconda (Ponchielli); Passacaglia in C Minor (Bach); March on Motives from La straniera (Bellini). In the interval, Talk. 9.30, Popular Music on Gramophone Records. 9.55, News. BASLE.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.8 kW.—4.0 p.m., Talk. 5.25, Time and Programme Announcements. 5.30, Dialogue in French. 6.0, Popular Music on Gramophone Records. 6.30, Song Recital: Aria from Die toten Augen (d'Albert); Bolero (Dessauer); Japan (Milojevic); Melody (Krstic); Ständchen (R. Strauss); Aria from Figaro (Mozart); Waltz from Faust (Gounod). 7.0, Programme relayed from Ljubljana (574.7 metres). 9.0, News, followed by Cigány Music, from the Potrosacka Zadruga Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, See Berlin (Witzleben). 2.0, Musical Programme for Children. 2.30, Weather and Exchange. 2.45, Reading: Geschichten vom lieben Gott (Rilke). 3.0, Talk for Women: The Berlin Exhibition. 3.30, Concert from Berlin (Witzleben). 4.10, Talk on Philosophy. 4.30, Recital of Eastern Folk Music. 5.0, Talk: The Fate of Germans in Russia. 5.30, Talk on the Evolution of March Music, with Illustrations. 5.55, Weather and Announcements. 6.0, German Lesson for Germans. 6.30, A Poem. 6.35, Agricultural Talk. 7.0, Concert of Light Music from the Roof Garden of the Café Berlin. 7.35, See Langenberg. 9.0, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN; 419.5 metres; 1.5 kW.—1.0 p.m., Gramophone Concert. The Berlin Philharmonic Orchestra, conducted by Leo Blech, Overture, The Secret Marriage (Cimarosa); Adolf Busch (Violin); (a) Suite in A (Vi-valdi), (b) Siciliano (Gemiani); Vera Schwarz (Soprano); Two Arias from Idomeneo (Mozart); Arthur Schnabel (Piano-forte); Für Elise (Beethoven); Simon Gold-berg (Violin); Sicilienne (Paradis); Richard Tauber (Tenor); (a) Im Herbst (Frauz), (b) Ueber Nacht (Wolf); Lotte Lehmann (Soprano); (a) Die Mainacht (Brahms), (b) Vergibliches Ständchen (Brahms). The Berlin Philharmonic Orchestra, conducted by Erich Kleiber; (a) Allegretto scherzando, from the Eighth Symphony (Beethoven), (b) German Dance No. 12 (Beethoven). 1.55, Ex-change and Market Prices. 2.20, Reminis-cences of an African Explorer. 2.35, Song Recital by Ely Thomas (Soprano); Two Songs (Schumann); (a) Du bist wie eine

THURSDAY MARCH THE SIXTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Mr. Harcourt Williams: "Macbeth from the Pro-ducer's Point of View." "L'Ami Fritz," an Alsa-tian Idyll, adapted by A. MacLean from Erckmann-Chatrian. LONDON REGIONAL Recital of Victorian Ballads. A Scottish concert. Chamber music. MIDLAND REGIONAL Choral concert from the Shire Hall, Gloucester. NORTH REGIONAL Hallé concert from the Free Trade Hall, Manchester. "Fairy Bread," a musical feature programme. WEST REGIONAL "An Echo of Former Days," song recital. SCOTTISH REGIONAL Scottish concert. BELFAST Vaudeville programme.

ABROAD

BARI 7.25 p.m., Military Band concert. COPENHAGEN 7 p.m., Concert, conducted by Prof. N. Malko, from the State Broadcasting Building. HUIZEN PRAGUE 7.40 p.m., The Utrecht Municipal Orchestra. 7.40 p.m., Beethoven violin sonatas, played by Stanislav Novak and Karel Solc. ROME STUTTGART 7.45 p.m., Brahms symphony concert. 7.35 p.m., Opera: "The Czarina's Slippers" (Tchaikovsky), from the National Theatre, Mann-heim. TOULOUSE 8.45 p.m., Extract from "The Barber of Seville" (Rossini). TURIN, MILAN, and TRIESTE 7.30 p.m., Opera: "Simon Boccanegra" (Verdi), from the Scala, Milan.

Blume, (b) Frühlingsnacht, Ueber Nacht (Hugo Wolf); In meiner Heimat (Eugen Hildach); Weiss du's noch (Schmalstieg). 2.50, Pianoforte recital by Sofie Selmann; Variations on Weinen, Klagen (Bach-Liszt); Prelude and Aria with Variations from the Suite in D Minor (Händel). 3.15, Talk: Artist helps Artist. 3.30, Concert by the Berlin Wireless Orchestra, conducted by Bruno Seidler-Winkler; Overture, Ray Blas (Men-delssohn); Romantic Suite (F. E. Koch). 4.5, Programme by the Berlin Wireless Chorus, conducted by Maximilian Adrecht. 4.30, Talk by Wilhelm Schifer. 4.50, Talk for Young People. 5.10, Cello Sonata in G Minor (Rachmaninov). 5.45, Talk on Pomerania. 5.55, The Witzleben Station informs its Lis-teners... 6.0, Topical Talk. 6.15, Talk: The Youth of Yesterday and the Youth of To-morrow. 6.40, Talk: The Evening's Musi-cal Programme. 6.50, Concert of Light Music and Dance Music from the Café Berlin. 7.0, Announcements. 7.45, Pianoforte Recital by Arthur Schnabel, relayed from the Philhar-monic; Sonata in C Sharp Minor, Op. 27, No. 2 (Beethoven). 8.0, Folk Songs. 8.30, Pianoforte Recital by Arthur Schnabel (cont'd.); Sonata in B Flat (Beethoven). 9.15, Weather, News, and Sports Notes, followed by Light Music and Dance Music on Gramophone Records. 11.0 (also on Zeesen, 31.38 metres), Concert by the Berlin Wireless Orchestra, conducted by Eugen Jochem; Concerto grosso in G Minor (Händel); Symphony in D, Op. 36 (Beeth-oven).

BERNE.—See Schweizerischer Landessender. BEROMUNSTER. — See Schweizerischer Landessender. BODEN.—See Stockholm. BODO.—See Oslo. BRATISLAVA 279 metres; 14 kW.—5.25 p.m., Humorous Talk with Songs. 6.0, See Prague. 6.10, Talk on Economics. 6.25, See Prague. 7.5, See Brno. 7.40, See Prague. 8.10, See Brno. 9.0, See Prague. 10.0 (approx.), Close Down. BREMEN.—See Hamburg.

BRESLAU

325 metres; 60 kW.; and GLEIWITZ, 253 metres.—10.50 a.m., Concert by the Station Orchestra, conducted by Franz Marszalek; Tales from Strauss (Korngold); Selection from Aida (Verdi); Waltz, Die Kosenden (Lanner); Selection from The Geisha (Jones); Waltz, Grubenlichter (Zeller); Selection from The Land of Smiles (Lehár); Brise de mer (Leonevallo); Three Bavarian Dances (Pachernegg). In an interval at 12.10 p.m., Weather Forecast. 12.45, Time, Weather, News, and Sports Notes. 1.5, Request Gramo-phone Concert: Movement from the Italian Caprice (Tchaikovsky); Waltz, Op. 39, No. 15 (Brahms); Two Tenor Solos from Lilac

Time (Schubert-Berté); Soprano Solo from Katherina (Steffan); A Wedding Day on Troldhaugen (Grieg); Das Geheimnis (Blume); Two Old Bohemian Dances (Jana-cek); Polka from Schwanda the Piper (Wein-berger). 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Talk for Ramblers: The Winter is Past. 2.50, Review of Books on the East German Frontier Problem. 3.10, Violin and Pianoforte Recital; Suite, Op. 28, No. 1, for Violin and Pianoforte (Moser); Sonata in D Minor in Old Style, Op. 99 (Sinding). 3.45, Concert from Heilsberg. 4.30, Agricultural Prices, followed by Book Talk for Children. 4.45, Swabian Legends. 5.0, Review of Books about Wagner. 5.20, Topical Programme. 5.35, Talk for Workers: Trade Unions. 6.0, Some Thoughts on the Problem of Race and its Relation to Forms of Government. 6.30, Weather Forecast and Market Prices. 6.35, The Nutcracker Suite (Tchaikovsky), on Gramophone Records. 7.0, Swedish Folk Music, relayed from Stock-holm. 7.35, Kitchchen von Heilbronn—Play (Heinrich Kleist). 9.5, Time, Weather, News, Sports Notes, and Programme Announce-ments. 9.30, Readings in Esperanto from Sillesian Literature. 9.40, Talk: Breslau's River Transport. 10.0 (approx.), Close Down.

BRNO

342 metres; 35 kW.—3.10 p.m., Concert by the Station Orchestra conducted by B. Bakada. 4.10, News for Young People. 4.20, See Prague. 4.50, Educational Talk. 5.0 Literary Review. 5.15, See Prague. 5.25, German Transmission: News and a One-Act Comedy. 6.0, See Prague. 6.25, Cello Recital by Milos Svoboda. 6.40, Concert by a Village Band. 7.5, Scene for Broadcasting. 7.40, See Prague. 8.10, Popular Concert by the Station Orchestra conducted by Jav Janota. Soloists: V. Kubiková and M. Svor-ciková (Songs). 9.0, See Prague. 10.0 (approx.) Close Down.

BRUSSELS (No. 1)

1.N.R.; 509 metres; 15 kW.—12 Noon, Con-cept by the Small Station Orchestra, con-ducted by P. Leemans. Soloists: M. Donlez (Pianoforte) and M. Wigy (Violin). Overtu-re, A May Day (Wood); Narcissus (Nevin); Intermezzo from Le pavillon d'Armide (Cherubini); Selection from Sam-son and Delilah (Saint-Saëns); Pianoforte Solos (d'Agreves); (a) Zamora, (b) Spanish Dance; Violin Solo; Croquis chinois (Leemans); Wedding Day on Troldhaugen (Grieg); Selection from Rose Marie (Friml-Stohart). 1.0 p.m., Journal Parlé. 1.10, Modes of Travel in Music. Concert on Gramophone Records: En selle (Courtade); A mules (Charpentier); The Skaters' Waltz (Waldteufel); Eine instige Schlittenfahrt (Eilenberg); En bateau (Debussy); La chaise a porteurs (Chaminade); Promenade en voiture (Alix); Polka, Les Belges en

diligence (Closset); La voiture de la marée (Ekman); Le dernier postillon (Giesse); Le petit chemin de fer (Zimmerman); Les fleurs de Vienne; Roman fait de l'automobile (Geisser); Rapid 13 (Van Marcy); Bahn frei (E. Straus); Foxtrot, Choo, Choo (Mal-neck). 5.0, Concert of French Opera Music by the Radio Orchestra, conducted by Charles Walpot; Overture, Le postillon du Longjumeau (Adam); Selection from The Grand Mogul (Audran); Intermezzo from Coriorio (Ganne); Overture, Veronique (Messager); Selection from Le petit oie (Lecocq). 5.30, Talk on Music. 6.0, Talk on Cookery. 6.15, Gramophone Concert: Jubel-Ouverture (Weber); Entry of the Gods into Valhalla, from The Rheingold (Wagner); Fantasia (Mozart); Mephilo-Walzer (Liszt). 6.45, Chamber Music by E. Guillaume (Pianoforte) and M. Harvut (Violin); Fantasia for Pianoforte and Violin (E. Guillaume); Sonata for Violin and Piano-forte (E. Guillaume). 7.15, Talk for Workers. 7.30, Wireless Notes. 8.0, Concert by the Symphony Orchestra, conducted by M. Meulemans. Soloist: Léon Guller (Violin). Overture, Anacréon (Cherubini); Concerto for Violin and Orchestra (Tartini); Concerto grosso (Corelli); Ballet of the Seasons (Verdi). 8.45, Comments on the 8 o'clock Concert. 9.0, Concert by the Radio Orchestra, conducted by Charles Walpot; March, Entry of the Gladiators (Fuchs); Waltz, Le taime (Waldteufel); Potpourri, Suppé Illusionen (Michaelov); Gramophone Records: Le temps des cerises (Renard); Quand je t'ai donné mon cœur (Orban); Air from The Grand Mogul (Audran); Pétons les printemps (Mambour); Oh, how I love Paris (Neville); Lying in the Hay, with Vocal Quartet (Mireille); Selection from White Horse Inn (Benatzky); Slow Waltz, Your Heart's mine (Hearts); Marching Song, Mandoline (May). 10.10, Gramophone Concert. Part I, Dance Music. Part II, Symphony Music. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Gramophone Concert: Cavalry March (Strauss); Air for Trumpets, Kettle-Drums and Oboe (Lully); Tarass Boul-ba chez les Cosaques (Georges); Air from The Bird Fancier (Zeller); Variations on a Swiss Theme (Mohr); Le Passage du grand cerf (Blémant); You are my Heart's Delight from The Land of Smiles (Lehar); The Ride of the Valkyries, from The Valkyries (Wagner); Allegro barbaro (Bela Bartok); Jazz Music (Foot); Danse des plébéiens (Maquet); Regimental Marches; Overture, Preciosa (Weber). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, con-ducted by P. Leemans. Soloist: A. Peeters (Songs). The Cadets' March (Souza); Selection from A Waltz Dream (O. Straus); Waltz, from Frühling im Wienerwald (Ascher); Songs: (a) 'L Is stille (Van Hoof), (b) Bruijtslied (De Boeck), (c) Jagerlied (Veremans); Selection from The Merry Peasant (Fall); Waltz from The Count of Luxembourg (Lehár). 5.0, Concert by the Symphony Orchestra, conducted by A. Meule-mans; March of the Nobles, from Tam-büser (Wagner); Romanian Rhapsody (Enescu); Night on the Bare Mountain (Mus-sorgsky); March and Cortège from The Queen of Sheba (Gounod). 5.45, Programme for Children. 6.30, Schubert Concert on Gramo-phone Records; Melody from Rosamund; Die Allmacht; Liebesbotschaft; Ständchen; Wiegeliel; Ave Maria; Die Frelle; Moment Musical; Nachgesang im Walde; Military March. 7.15, Film and Book Reviews. 7.30, Talk for Women. 8.0, Reuskenrevue—a Re-veue in Three Parts (Schnemann), relayed from Borgerhout. In the interval, Le Jour-nal Parlé. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Light Music and Romanian Music by the Dinco Orches-tra. In the interval at 5.0, News and Time Signal. 6.0, Talk: The Historical Develop-ment of Romania. 6.30, Relay from the Romanian Opera House. In the intervals, News.

BUDAPEST

550 metres; 18.5 kW.—Also relayed on 840 metres from 5.45 to 11.0 p.m. 4.30 p.m., Popular Music on Gramophone Records. 5.15, English Lesson. 5.45, Concert by the Budapest Concert Orchestra, conducted by Wilhelm Komor; Overture, Der Schneemann (Korngold); Selection from Faust (Gounod); Algerian Suite (Saint-Saëns); Selection from Der Freischütz (Weber); Selection from The Violin Maker of Cremona (Hubay); Tans-zene (Gikzinov). 7.0, A Comedy (Bogyi). 8.45, News, followed by Music by the Berci Ráczy Cigány Band. 10.15 Dance Music by the Leo Patat Band, with Songs by Miklos Vig, relayed from the Hotel St. Geibert. 11.0 (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBERG, 1,153 metres; 7.5 kW.—11.0 a.m. to 1.0 p.m., Concert from the Hotel d'Angleterre. 2.0, Violin Recital by Klise Marie Bruun; Le tend

MARCH 16th

THURSDAY

continued

(Wieniawsky); Rêverie (Debussy); Souvenir (Drdla); Spanish Dance (Granados). 2.20, Orchestral Concert from the Wivex Restaurant. 4.0, Programme for Boys. 4.40, Exchange and Market Prices. 5.0, Town Hall Chimes. 5.2, Talk: The Film as a Cultural Factor. 5.20, English Lesson. 5.50, Weather and News. 6.15, Time Signal. 6.16, Talk. 6.45, Danish Lesson. 7.10, Twenty-third Concert from the State Broadcasting Building. The Radio Symphony Orchestra, conducted by Prof. Nikolai Malko. Soloist, Willy Drougraf Fassbaender (Baritone). The Fourth Symphony in F Minor, Op. 36 (Tchaikovsky); Aria from the Third Act of André Chénier (Giordano); Overture, Tancréd (Rossini); Credo, from the Second Act of Otello (Verdi); Largo al factotum, from The Barber of Seville (Rossini); Concert Overture, Carnival, Op. 92 (Dvorák). 9.15, News Bulletin. 9.30, Reading. 9.50, The Copenhagen Yachting Club Festival, relayed from the Lorry Establishment. 12 Midnight, Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30, p.m., News Bulletin. 12.45, Programme for Children. 6.0 to 7.0, Programme in English by the I.B.C., C. Dauvers Walker, R. Chene, and B. McNabb announcing. 6.0, Hawaiian Band Concert for Brighton Listeners: Ayo, ay (Freire); Mari Mari (di Capua); Aloha Oe (Lihoukalani); O sole mio (di Capua); Hawaiian Hotel (Traditional); La Paloma (Yradier); Kilima (Traditional); My Waikiki Mermaid (Traditional). 6.30, Ketchelby Concert for Hove Listeners: In the Camp of the Ancient Britons, Parts I and II; The Clock and the Dresden China Figures; In a Chinese Temple Garden, Parts I and II; Wedgwood Blue; The Sacred Hour; In the Mystic Land of Egypt. 7.0, Local News and Popular Music on Gramophone Records. 7.30, Radio Gazette. 8.0, The Listeners' Half-hour and News. 8.30, Concert relayed from the Town Hall, Rome. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, The Empire Party; Selection from Happy Days; A Night of Happiness; Balls, Picnics and Parties; What are you thinking about?; It always starts to rain; Joey the Clown; Ali Baba's Camel; Selection from Popular Films; The Man from the South; Tom Thumb's Drum; Kiss me Good-night; Just one more Chance; Me; Pagan Serenade. 11.0, Songs; Selection from The Hit Parade, Parts I and II; Only a Rose (Friml); Goin' Home; Song of the Vagabonds (Friml); Waiting at the end of the Road (Berlin); Medley of Old-time Music (arr. Griffiths). 11.30, Organ Recital; Selection from Indian Love Lyrics (Woodford-Finden); Selection from Les Millions d'Arlequin (Drigo); Bird Songs at Eventide (Coates); The Londonderry Air (Traditional); A Palace of Dreams (Waller); Ballet égyptien (Luigini). 12 Midnight, Scottish Songs; The Glasgow Highlanders (Dyack); Duncan Grey; Loch Lomond; Johnnie Cope; Piper of Dundee; Ye Banks and Braes; Kirkconnell Lea; Meg Merrilies (arr. Dyack). 12.30 a.m. (Friday), Pianoforte Solos; Tuneful Melodies of Today (Ray); I found you (Noble); Selection from The King of Jazz (Whiteman); Let love take care of you (van Phillips); Selection from Puttin' on the Ritz (Berlin); Popular Melodies (Ray). 1.0, Humorous Music; Fall in and follow the Band; Don't look at me that way; Back to gay Paree; He's a good man to have around; Sally, I wonder what is really on his mind?; We're uncomfortable; I'm down! what I'm doin' for love. 1.30, Vocal Duets; Gipsy Moon (Borganov); I'm through with love; Shine on, Harvest Moon; Just one more chance; Lazy Pete (Kersten); Save the last dance for me; Rosalinda; Erythraeella. 2.0, Variety Music; Love is the Sweetest Thing; Good Morning, Mr. Sun; I'll do my best to make you happy; Smile and sing your cares away; The Voice in the Old Village Choir; The Turning of the Tide; Where the Blue of the Night meets the Gold of the Day; Day by Day; An Evening in Caroline; Now that you're gone; By the Sycamore Tree; Blues in my Heart; Now's the Time to fall in love; Back again to happy-go-lucky days; Only me knows why. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259.3 metres; 17 kW. and CASSEL, 245.9 metres, and TRIER, 259.3 metres.—2.30 p.m., Programme for Children. 3.50, Exchange Quotations. 4.0, Concert by the Wiebaden Municipal Orchestra, relayed from the Kurhaus, Wiesbaden. Conductor: Herbert Albert. Overture, The Corsair (Berlioz); Danse macabre (Saint-Saëns); Selection from Die toten Augen (d'Albert); Suite from Carmen (Bizet); Emperor March (Wagner). 5.15, Economic Notes. 5.25, The German Arts and Crafts in the Present Depression—an Interview with a Goldsmith. 5.50, Talk: Modern History. 6.15, Time, Programme Announcements, Weather and Exchange. 6.20, Talk: News from all Parts. 6.30, See Stuttgart. 7.0, See Stockholm. 7.35, See Stuttgart. 9.5, Time, News,

Weather and Sports Notes. 9.20, Bunte Stunde. Soloists: Albert Peters (Tenor), Justus Gellius (Flute), and Franz Hauck (Saxophone). 10.30 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—6.0 p.m., Talk on Epidemics. 6.25, Weather Forecast. 6.30, Choral and Orchestral Concert, relayed from the Volksheim, Hanover. 7.45 (from Bremen), String Sextet for Two Violins, Two Violas, and Two Cellos (Brahms), relayed from the Lyzeum. 8.30, Recital on Four Organs, relayed from St. Mary's Church, Lübeck. Commentary by Dr. Edelhoff. 9.10, Time, Weather, News, Sports, and Police Notes. 9.30, Topical Talk. 9.40, Concert of Dance Music by the Station Chamber Orchestra, conducted by Gerhard Maass. Soloist, Richard Beckmann (Pianoforte). In an interval at 10.20, Ice Report.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres, 60 kW.; and DANZIG, 453.2 metres.—12.5 p.m., Light Music on Gramophone Records. In the interval at 12.20, News. 1.30 to 2.0, Interval. 2.0, Agricultural Prices and Exchange Rates. 2.30, Programme for Children. 3.0, Talk for Young People: In the Little-known Parts of Southern Arabia. 3.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Le Postillon de Longjumeau (Adam); Suite mignonne (Sibelius); Selection from Das Dorf ohne Glocke (Künneke). 4.45, Talk by Dr. Carl Hagemann: My Native Bearers. 5.15, Agricultural Prices. 5.20, Ice Report. 5.30, Agricultural Talk. 6.0, Pianoforte Recital by Ernst Rudolph: Suite, Op. 24 (Göhl); Sonata, Op. 21 (Jokk). 6.30, English Lesson for Beginners. 6.55, Weather Report. 7.0, Swedish Folk Music, relayed from Stockholm. 7.35, Contemporary Problems in Modern Literature (V): Unemployment. 8.35, News. 8.40 (from Danzig), Octet in B Flat, Op. 156, for Flute, Oboe, Two Clarinets, Two Horns, and Two Bassoons (Lachner). 9.15, Weather, News, and Sports Notes.

HILVERSUM

Announced HILVERSUM, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—11.55 a.m. to 1.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Orchestra, conducted by J. Geritsen: March (Westly); Overture, Martha (Flotow); Lotusblumen (Ohlsen); Selection from Tieland (d'Albert); Ballet Music from Hamlet (Thomas); Gramophone Records; Overture, Jean de Paris (Boieldieu); Suite, The Three Bears (Coates); Selection from Die Faschingsfee (Kálmán); Air from The Flying Dutchman (Wagner); The Cadets' March (Souza). 1.40 till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 1.40, Lesson in Handicrafts. 2.40, Talk for Women. 3.10 to 3.40, Interval. 3.40, Bible Reading followed by Recital by Mlle. de Jager (Songs) and M. Jurjaanz (Organ). 4.40, Concert by the Columbia Three: De Fremersberg (Koenemann); Overture, Post and Peasant (Suppé); Oriental Suite (Poppy); Overture, Alessandro Stradella (Flotow). 5.25, Handwork Lesson for Young People. 5.55, Talk. 6.25, Dressmaking Lesson. 6.40, Press Review. 7.10, Police News. 7.20, Talk. 7.40, Concert by the Utrecht Municipal Orchestra, conducted by Henri van Gooieover: Brandenburg Concerto, No. 3 (Bach); Overture, Figaro (Mozart); Symphony in B Flat, No. 102 (Haydn); Overture, Egmont (Beethoven). 8.40, Talk for Parents. 9.10, Concert (contd.): Overture, A Mid-summer Night's Dream (Mendelssohn); Prelude à l'après-midi d'un faune (Debussy); L'Apprenti sorcier (Dukas); Till Eulenspiegel's Merry Pranks (K. Strauss). In the interval at 9.40, News. 10.10, Popular Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—10.40 a.m. till Close Down, Programme of the Algemeene Vereniging Radio Omroep (A.V.R.O.). 10.40, Fashion Review. 11.10, Recital by Marie Olsen (Soprano), Jan Blok (Baritone), and Egbert Veen (Pianoforte). 11.40, Concert of Light Music by the Rentmeester Ensemble. 1.40 p.m., Talk for Women. 2.10, Interval. 2.25, Light Music on Gramophone Records. 2.40, Fashion Talk. 3.25, Gramophone Records (contd.). 3.40, Programme for Hospitals. 4.10, Recital of

Czechoslovak Folk Songs by Marta Harlasova-Schödlöve. 4.40, Programme for Children. 5.10, Concert by the Wireless Orchestra, conducted by Nico Treep: Overture, Ten Maids and No Man (Suppé); Selection from Tannhäuser (Wagner); Waltz, Mon rêve (Waldteufel); Drei Rosen (Nieli); Orientzauber (Diecker); Turkish Tattoo (Volkmann); The Passing of Salomé (Joyce); Tout feu, toute flamme (Beger); March, Blue Devils (Williams); Waltz Rhapsody, Panszlagöndchen (Lindsbauer); Romance for Violin (d'Ambrosio); Galop, Durchs Ziel (Transtateur). In an interval at 6.10, Sports Talk. 7.10, English Lesson. 7.40, Time Signal. 7.41, News Bulletin. 7.45, Light Music on Gramophone Records. 7.55, Concert by the Concertgebouw Orchestra, conducted by Pierre Monteux. Soloist: Jo Vincout (Soprano); Symphony in E Flat (Haydn); Aria from Julius Caesar (Händel); Selection from Alessandro (Händel); Symphony from The New World (Dvorák). 10.10, Concert of Light Music by Kovacs Jajos and his Band. 10.40 (in an interval), Weather and News. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., Sports Notes. 6.15, Announcements and Gramophone Records. 6.25, Programme for Scouts. 6.30 to 10.0, See Warsaw. 10.0, Dance Music relayed from the Astoria.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert, conducted by Wolf: Overture, Britannicus (Scassola); Elegy (Sink); Rheinlegende (Mähler); Mendelssohn Potpourri (Urbach); Dance Suite (Mraczek); Selection from Faust (Gömmel); Selection from The Three Wishes (Zihrer); Waltz, Etüelles (Waldteufel). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Economic Notes and Time. 2.50, Programme for Children. 3.20, Notes on the Broadcasts for Schools. 3.30, Botanical Talk. 4.0, See Frankfurt. 5.0, Talk on Contemporary Literature. 5.20, French Conversation. 5.40, Weather, Time, Economic Notes, and Sports Results. 5.50, Talk: The Retail Trader as the Party receiving Credit. 6.15, Discussion on Health Insurance. 6.55, News. 7.0, Swedish Folk Music, relayed from Stockholm. 7.35, Brahms and Beethoven Concert by the Station Orchestra, conducted by Busch-Kötter. Soloist: Ely Ney (Pianoforte); Symphonie Concerto in D Minor (Brahms); Symphony No. 7 (Beethoven). 9.5, News and Sports Notes. 9.30, Serenade and Dance Music, conducted by Eysoldt. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319 metres.—11.5 a.m., Gramophone Concert: König Karl—March (Turath); March (Blon); Historic Marches; Waltz, Roses from the South (Joh. Strauss); Polka-Mazurka, Frauenherz (Jos. Strauss); March, Zum Städtle hinaus (Meissner); Waldmächtel (Franz Abt); Es walt ein Mädchen früh aufstehn (Becker); Jägermarsch (Reckling); Regimental March (Latanz); Geschwindmarsch (Joh. Strauss); Fröhliche Pfalz, Gott erhalt's (Gruss); Hohenfriedberger-Marsch (Frederick the Great). 12 Noon, News, Weather, Snow Report, and Time, followed by Chamber Music on Gramophone Records. 1.0 p.m., Film Review. 1.30, Talk: Education for the Unemployed. 2.0, Programme for Children. 2.35, Exchange and Market Prices. 3.0, Concert by the Schwarzburg Orchestra of Rudolstadt: Overture, Peter Schmol (Weber); Suite, The Taming of the Shrew (Zihrer); Waltz, Wiener Kinder (Jos. Strauss); Selection from The Tales of Hoffmann (Offenbach); Hungarian Rhapsody in F Minor, No. 14 (Liszt); Gasteiner-Walzer (Kern); Two Pieces for Small Orchestra, Op. 92 (Carl Schroeder); (a) Wiegenlied, (b) Serenade-Pizzicato. 4.30, Weather and Time. 4.50, Exchange Quotations. 5.0, Talk on Hygiene. 5.15, Notes for Taxpayers. 5.30, Spanish Lesson. 5.50, Talk (to be announced). 6.0, Talk: Petroleum in International Politics. 6.30, Concert of Operetta Music by the Leipzig Symphony Orchestra, conducted by Hilmar Weber. Soloists, Ilse Thomann (Soprano), and Bert Eiken (Tenor); Extracts from Das Fürstentum (Lehár); Overture, Der Opernball (Heuberger); Extracts from The Last Waltz (Oskar Straus). 8.0, News Bulletin. 8.10, Flucht in kreise—Radio Play, with Music (Hans Natonek). 9.40, News Bulletin and Silent Night.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 7 kW.—6.0 p.m., Talk on Economics. 6.30, The Letter Box. 7.0, Symphony Concert. 9.0, Time, News, and Popular Music on Gramophone Records.

LWOW

381 metres; 16 kW.—6.5 p.m., Miscellaneous Items. 6.20, See Warsaw. 9.15, Variety Programme. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, The St. Jolin Passion (Bach) for Soloists, Choir and Orchestra, relayed from the Salle Rameau. After the Programme, News.

MADRID

ARANJUEZ (EAQ); 30.43 metres; 20 kW.—10.30 p.m., Variety Concert. 10.45, Radio Chronicle. 11.0, Variety Concert (contd.). 11.35, Talk. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Programme for Children, and Request Gramophone Records. 8.15, News Bulletin and Political Review. 8.30 to 9.0, Interval. 9.0, Linguaphone English Lesson. 9.30, Chimes, Time Signal, and Political Review. 9.45 (approx.), Song Recital by Maria Strasse, followed by Band Concert, relayed from the Hotel Nacional. 11.45, News Bulletin. 12.0 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—5.30 p.m., German Transmission: Talk and Reading. 6.0, See Prague. 6.40, Brass Band Concert by Unemployed Musicians. 7.5, See Brno. 7.40, See Prague. 8.10, See Brno. 9.0, See Prague. 10.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—4.30 p.m., Grieg Concert. 5.30, Kostechi, the Immortal—Opera (Rimsky-Korsakov). 8.0, Talk in English: Review of the Week and Answers to Correspondents.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—3.30 p.m., Song and Pianoforte Recital by Gusti Sauter (Soprano), Erik Jørgensen (Baritone), and Friederike Bucher (Schubert). Three Songs for Soprano (Schubert): (a) Heidenröslein, (b) Frühlingsglaube, (c) Die junge Nonne; Humoresque (Schumann); Four Songs for Baritone (Max von Schillings): (a) Bot-schaft, (b) Juliana, (c) Wie wundersam, (d) Aus dem Nibelungen. 3.40, Talk: Recent Developments in the Natural Sciences. 4.0, Orchestral Concert: Overture, Lallah Rookh (David); Memories of Franz Abt (Maunfer); Intermezzo, In der Spinnstube (Rhode); An der schönen grünen Narenta (Komzak); Selection from Gri-Gri (Lehár); Spanish March, Cadiz (Valverde). 5.15, Vocational Talk: The Apprentice in the Chemical Industry. 5.35, Agricultural Talk. 5.55, Time, Weather, and Agricultural Notes. 6.5, Recital of Shakespeare's Songs, by Martha Martensen (Soprano) and Otto Goshel (Bass); The Willow Song from Othello (Anon); A Lover and his Lass, from As you Like it (Anon); Where the Bee sneaks, there lurk I, from The Tempest (R. Johnson); To Sylvia, from The Two Gentlemen of Verona (Schubert); Drinking Song from Antony and Cleopatra (Schubert); When that I was and a little tiny boy, from Twelfth Night (Schumann); Bottom's Song, from A Midsummer Night's Dream (Hugo Wolf); Three Songs of Ophelia, from Hamlet (R. Strauss); (a) How shall I my true love know? (b) Tomorrow is St. Valentine's Day, (c) They bore him barefaced on the Bier; 2.0 Sonnets (Beer-Walbrunn). 6.35, Talk: The Lake Country of Central Coles. 7.0, Swedish Folk Music, relayed from Stockholm. 7.35, Concert of Viennese Music by the Weiser Band, Hermann Leopoldi, and Bejta Milescaja. 8.10, Concert by the Station Choir and Orchestra, conducted by Hans Winter. Soloists: Karl Erb (Tenor) and Jani Szanto and Anton Huber (Violins). Overture, Don Giovanni (Mozart); Concerto for Two Violins and Orchestra (Marr); Psalmus Hungaricus for Tenor, Choir, and Orchestra (Kodaly). 9.20, Time, Weather, News, and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—4.0 p.m., Relay of European Stations. 5.0, German Lesson. 5.30, Divine Service. 6.0, Announcements, Weather and News. 6.30, Popular Music. 7.0, Time Signal. 7.1, Agricultural Programme. 7.30, Song and Cello Recital by Mlle. Valborg Lundberg (Soprano) and M. Karoly Farkas. Romance; Cavatina (Raff); Hungarian Rhapsody (Salesski); Tarantella

(Popper). 8.15, Talk. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Relay of European Stations. 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

627.6 metres; 3 kW.—7.0 p.m., Dopplavero Notes. Agricultural Talk, and Giornale Radio. 7.20, Popular Music on Gramophone Records. In an interval at 7.30, Time and Announcements. 7.45, Vocal and Orchestral Concert. 8.30, Tra canti e suoni—One-Act Comedy (La Lonia). 9.0, Concert (contd.). 9.55, News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Le Journal Parle. 7.20, Weather Report. 7.30, Gramophone Concert: Overture, Gwendoline (Chabrier); Ronde villageoise (Chabrier); Joyeuse marche (Chabrier); Bourrée fantasque (Chabrier); Petite Suite (Debussy); Pavane pour une Infante défunte (Ravil); Rhapsodie, España (Chabrier); Overture, Zampa (Herold); Songs from The Drum Major's Daughter (Offenbach); Melody (May); Valse amoureuse (Sylviano); Le Chanson des Pouspiller (Goullier); La Voix des Chénus (Flute Player) (Ganne); Arrangements andaluzas (Bruznera); Pasodoble, Garlo gitano; La Houssarde (Ganne).

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parle. 7.0, Programme for Children. 7.30, Popular Music on Gramophone Records. 7.40, Duets by Pills et Tabet. 8.0, Agricultural Talk. 8.15, Interval. 8.30, L'Affaire Lafarge—Play (Cognat). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Protestant Address. 12.30 p.m., Orchestral Concert: Gitanerias (Infante); Romance bohémienne (Baldi); Neapolitan Festival (Wesley); Ukranian Pictures (Akimenko). 1.0, Exchange, News and Weather. 1.5, Concert by the A Camera Vocal Quartet. 1.30, Exchange. 1.35, Orchestral Concert: Selection from The Pink Lady (Caryl); Song (Wachsmann); One Hour with you (Whiting); Selection from No, No Nanette (Youmans). 2.0, Exchange. 3.45, Exchange and Market Prices. 5.45, Agricultural Report. 6.0, Address by the Reverend Marc Boegner, relayed from the Reformed Church, Passy. 7.0, Talk on French Poetry since 1870: Corbière, Laforgue, Jammes and Viel-Griffin. 7.20, Orchestral Concert: Kermesse villageoise (Fillipucci); Nel Grappone (Ganne); Premiers Rythmes espagnols (Laparra). 7.45, Commercial Prices, News and German Press Review. 8.0, Le Gendre de Monsieur Poirier—Comedy (Angier). In the interval at 8.30, News and Weather. at 8.40, Review by Boumard, and at 9.15, Press Review and News. 10.0, Concerto No. 2 in C Minor (Rachmaninov) on Gramophone Records, by the Philadelphia Symphony Orchestra, conducted by Stokowski, with the Composer at the Piano.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 305 metres; 25 kW. Relay by W8XK on 48.85 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Blue Ridge Buddies. 9.57, David Lawrence Dispatch. 10.0, Programme to be announced. 10.15 to 11.15, New York Relay. 10.15, The Adventures of Dr. Doolittle. 10.30, Singing Lady. 10.45, Little Orphan Annie. 11.0, Our Daily Food—George Rector's Cooking School. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45 to 12.30 a.m. (Friday), New York Relay. 11.45, Today's News, by Lowell Thomas. 12.0 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Carson Robinson and his Barbarol Buckaroos. 12.30, The Fireflies. 12.45, The Townsend Murder Mystery. 1.0 to 3.30, New York Relay. 1.0, Captain Diamond's Adventures. 1.20, Time Signal and Rin Tin Tin Thrillers. 1.45, Thurston the Magician. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra, with Lady Esther. 3.0, Wilfred (Glenn Basso). 3.15, Vic and Sade. 3.30, The 1933 Income Tax, by Robert L. Wickline. 3.45, Bradley Kincaid, from New York. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News Flashes. 4.20, Bertha Schmid (Soprano). 4.30, Josef Lhevinne (Concert Pianist), from New York. 5.0, KDKA Artist Bulletin. 5.2, Smith Ballew and his Orchestra. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Brno. 4.10, Talk on Economics. 4.20, Programme for Children. 4.50, Light Music on Gramophone Records.

MARCH 16th THURSDAY continued

phone Records. 5.5, Talk for Bee Keepers. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Agricultural Talk. 6.0, Chimes. 6.1, News Bulletin. 6.10, English Lesson. 6.25, Talk: From the Earth to the Stars. 6.40, Popular Programme. 7.5, See Brno. 7.50, Sonata in G Op. 30 No. 3 for Violin and Piano (Beethoven) by Stanislav Novak and Karel Sile. 8.0, Time Signal. 8.10, See Brno. 9.0, Time Signal. 9.1, News Bulletin. 9.15, Piano-forte Recital by Dr. Vaclav Holzknecht: Little Piano-forte Suite Op. 12 (Jirak); Sonata for Piano-forte Op. 11 (Janacek); Kaleidoscope Op. 18 (Goossens). 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW; LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.20 p.m. (from Geneva), Esperanto Lesson. 5.35 (from Lausanne), Italian Lesson. 6.0 (from Geneva), Weather Forecast, News Bulletin and Announcements. 6.15 (from Geneva), Answers to Correspondence. 6.30 (from Geneva), Theatre Notes. 7.0 (from Geneva), Talk: The Work of the League of Nations. 7.25 (from Geneva), Introductory Talk to the following Transmission. 7.35 (from Geneva), Symphony Concert by the Station Orchestra, conducted by M. Baud-Bovy. Soloists: Mlle. Blanche Honegger (Violin) and M. Henri Honegger (Cello); Suite No. 4 in D Minor (Bach); Concerto for Violin, Cello and Orchestra (Brahms); Suite for Orchestra, Baritone and Four Female Voices, Israël (Bloch). In an interval at 8.15 (approx.), News Bulletin and Weather Forecast. 9.15 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Concert by the Station Quartet. Soloists: Georg Takias (Violin). After the Concert, Overture, A Midsummer Night's Dream (Mendelssohn), on Gramophone Records.

RJUKAN.—See Oslo.

ROME

Call 1R0, 441 metres; 50 kW. Relay by Naples, 319 metres, and 2R0, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30 a.m., Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2, Humorous Talk. 12.5 to 1.15, Concert from Turin. In the interval at 12.30, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30 to 5.15, Orchestral Concert: Overture, The Barber of Seville (Rossini); Valse triste (Carabellia); Selection from Francesca da Rimini (Zan-dani); Suite for Two Piano-fortes, A Masked Ball (Palmer); Tango, Ich bin in dein Parfum verliebt (Fall); Chiaro-scuri (Cerrahi); Violetta (Rust); Lena (Cubotta). 6.0 (Naples), Shipping and Sports Notes. 6.10, Agricultural and Dopplavero Notes. 6.20, Giornale Radio. 7.0, Time and Announcements. 7.15, Light Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 7.45, Brahms Symphony Concert, conducted by Rito Seivaggi; Soloist, Giulio Riccardi (Violin); The Second Symphony in D; Concerto in D for Violin and Orchestra; Hungarian Dances. In the intervals, Review of Literature and Art and Notes on Art. 9.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relay at intervals by W2XAF on 31.49 metres, and by W2XAD on 19.56 metres.—12 Midnight, Mr. Twister, from New York. 12.15 a.m. (Friday), Stock Report. 12.30 till Close Down, New York Relay. 12.30, Donald Nevis (Tenor). 12.45, The Goldbergs. 1.0, Fleischmann Hour. 2.0, Captain Henry's Show Boat. 3.0, Lucky Strike Hour, followed by Programme Resumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER; 459 metres; 61 kW.; BASEL, 234.2 metres; and BERNE, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather Forecast and News Bulletin. 11.40 (from Basle), Popular Music on Gramophone Records. 12 Noon (from Basle), Talk on Welfare Work. 12.15 p.m., Gramophone Concert (contd.). 12.35 to 12.45, Weather and Exchange. 2.30 (from Berne), Light Music on Gramophone Records. 4.0 (from Berne), Chamber Music on Gramophone Records. 4.30 to 4.35, Weather Forecast. 5.30 (from Basle), Talk for Workers. 6.0, Time Signal, Weather Forecast, and Traffic Report. 6.15 (from Basle), Italian Lesson. 7.0 (from Basle), Concert by the Basle Chamber Orchestra. Soloists: Gertrud Fligel (Violin), Hans Bauer (Cello), and Martha Hamm-Stöcklin (Harpsichord). 8.30, Weather and News. 8.40 (from Basle), Concert by the Hans Gluck Orchestra. 9.15 (approx.), Close Down.

(Harpsichord). 8.30, Weather and News. 8.40 (from Basle), Concert by the Hans Gluck Orchestra. 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres, 55 kW. Relay by Boden, 1,223.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,254.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—3.45 p.m., Shortland Lesson. 4.5 (from Boden), Studio Service. 4.30, Programme for Children. 4.45, Light Music on Gramophone Records. 5.45, Elementary English Lesson, relayed from Jönköping, 201.3 metres. 6.30 (from Göteborg), Talk. 7.0, Swedish Folk Music. 7.35, Microphone Report. 7.50, Military Band Concert, conducted by Oscar Johnson, relayed from Gävle, 204 metres. 9.3, Concert of Light Music. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert: Overture, Light Cavalry (Suppé); Selection from I Pagliacci (Leoncavallo); Two Arias from Rigoletto (Verdi); Prelude and Entr'actes between Acts 1, II and IV of Carmen (Bizet); Seguedilla and Habanera from Carmen (Bizet); Selection from Faust (Gounod); Jewel Song, Ballad and Ballet Music from Faust (Gounod). 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Dance Music on Gramophone Records. 2.0, Programme for Children. 3.0 to 4.15 Interval. 4.15, French Elocution Lesson. 4.30, Programme for Children, relayed from Bordeaux-Lafayette. 6.0, Talk in German: Legends of the Saints in the Middle Ages. 6.15, Talk for Women. 6.30, Orchestral Concert, conducted by Maurice de Villers: Ballet Music from Hamlet (Thomas); Overture, Pièdre (Massenet); Extract from La vie du poète (Charpentier); Selection from Pepita Jiménez (Albeniz); Spanish Dance, Zambra (Granados); Marche Orientale (Granados). In the intervals at 7.30, Time, and at 7.45, News. 7.50 (approx.), Concert (contd.): Overture, La fête du village voisin (Boieldieu); Selection from Coppélia (Delibes); Waltz des brunes (Ganne); Bohemian March (Chauvet). 8.20, Lottery Results. 8.30, Orchestral Concert, relayed from Sarreguemines. Soloist: M. Grégoire (Violin). Overture, II Seraglio (Mozart); Concerto for Violin and Orchestra (Beethoven); Symphony in E Flat (Mozart); Grave (Friedemann-Bach); Violin Solos: Prelude and Allegro (Pugnani); Hofballtänze (Lammer). 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—12.30 p.m., Gramophone Concert of Folk Songs. 1.0, Musical Programme, arranged by the Post Office. 1.30, Spanish Lesson. 2.3, Elementary English Lesson. 2.30, See Frankfurt. 3.30 to 4.0, Interval. 4.0, See Frankfurt. 5.15, Time, Weather, and Agricultural Notes. 5.25, Talk: The Aisatian Lyric of the Nineteenth Century. 5.50 (from Mannheim), Talk on Ready Reckoning. 6.15, Time and News. 6.30, Violin Recital by S. Frydberg: Suite in A Minor (Sinding); Adagio from Sonata No. 3 (Bach); Larghetto from Sonata No. 4 (Handel); Almodrott (Wagner-Wilhelmy); Romance (Giletti); Etude 24 (Pagani-Kreisler); Russian National Anthem (Frydberg). 7.0, See Stockholm. 7.35 (from Mannheim), The 'Zarin's Slippers—Opera (Tchaikovsky). 9.5, Time, News, Weather and Programme Announcements. 9.20, Concert of the Music of Artistic Studies: Brunnbild Mücke-sch (Soprano), Traute Zarges (Piano-forte), and Kurt Krause (Violin); Bedenke, Mensch, Schlaf ein, mein Kind; Heinkelir; Maßgebekhen am Waldesrand; Sonata in F for Violin and Piano-forte; Dämmerstunde; Am Abend; Heideblumen; Pythia. 10.0 (approx.), Close Down.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Hunting Horn Music. 6.30, Programme for Children. 7.0, Chansonnettes. 7.15, Racing Results, Market Prices, and News. 7.25, Local News. 7.30, Three Pieces by a Viennese Orchestra. 7.45, Popular Melodies. 8.0, Sound Film Music. 8.15, Accordion Music. 8.20, Instrumental Music. To Spring (Grieg); Wien bleibt Wien (Schrammel). 8.45, Extracts from The Barber of Seville—Opera (Rossini). 9.30, Tello Solos: (a) Allegro appassionata (Saint-Saëns), (b) Le Cygne (Saint-Saëns), (c) Agnus Dei (Bizet). 9.45, Popular Orchestral Concert. 10.15, North African News. 10.30, Concert for Listeners in Morocco. Oueretta Potpourri (Mizraki); Melody (Tagliavia); Violin Solo; Waltz Caprice (Wieniawsky); Berceuse from Mignon (Thomas); Invitation to the Waltz (Weber). 11.0, Orchestral Music. 11.15, Airs from Operetta. 11.30, (a) The Drum Major's Daughter (Offenbach), (b) Elle est à vous (Yvain), (c) Une nuit au Louvre (Urgel). 11.30 to 12 Midnight, Programme in English by the I.B.C. H. K. Hitchcock announcing. 11.30, I.B.C. Half Hour, Always in my Heart; Here lies Love; Till

to-morrow; Please; When the Morning rolls around; Try a little Tenderness; How are You; Let's all dance the Polka. 11.7, I.B.C. Good-night Melody. 12 Midnight, Weather Announcements. 12.5 a.m. (Friday), Sound Film Music. 12.15, Symphony Music. 12.50 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.10 to 6.0 p.m., See Turin. 6.0, Light Music on Gramophone Records. 6.23 till Close Down, See Turin.

TRUNDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relay by Milan, 33.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—4.10 to 5.0 p.m., Orchestral Concert: Overture, Cleopatra (Mauclair); Ronde des vivans (Billi); Basque Rhapsody (Piermé); The Witch's Ride, from Hansel and Gretel (Humperdinck); Selection from Gloria (Cilea). 5.35, Giornale Radio, Agricultural and Dopplavero Notes. 6.0, Light Music on Gramophone Records. 6.20, Giornale Radio. 6.30, Time, Announcements, and Variety Music on Gramophone Records. 7.0, Giornale Radio, Weather and Gramophone Records (contd.). 7.30 (approx.), Simon Baccanegra, Opera in Three Acts (Verdi), relayed from the Scala, Milan. In the intervals, Talk, Literary Notes, and Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in French. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relay by Graz, 352.1 metres; Innsbruck, 293 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—3.50 p.m., Concert, The Schwartz Trio, Lucia Ivanovic (Soprano), Amy Wimperger (Contralto), and Hans Weber (Piano-forte); Piano-forte Solos: Prelude, Choral and Fugue (Franck); Soprano Solos (Schubert). (a) Ave Maria, (b) Das Rosenband; Soprano Solos (Schumann), (a) Erstes Grün, (b) Frühlingssticht; Contralto Solos (Schubert), (a) Der Zwerg, (b) Hekönig; Contralto Solos, Kleiner Haushalt (Loewe); Contralto Solos (Wolf), (a) Der Feuerreiter, (b) Storchentotschaft; Trio in E for Piano-forte, Violin, and Cello (Mozart). 5.5, Talk: Karl Marx and Women. 5.50, Talk, arranged by the Board of Trade. 6.50, French Lesson. 6.15, Theatre Notes. 6.20, Time, Weather, and Programme Announcements. 6.30, Reading (Molnár). 7.0, Swedish Folk Music, relayed from Stockholm. 7.30, Opera Music by the Vienna Symphony Orchestra, conducted by P. S. di Valerociata; Soloist, Hedwig von Debnka (Soprano); Overture, Figaro (Mozart); Aria from Paris and Helen (Gluck); Pamina's Aria from The Magic Flute (Mozart); Overture, Semiramis (Rossini); Aria, Regnava nel silenzio from Lucia di Lammermoor (Donizetti); Aria, Mother, compassionate Virgin, from the Force of Destiny (Verdi); Ballet Music and Aria from Faust (Gounod); Two Entr'actes from Carmen (Bizet); Aria, Vissi d'arte, vissi d'amore, from Tosca (Puccini); Overture, Le Maschere (Mascagni). In the interval at 8.50, News, Weather, and Announcements. 9.5, Snow Report. 9.20, Dance Music by the Karl Muechek Jazz Band, relayed from the Café Sacher; Vocal Refrains by Ernst Selöfn.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 11.30, Weather Forecast. 11.35, Concert for Schools by the Warsaw Philharmonic Orchestra, conducted by C. Wilkomirski; a Choir, and A. Dobosz (Tenor). Introductory Talk by M. Szczerba, Polish National Anthem; Polonaise in A (Chopin); Overture, Flys (Moniuszko); Tenor Solos: (a) Two Military Songs (Szymanowski), (b) Three Military Songs (Niewiadomski); Polish Military Music (Rybicki); Mazurka from the Haunted Castle (Moniuszko); March (Boskowsky); Choir: Song (Mazzyer); Cantata (Grubersky-Mazzyer); Four Military Songs (arr. Mazzyer); Military Music (arr. Gorkowsky). 1.0 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Light Music on Gramophone Records. 2.35, Talk on Women's Clubs. 2.50, Popular Music on Gramophone Records. 3.25, Intermediate French Lesson. 3.40, Talk: Are the sins of the Fathers visited on their Children? 4.0, Chamber Music on Gramophone Records. In the interval, Announcements. 4.40, Topical Talk. 4.55, Programme Announcements; Educational Talk. 5.20, Current Events. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Talk. 6.30, Reading. 6.45, Radio Journal. 7.0, Concert of Light Music by the Station Orchestra, conducted by S. Nawot. Soloist: Mme. L. Messat (Songs). In the interval, Sports Notes and Radio Journal. 8.30, Romeo and Juliet—Drama (Shakespeare), arranged for Broadcasting by M. Mellin. 9.15, Dance Music. 9.55, Weather Forecast for Aviation and Police Notes. 10.0, Dance Music.

ZURICH.—See Schweizerischer Landessender.

ALGIERS

363.3 metres; 13 kW.—7.10 p.m., Sports Notes. 7.15, Agricultural Talk. 7.30, Agricultural Report and Weather Forecast. 7.45, Viennese Music. 7.55, News Bulletin. 8.0, Time Signal. 8.20, Talk: The Sahara. 8.45, César Franck and Vincent d'Indy Concert by the Station Orchestra. Soloist: Mme. Raymonde Brichet (Pianoforte); Suite in D (d'Indy); Symphonic Variations for Piano-forte and Orchestra (Franck). 8.45, News. 8.50, Concert (cont'd.). Symphonic Legend, La Forêt enchanté (V. d'Indy); Symphonic Piece, Rédemption (Franck). 9.35 (approx.), News. 9.40, Light Music. 9.55, News. 10.0, Dance Music relayed from the Hotel Aletti. 11.0 (approx.), Close Down.

ATHLONE

413 metres; 60 kW.; and **CORK**, 224.4 metres.—6.0 to 10.30 p.m., Special Irish Programme of Vocal and Instrumental Music. 10.30 (approx.), Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations. 8.0, Light Music on Gramophone Records and News. 9.0, Chimes from the Cathedral. Weather Forecast, Messages to Seamen, Exchange Quotations, and Market Prices. 9.10, Concert by the Station Orchestra: Overture, Raymond (Thomas); Selection from El Domino azul (Ariceta); Waltz-Intermezzo (D'Ambrosio); Dance from Scenes napolitaines (Massenet); Ständchen (R. Strauss); Indian Wedding (Percy). 10.0, Reading. 10.15, Orchestral Concert, relayed from the Café Español. 11.0 (in an interval), News. 12 Midnight (approx.), Close Down.

BARI

269.8 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Talk, and Popolavoro Notes. 7.20, Giornale Radio and Weather. 7.30, Time and Announcements. 7.35, Concert of Opera Music. Soloists: De Santis Bruno (Soprano) and Lino d'Angelo (Baritone). Overture, Diana (Cabella); Soprano Aria, You'd fain be hearing, from A Masked Ball (Verdi); Selection from Francesca da Rimini (Zandonai); Baritone Solo, Visione fuggitiva, from Hierodiade (Massenet); Soprano Solo, Micaëla's Song, from Carmen (Bizet); Selection from Fedora (Giordano); Overture, Gloria (Frontini); Baritone Solo, Vien, Lenora, a piedi nudi, from La Favorita (Donizetti); Intermezzo from The Jewels of the Madonna (Wolff-Ferrari); Soprano Solo from Loreley (Catalani); Baritone Solo from L'Africaine (Meyerbeer); Elegiac Prelude (Galli-David); Soprano Solo from Mephistopheles (Boito); Selection from Falstaff (Verdi). In the interval, Theatre Notes and Talk on Sports. 9.30, Concert from the Grand Hotel Moderno. 9.55, News.

BASLE.—See Schweizerischer Landessender.

BELEGRADE

330.4 metres; 2.8 kW.—4.0 p.m., Talk. 5.55, Time and Programme Announcements. 6.0, Song Recital: Wiegenlied (Brahms); Arias (Puccini) from (a) Gianni Schicchi, and (b) Manon Lescaut; Divna si (Bajice); Se tu canti (Tosti); Aria from Manon (Massenet); Lolita (Buzzi-Peccia). 6.30, Talk for Sokols. 7.15, See Warsaw. 9.15 (approx.), News, followed by Cigány Music by the Rudnicaini Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert from Berlin (Witzleben). 2.0, Talk for Girls. 2.30, Weather and Exchange. 2.45, Reading (Hans Grimm). 3.0, Talk: Agricultural Colleges and their Standing in Rural Educational Schemes. 3.30, See Leipzig. 4.10, Talk on Health. 4.30, Talk: The Great Wall of China—a World's Wonder. 5.0, Pianoforte Recital by Alice Jacob-Lowenstein: Sonata (Gimaraes); Christmas Sonatina (Busoni); Four Duets (Bach). 5.30, Talk for Workers: Social or Private Insurance? 5.55, Weather and Announcements. 6.0, Talk: How should Foreign Words be pronounced in German Broadcasting? 6.30, A Poem. 6.45, Talk by Kurt G. Sell: What they are talking about in America, relayed from America (on Gramophone Records). 7.0, See Hamburg. 9.15, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Concert from Berlin (Witzleben). 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—5.55 p.m., The Witzleben Station informs its Listeners. 6.0, See Berlin (Konigs Wusterhausen). 6.25, Typical Talk. 6.35, Sings Summer songs to the Lute. 6.45, Talk on Gramophone Records: What People are talking about in America. 7.0, Songs to the Lute (cont'd.). 7.25, Announcements. 7.30, Pianoforte Duet in F-flat (Mozart) by Bruno Seidler-Winkler (Pianoforte), Franz von Szipanovsky (Violin), Willy Fiala (Viola), and Julius Berger (Cello). 8.0, Andreas Hollmann—Radio Play (Hans Karger). 9.15, Weather, News, and Sports Notes. 9.30, On an Ether-Wave Expedition—a Laboratory Report. 9.40 (approx.),

FRIDAY

MARCH THE SEVENTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Two miniature operas: "Bastien and Bastienne" and "The Impresario," by Mozart. "Ireland," a programme for St. Patrick's night.
- LONDON REGIONAL** "L'Ami Fritz," by Allan MacLean, taken from the French of Erckmann-Chatrian.
- MIDLAND REGIONAL** Speeches from the Sales Managers' Association's Dinner at Leicester.
- BELFAST** "Ireland," a St. Patrick's Night programme.

ABROAD

- ATHLONE** 6 p.m. Special All-Irish programme.
- BERO-MUNSTER** 7 p.m. Opera: "Manon Lescaut" (Luccini), from Berne.
- HAMBURG** 7 p.m. Musical play: "White Horse Inn," by Benatzky.
- OSLO** 7 p.m. Symphony concert from Logen Hall.
- PALERMO** 7.45 p.m. Opera: "Manon," by Massenet.
- RADIO PARIS** 9 p.m. "Tire-au-flanc," vaudeville from the Theatre Dejaset.
- ROME** 3 p.m. Concert from Santa Cecilia Royal Academy.
- STRASBOURG** 9 p.m. Concert from the Conservatoire, Toulouse.
- STUTTGART** 7.5 p.m. Wagner concert from the Liederhalle.
- TURIN, MILAN, and TRIESTE** 8 p.m. Symphony concert, conducted by F. Previtali. Solo pianoforte: Arthur Rubinstein.

Dance Music from the Wilhelmshullen at the Zoo. 11.0 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BRATISLAVA

279 metres; 14 kW.—5.40 p.m., Light Music on Gramophone Records. 5.45, Slovak Spelling Lesson. 6.0 till Close Down, See Prague. 9.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ**, 253 metres.—12.10 p.m., Japan in Opera, and Operetta—Gramophone Concert: Selection from The Mikado (Sullivan); Two Soprano and Tenor Duets from Madame Butterfly (Puccini); Soprano Solo from Madame Butterfly (Puccini); Mimosas Waltz from The Geisha (Jones). 12.45, Time, Weather, News, and Exchange. 1.5, Gramophone Concert: Introduction and Ronda capriccioso (Saint-Saëns); Serenade (Saint-Saëns); Rondo allegro from Eine kleine Nachtmusik (Mozart); Sérénade mélancolique (Tchaikovsky); Spanish Caprice (Moszkovsky); Rondo from the Trio in B-flat (Schubert); La Capricieuse, Op. 17 (Egar); Valse caprice (Rubinstein). 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Talk for Young People: Enlarging Photographs. 3.10, Talk: The Art of Portraiture and its Development. 3.35, Concert of Light Music by the Station Orchestra, conducted by Franz Marszalek; Selection from Rienzi (Wagner); Waltz, Heimatgrüße (Kraus); Two Old Folk Melodies (arr. Muello); Selection from Der Teufelsreiter (Kalmán). 4.30, Agricultural Prices. 4.35, Literary Talk: Wilhelm Michel. 5.0, Talk on Trade Schools. 5.30, Topical Talk. 6.0, See Berlin (Konigs Wusterhausen). 6.25, Agricultural Prices, followed by Light Music on Gramophone Records. 6.45, Talk: What People are talking about in America, relayed from America. 7.0, Concert by the Silesian Philharmonic Orchestra, conducted by Max von Schillings; Romantic Suite (Max Regert); A Tone Poem for Small Orchestra, Ein Zwiesgespräch (M. von Schillings); Harvest Festival from Moioch (M. von Schillings); The Second Symphony in C, Op. 61 (Schumann). In an interval at 8.10, News Bulletin. 9.0, Time, Weather, News, Sports Notes, and Programme Announcements. 9.25, Talk. 9.40, Concert of Light Music and Dance Music by the Station Orchestra, conducted by Franz Marszalek, with Song Refrains by Hellmut Hallendorf (Tenor). 11.0 (approx.), Close Down.

BRNO

342 metres; 35 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by Jan Janota. 3.55, Theatre Notes. 4.5, See Prague. 5.5, Talk: Creative Art. 5.15, Talk for Workers. 5.25, German Transmission: News, Sports Notes and Reading. 6.0 till Close Down, See Prague. 9.15 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Selection from Rigoletto—Opera (Verdi), on Gramophone Records. 1.0 p.m., Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Leemans; Overture, La vie joyeuse (Hirschman); Selection from Nina Rosa (Romberg); Two Pieces for Pianoforte (Douliez); Images enfantines (Strens); Melody for Cello (Massenet); Mosaic (Zimmer); Loin du bal (Gillet). 2.0, Programme for Schools. 5.0, Concert of Chabrier Music by the Symphony Orchestra, conducted by J. Kumps; Overture, Gwendoline; Habanera; Suite pittoresque; Fête polonaise from Le roi malgré lui; España. 6.0, Talk: What the League of Nations has achieved so far. 6.15, Gramophone Concert: Allegretto vivace from the Trio in F (Saint-Saëns); Two Airs from Romeo and Juliet (Gounod); Les chérubins (Couperin-Salmon); Serenade (Volkmann); The Flight of the Bumble Bee (Rimsky-Korsakov); Easter Overture (Rimsky-Korsakov). 7.15, Talk: Optimism in Spite of Troublous Times, by the Director of the Coné Institute. 7.30, Literary Review. 8.0, Bizet Concert by the Symphony Orchestra, conducted by Jean Kumps; Soloists: MM. Daens and Declercq (Songs); Overture, Patrie; Ballet Music from Carmen; Duet from Carmen; Mimet and Farandole from L'Arlesienne; Duet from The Pearl Fishers; Petite Suite. 8.45, Talk: Women's Emancipation. 9.0, Symphony Concert (cont'd.); Soloist: H. De Guent (Soprano); Overture, La princesse jume (Saint-Saëns); Two Melodies (Van Oost); Songs: (a) Aria from Figaro (Mozart), (b) Se tu m'ami (Pergolesi), (c) Die Forelle (Schubert); Roman d'Arlequin (Massenet); Fantasetta (Dubois); Waltz, Wine, Woman and Song (Joh. Strauss). 10.0, Journal Parlé. 10.10, Request Gramophone Records. 10.25, Popular Music on Gramophone Records. 11.0, La Brabançonne.

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Concert by the Station Orchestra, conducted by P. Leemans; Overture, Der Freischütz (Weber); Still wie die Nacht (Bühm); Invertissement-rapsodie (Leemans); Melody (Raellmannov); Spanish Dance for Violin (Falla-Kreiser); Selection from La Bohème (Puccini); Waltz, By all the Stars above you (Williams); Pasodoble, Puerta de la carne (Luchesi). 1.0 p.m., Le

Journal Parlé. 1.10, Popular Music on Gramophone Records. 2.0, Educational Programme. 5.0, Dance Music from the St. Sauveur Palais de Danse. 6.0, Concerto for Violin and Orchestra (Tchaikovsky), on Gramophone Records. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans; Romantic Prelude (Rogister); Ballet Suite (Infante); Elan (Douliez); Grotesque Dance (Schmitt); Legend No. 10 (Dvorak); Suite, En Bretagne (Rhené-Baton). 7.15, Talk: Bernard Shaw's Play, Too true to be good. 7.30, Wireless Notes. 8.0, The Chicago Underworld—Radio Play (Schack), translated by Yvonne de Man. 9.0, Concert by the Band of the First Regiment of Grenadiers, conducted by Lieut. R. De Cœnnick; La Brabançonne (Van Campenhout); Military Symphony (Haydn); Third Serezo (Gilson); Spanish Dances (Granados); Le chasseur maudit (Franck); Scheherazade (Rimsky-Korsakov). In the interval, Le Journal Parlé.

BUCHAREST

294 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra: Cadets' March (Souza); Waltz, Wiener Bonbons (Strauss); Overture, Châl Romant (Kettlhey); Selection from Don Giovanni (Mozart); Selection from the Geisha (Jones). 5.0, News and Time Signal. 5.10, Talk. 5.25, Concert (cont'd.): Dance Suite (Mannfred); Slav Dances Nos. 8 and 9 (Dvorak); Sligh Ride (Jesse); 6.0, Talk: Romanian Epic Poetry. 6.40 Light Music on Gramophone Records. 7.0, Symphony Concert by the Philharmonic Orchestra, conducted by Georgesco. 8.0 (in an interval), Recitations. 9.0, News.

BUDAPEST

550 metres; 18.5 kW.—Also relayed on 840 metres from 5.30 to 11.0 p.m.—4.30 p.m., Hungarian Folk Songs by Akos Morvay (Pianoforte). 5.0, Reading. 5.30, Talk with Gramophone Illustrations: Dance Music of Many Lands. 6.30, Hungarian Songs by Benes Budai and Béla Reményi, sung by Elisabeth Toth and Paul Kalmár. 8.45, News Bulletin, followed by Music by the Karl Rura Cigany Band. 9.0, Weather. 9.5, Orchestral Concert, conducted by T. Palgá; Overture (Lincke); Ballet Scene (Nagy); Die Werbung (Firdögh); Potpourri (Skizmal); Orientalische Szene (Kazassay); Selection from The Arabian Nights (Joh. Strauss); Cossack Dance (Dargomysky); Pas de Deux (Delibes); Overture, Ein Herbstmanöver (Kalmán). 10.30, Dance Music by the Javor Band from the Bellevue Hotel.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG**, 1,153 metres; 7.5 kW.—11.0 a.m., Time and Chimes from the Town Hall. 11.5, String Ensemble Concert, conducted by Harald Andersen, relayed from the Bellevue Strandhotel. 12.15 p.m., Talk: Music of the Eighteenth Century—Handel. 12.45 to 2.0, Interval. 2.0, Orchestral Concert conducted by Lamy Grondahl. Soloists: Helge Rungwäld (Songs) and Henrik Boye (Harptitanen March (Stark)). Festival Overture (Tchaikovsky). Strophe (Bartholdy). Waltz, Soldaterminder (Norup). Cornet Solo: Paa Vagt (Dierig). Selection from Fidelio (Beethoven). March, Hilsen til Danmark (Baldmann). Songs with Harp Accompaniment: (a) Wolfram's Song from Tannhäuser (Wagner), (b) Au cimetière (Saint-Saëns), (c) Two Songs from Chinese Songs (Toft), (d) Vaagu af din Slummer (Heise). Riberhus March (Frohlich). Prelude to Act Four of Tovelille (Hamerik). Polka, Biondini (Lumby). Invitation to the Dance (Weber). Fantasia on Danish Melodies (arr. Lauzky). March, Stars and Stripes (Souza). 4.0, Programme for Children. 4.40, Exchange and Fish Market Prices. 4.50, Talk. 5.20, German Lesson. 5.50, Weather Forecast. 6.0, News. 6.15, Time Signal. 6.30, Review of Politics for February. 7.0, Chimes from the Town Hall. 7.5, Programme by Per Knutzon. 7.10, String Quartet in C Minor, Op. 59, No. 2 (Beethoven). 7.50, Die geschwister—Comedy in One Act (Goethe). 8.30, Concert of Russian Music. 9.5, News. 9.20, Saxophone Recital by Henry Casse. Trees (Rasbach). Ay-Ay-Ay (Perz-Freires). Gramophone Records. Indian Love Call (Friml). Here lies love (Rainger). 9.50, Dance Music relayed from the Ritz Restaurant. In the interval at 11.0, Time and Chimes from the Town Hall. 11.30 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Variety Concert. 1.0 to 7.0, Programme in English by the I.B.C., C. Danvers Walker, R. Chene and B. McNabb announcing. 6.0, Military Band Concert for Torquay Listeners: King Cotton March (Souza); Medley of British Songs; Jungle Drum (Kettlhey); Paree (Padilla); The Battle of Waterloo (Eckersburg); Valencia (Padilla); National Emblem March (Bagley); Le Reve passe (Krier). 6.30, Concert for Weymouth Listeners. Trio: Old Time Jigs

MARCH 17th

FRIDAY

continued

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—12.5 p.m., Light Music on Gramophone Records. In the interval at 12.20, News. 1.30, Programme with Gramophone Records, arranged by the Post Office. 2.0, Agricultural Prices and Exchange Rates. 2.30, Programme for Children. 3.0, Talk: The New Spring Fashions. 3.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Three Oriental Miniatures (Fischer); Berceuse (Kursch); Psalm (Kursch); Waltz (Lühr); Selection from Le Tribut de Zamora (Gounod); Potpourri, Klänge aus Arkadien (Morena); Grenzmarkklänge-Marsch (Schmidt). 4.30, Book Review. 4.50, Talk for the Country Woman. 5.15, Agricultural Prices. 5.20, Ice Report. 5.30, Instrumental Concert by Eugen Wilcken (Viola), Richard Wendt (Oboe), Richard Knauer (Clarinet), Hermann Nagel (Trumpet), and Erich Börschel (Pianoforte). 6.0, See Berlin (Königs Wusterhausen). 6.25, Talk: The Gelska. 6.45, Talk by Kurt G. Sell: What People are talking about in America, relayed from America. 7.0, Weather and News. 7.10, Dialogue: How to listen to Orchestra Music, with Examples from Brückner's Fourth Symphony. 7.55 (approx.), by the Königsberg Opera House Orchestra, conducted by Erich Seidler. 8.40, Guitar Recital by Heinrich Albert: Prelude and Fugue (Bach); Minuet, Op. 11, No. 5 (Sors); Impromptu (Mertz); Valse lento (Mozzani); Springbrunnen (Albert); Mandolinata (Albert); Etude from Caprices, Op. 20 (Lezmann); Arab Serenade (Barreka). 9.10, Weather, News, and Sports Notes.

HILVERSUM

Announced HUIZEN; 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Christian Radio Society (S.C.R.V.). 11.40 a.m., Police Announcements. 11.55, Trio Concert. Soloist, M. J. v. Ginkel (Clarinet). Overture, La finta semplice (Mozart); Spring Song (Mendelssohn); Selection from Henry VIII (Saint-Saëns); Walter's Prize Song (Wagner); Selection from Parsifal (Wagner); Gramophone Records; Overture, Das Nachtlager in Granada (Kreutzer); Nord-eibilder (Joh. Strauss); Norwegian Bridal Procession (Grieg); Selection from Piccolino (Guiraud); Entr'acte Gavotte (Gillet); Selection from Le Déluge (Saint-Saëns). 1.40 p.m., Interval. 2.10, Religious Reading. 2.40, Talk for Women. 3.10, Concert, Mme. I. Mübber-Belser (Contralto), J. H. E. Wittgen (Flute), H. Schell (Violin), B. Oberstein ('Cello), and G. Hengeveld (Pianoforte). Trio Sonata in E (Telemann); Dank sei dir Herr (Handel); Sonata in G Minor (Mascini); Cavatine and Air from Figaro (Mozart); Adagio from the Concerto for 'Cello (Haydn); Trio No. 2 (Haydn); Geistliches Wiegenlied (Brahms); Entr'acte in A, Op. 118, No. 6 (Brahms); Ballade in G Minor, Op. 118, No. 3 (Brahms); Ocliette (Saint-Saëns); L'Absent (Faure); Nocturne (C. Franck); Zigeunerweisen (de Sarasate). 4.40, Botanic Talk. 5.10, Talk for the Amateur Photographers. 5.40, Horticultural Talk. 6.10, Talk. 6.40, Literary Programme. 7.10, Police Announcements. 7.25, Religious Information. 7.40, Concert by the Amsterdam Orchestral Society, conducted by Frans van Diepenbeek: Marche des cloches (Maillart); Overture, The Caliph of Bagdad (Boieldieu); Selection from Les Sultanes (Ganne); Lotus Flowers (Olsen); Dance from Paraty (Valverde); Selection from Robert le Diable (Meyerbeer-Gaume). 8.40, Talk. 9.10, Concert (cont'd.): Gusak's March (Souza); Overture, Serenades (Rossini); Oriental March, The Arabian (Asch); Finale from Ariete (C. Bach); Venn and Triumphal March from Aida (Verdi); Selection from Romeo and Juliet (Gounod). In the interval at 9.40, News. 10.10, Popular Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM; 1,875 metres; 8.5 kW.—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40 a.m., Time Signal. 11.41, Concert by the Wireless Orchestra, conducted by Nico Treep: Overture, Les Saltimbanques (Ganne); In the Mystic Land of Egypt (Kotlbehy); Suite Phrygienne (Brussels); Russian Dance (Moszkowsky); Humoresque (Dvorak); Gramophone Records, Schritte im Dreivierteltakt (Kockert); Waltz, Les fleurs (Walckend); Ein Abend in Toledo (Schmelzing); Si vous l'avez compris (Denza); Selection from Le postillon de Longjumeau (Adam); Gramophone Records: Ein Melodientraum (Urbach); March, The Liberty Bell (Souza). 1.40 p.m., Talk. 2.10, Kovacs Lajos and his Dance Band. 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Concert by the Small V.A.R.A. Orchestra, conducted by P. Duellant: Overture, Morning, Noon and Night (Suppé); Selection from The Arabian Nights (Joh. Strauss); Serenade (Braga); In the Seventh Heaven (Petras); Lolita (Buzzi-Peccini); In the Harbour of Port Saïd (Armandola); Selection from A Kiss in Spring (Kálmán). 4.30, Programme for Children. 5.10, Concert by the De-Friederiters, conducted by H. de Groot: Hallo Baby (Baffalli); Ich wärst für nicht die Frau gewesen (Weinberger); Knave of Diamonds (Steele); Oriental Love (Leopold); Brighter than the Sun (Winn); Wir tanzen Welterschlager (Borchert); Zebra Stripes (Perl); Donna Valtra (Köpping); Harlequin (Erwin); Der Spielmann (Wilezinsky); De Internationale (de Geyter). 5.50, Popular Music on Gramophone Records. 5.55, Organ Recital by J. Jong; Chopiniana (Petras); Fairy on the Clock (Myers). 6.20, Talk. 6.40, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot: Overture, Poet and Peasant (Suppé); Die Schönruher (Lanner); Selection from Louise (Charpentier); Slav Dances Nos. 1 and 2 (Dvorak); Lied (Fibich); Waltz (Strauss); Chromatic Gallop (Liszt). 7.40 to 10.40, Programme of the Liberal Radio Protestant Society (V.P.R.O.). 7.40, Talk. 8.10, Concert. 8.40, Talk. 9.10, Concert (cont'd.). 9.40, News. 9.55, Talk on Max Regér. 10.25, Gramophone Records. 10.40 till Close Down, Programme of the V.A.R.A. 10.40, Concert by De Notenkrakers, conducted by D. Wius; Hunky Dory (Holzmann); Memories of the Ukraine (Ferraris); Hochzeitszug in Lilliput (Translatour); Granny's Photo-Album (Greer); Selection from The Czarevitch (Lehar); Gramophone Records: O, mein schönes Neapel (Stolz); Burikai (Kubati); A Night's Dream (May); Elégie (Massenet); Waltz favourites (Clere); L'Internationale (de Geyter). 11.40 (approx.), Close Down.

and Reels; Songs: (a) Call me Darling, (b) Home, (c) Only a Rose (Primi); Trio; Turkey in the Straw; Songs: (a) Marta, (b) Save the Last Dance for me, (c) Song of the Vagabonds. 7.0, Local News and Popular Music on Gramophone Records. 7.30, Radio Gazette. 8.0, Agricultural Talk. 8.15, Light Music on Gramophone Records. 8.30, Programme relayed from La Havre. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Light Music: Under a Texas Moon; Blue is the Night; Love in a Mist; Hello Baby; Blue Pacific Moonlight; Crying for the Carolines; Mother's Smile; Swanee Shuffle; If I can't have you; Marianne; The Sunshine of Marseille; When the Red Roses get the Blues for you; The Love Waltz; Dreamy Honolulu; An Old Italian Love Song; A Night of Happiness. 11.0, Music by a Symphony Orchestra: Overture, Tanceredi (Rossini); Two Dances from the Nell (Agnoni Suite (German)); (a) Country Dance, (b) Merry-maker's Dance; Prelude to Carmen (Liszt); Two Dances from the Henry VIII Suite (German); (a) Toreh Dance, (b) Morris Dance; Two Pieces from the Peer Gynt Suite (Grieg); (a) The Hall of the Mountain King, (b) Morning. 11.30, Song Recital: Brother of the Empire (Helmere); I am a Friar of Orders Grey (Reeve); My Sword and I (Byung); Rocked in the Cradle of the Deep (Knight); Orchestra: Roses from the South (Joh. Strauss); Le Réve passe; I travel the Road (Thayer); Rolling down to Rio. 12.0 Midnight, Variety Music: The Wedding of Lauchie (McGraw); Hans put up the Buns; Corporal Hoskins; Xylophone Solo: Gold Fishes; The Pack Man; All in favour; Waltz, The Blue Danube (Joh. Strauss). 12.30 a.m. (Saturday), Accordion Solos: Ragtime Medley (Cuvellier); Petit Jean (Cuvellier); Perdita (Cuvellier); Triumph of Bras (Cuvellier); La Tourterelle (Damare); Tango de Paques (Cuvellier); Restless Fingers (Cuvellier). 1.0, Orchestral Concert: Gems of Robbie Burns (arr. Beaton); Light-some Reel (Traditional); Irish Set Dance (Traditional); Paul Jones (Traditional); Irish Jigs (arr. Smith); Barn Dance (Henry); Four-some Reel (Traditional); The Gay Gordons (arr. Stephen). 1.30, Songs: Pretty Kitty (John); Speak to me of love (Stevier); To-day, To-morrow, For ever; Springtime reminds me of you (Carter); Dream Lover; Excuse me, Lady; My Love Parade (Schertzinger); I'm just a Vagabond Lover. 2.0, Variety Music: You, just you; In a Shanty in Old Shanty Town; Don't say good-bye; We just couldn't say good-bye; She was only Somebody's daughter; Silver Hair and Heart of Gold; Marching along Together; Song of the Bells; Where is this Lady?; Rock your cares away; Tell me to-night; A Bedtime Story; Yes Mr. Brown; Bravo Jim; Take a Spot of Happiness. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLensburg.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259.3 metres; 17 kW.; CASSEL, 245.9 metres; and TRIER, 259.3 metres.—4.0 p.m., Orchestral Concert. Soloist: August Pfaff ('Cello); Overture, Der Wildschütz (Lortzing); 'Cello Solos: (a) Andante (Pfaff), (b) Cantabile (Cui); Ballet Music from Silvana (Weber); 'Cello Solos: (a) Preghiera (Dorn), (b) Scherzo (Gooss); Ballet Music from Undine (Lortzing); Old Dance Music. 5.15, Economic Notes. 5.25, Talk: Territory in Eastern Europe taken from Germany by the Treaty of Versailles. 5.50, Time, Programme Announcements, Weather and Economic Notes. 6.0, See Berlin (Königs Wusterhausen). 6.30, Words for Germans—Radio Sequence (Willi Koch and Wolfram Brockmeier). 7.5, See Stuttgart. 9.0, Time, News, Weather and Sports Notes. 9.25, See Stuttgart. 9.40, See Langenberg. 10.30 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romanda.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—6.0 p.m. (from Kiel), Talk relayed from Berlin (Königs Wusterhausen). 6.25, Weather Forecast. 6.50, Review of Books about Hamburg. 6.45, Talk: What People are talking about in America, relayed from America. 7.0, White Horse Inn—Musical Play in Three Acts (Benatzky). 9.15, Time, Weather, News, Sports and Police Notes. 9.35, Concert relayed from the Stadtshänke. 10.20, Ice Report. 10.25 (from Bremen), Concert relayed from the Astoria. HANOVER.—See Hamburg.

tion from A Kiss in Spring (Kálmán). 4.30, Programme for Children. 5.10, Concert by the De-Friederiters, conducted by H. de Groot: Hallo Baby (Baffalli); Ich wärst für nicht die Frau gewesen (Weinberger); Knave of Diamonds (Steele); Oriental Love (Leopold); Brighter than the Sun (Winn); Wir tanzen Welterschlager (Borchert); Zebra Stripes (Perl); Donna Valtra (Köpping); Harlequin (Erwin); Der Spielmann (Wilezinsky); De Internationale (de Geyter). 5.50, Popular Music on Gramophone Records. 5.55, Organ Recital by J. Jong; Chopiniana (Petras); Fairy on the Clock (Myers). 6.20, Talk. 6.40, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot: Overture, Poet and Peasant (Suppé); Die Schönruher (Lanner); Selection from Louise (Charpentier); Slav Dances Nos. 1 and 2 (Dvorak); Lied (Fibich); Waltz (Strauss); Chromatic Gallop (Liszt). 7.40 to 10.40, Programme of the Liberal Radio Protestant Society (V.P.R.O.). 7.40, Talk. 8.10, Concert. 8.40, Talk. 9.10, Concert (cont'd.). 9.40, News. 9.55, Talk on Max Regér. 10.25, Gramophone Records. 10.40 till Close Down, Programme of the V.A.R.A. 10.40, Concert by De Notenkrakers, conducted by D. Wius; Hunky Dory (Holzmann); Memories of the Ukraine (Ferraris); Hochzeitszug in Lilliput (Translatour); Granny's Photo-Album (Greer); Selection from The Czarevitch (Lehar); Gramophone Records: O, mein schönes Neapel (Stolz); Burikai (Kubati); A Night's Dream (May); Elégie (Massenet); Waltz favourites (Clere); L'Internationale (de Geyter). 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., Literary Talk. 6.15, Announcements and Gramophone Records. 6.25, Sports Notes. 6.30 to 10.0, See Warsaw. 10.0, Answers to Correspondents in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 40 kW.; and HELSINKI, 368.1 metres.—6.40 p.m., Humorous Programme. 7.0, Dance Music, relayed from Helsinki. 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

473 metres; 60 kW.—12 noon, Concert conducted by Eysoldt. Soloists: Erich Rauch (Baritone) and Eibert Grape (Pianoforte). Overture, Peter Schmitt (Weber); Waltz, Samt und Seide from Der Fremdenführer (Ziehrer); Songs (Loewe): (a) Der Nöck, (b) Friederix Rex; Ein Plauder-Tündchen (Wismar); Geburtstags-Liedchen (Linke); Selection from Wild Violets (Stolz); Frühlingslied (Schirmann); Behüt dich Gott (Nessler); Variations on a German Folk Song, 's kommt ein Vogel geflogen (Heis); Song (Hill); Mareh Potpourri, Jung Deutschland (Weniger). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Economic Notes and Time. 2.50, Programme for Children. 3.20, Jack and John—A Fairy Play for Children (Josef Otto), with Music by Hans Ebert. 4.0, Concert, conducted by Wolf: Overture, Beherscher der Geister (Weber); Becarolo (Tchaikovsky); Troika (Tchaikovsky); Liebeswälder (Moszkowsky); Selection from Mignon (Thomas); Ballet Suite, La Source (Debussy); Viennese Song Potpourri, Servus Wien (Dostal); Castaldo-Marsch (Novacek). 5.20, English Conversation. 5.45, Weather, Time, Economic Notes and Sports Results. 6.0, See Berlin (Königs Wusterhausen). 6.30, Talk: The Modern Author. 6.55, News. 7.0, Song Recital on Gramophone Records: Adele Kern (Soprano) and Julius Patzak (Tenor). Soprano Solo from Figaro (Mozart); Tenor Solo from The Magic Flute (Mozart); Soprano Solo from Il Seraglio (Mozart); Tenor Solo from Così fan tutte (Mozart); Soprano Solo: Ach, wir' ich schon mit ihm vereint from Fidelio (Beethoven); Tenor Solo: Walters Prize Song from The Mastersingers (Wagner); Soprano Solo from A Masked Ball (Verdi); Tenor Solo from La Bohème (Puccini); Tenor Solo from La Bohème (Puccini); Soprano Solo: The Nightingale (Albéniz); Tenor Solo (Ständchen (R. Strauss); Soprano Solo: Waltz, Frühlingsstimmen (Joh. Strauss); Tenor Solo: Czuzonetta from Gasparone (Milficker). 8.5, See Leipzig. 9.5, News and Sports Notes. 9.20, Talk by Kurt G. Sell: What People are talking about in America, relayed from America. 9.40, Serenade and Dance Music, conducted by Eysoldt. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romands.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 310 metres.—11.5 a.m., Concert by the Argé Orchestra, conducted by Gustav Curth;

March, Schützenjubil (Curth); Overture, Die schöne Galathée (Suppé); Entr'acte L'Exposition (Thomé); Mosele March (Hitt); Kaiser-Friedrich-Marsch (Friedemann); Selection from Orpheus in the Underworld (Offenbach); Paraphrase on the Song Still rüht der See (Schreiner); Poseidon March (Lease); Unter der Friedensflagge (Novotzsky); Potpourri, Ein musikalisches Wander-Panorama (Lincke); Waltz from Die Förscherchustel (Jarno); March, Unter den Linden (Kollo); Waltz from Das Puppenlied (Fall); Intermezzo, In the Shadows (Finck); Potpourri, With Fire and Sword (Petras). In an interval at 12 Noon, News, Weather, Snow Report, and Time. After the Concert, Exchange. 1.0 p.m., Art Review. 1.30 to 1.50, Reading. 2.15, Talk for Housewives. 2.35, Exchange and Market Prices. 3.0, Talk: How to make Nesting-boxes for Birds. 3.30, Concert by the Dresden Philharmonic Orchestra, conducted by Joseph Gustav Mrazek: Overture, The Magic Flute (Mozart); Six German Dances (Haydn); Dance Suite for Chamber Orchestra, Aus galanter Zeit (Klaas); Scherzo (Ehrenberg); Selection from the Ballet, Lazy John (Nedbal); Waltz, Strandwellen (Lilling); Gavotte (Schütt). 4.30, Weather and Time. 4.50, Economic Notes. 5.0, Book Review. 5.25, English Lesson. 5.50, Talk: Christoph Friedrich Nicolai (on the 200th Anniversary of his Birth). 6.0, See Berlin (Königs Wusterhausen). 6.25, Gramophone Concert: Overture, Fra Diavolo (Auber); Overture, A Midsummer Night's Dream (Mendelssohn); Kubelik Serenade (Ordn); Selection from The Land of Smiles (Lehar). 6.45, Talk: What People are talking about in America, relayed from America. 7.0, Talk on Economic Questions. 7.10, Siegfried Kahn Memorial Concert by the Kuhn Women's Choir; a Double Quartet and a Male Voice Choir; Soloists: Rudolf Watzke (Baritone) and Ida Kuhn (Pianoforte); Mixed Choir: Morgengruss; Songs for Baritone: (a) Ich wills o gerne singen, (b) Schlummerlied, (c) Seelen, (d) Der verzweifte Liebhaber; Variations on an Old Minnelied for Pianoforte; Three Songs: (a) Der Abend, (b) Durch die Nacht, (c) Reiterlied; Mixed Choir: Die Stadt am Meer. 8.5, Kampfe, the Waiter goes to Law—a Legal Problem, songs for Workers (Sekundus). 9.5, New Bulletin. 9.20 (approx.), Concert by the Leipzig Symphony Orchestra, conducted by Carl Schuricht: Music for Orchestra (Thomé); Symphony No. 3 (Hans Fleischler). 9.20 (approx.), Close Down.

LINZ.—See Vienna.

LWOW

381 metres; 16 kW.—6.0 p.m., Talk: In the Film Studio. 6.15, Miscellaneous Items. 6.30, See Warsaw. 10.0 (approx.), Close Down.

MADRID

ARANJUEZ (EAQ), 30.43 metres; 20 kW.—10.30 p.m., Popular Music. 10.45, Radio Chronicle. 11.0, Popular Music (cont'd.). 11.35, Answers to Correspondence. 11.40, Spanish-American Talk. 11.45, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO; Call EAJ7; 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Programme of Musical Novelties, Medical Talk, and Variety Items by Ramon Gomez de la Serna. 8.15, News Bulletin and Political Review. 8.30 to 9.30, Interval. 1.30, Chimes, Time Signal, and Political Review. 9.45 (approx.), Humorous Talk, followed by Concert by the Station Symphony Orchestra, conducted by Carlos Bacariss; Selection from Iphigenia in Aulis (Gluck-Wagner); Concerto for Harp and Flute, with Orchestral Accompaniment (Mozart); Symphony No. 7 in A (Beethoven); Prelude à l'après-midi d'un fume (Debussy); Night on the Bare Mountain (Musorgsky). 11.45, News Bulletin and Programme Announcements for Listeners Abroad. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—6.0 till Close Down. See Prague. 9.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—4.30 p.m., Literary Programme. 5.30, Symphony Concert, relayed from the Radio Theatre, Chopiniana (Rogal-Lewitzky). 8.0, Talk in English: The Paris Commune.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—4.0 p.m., Concert, conducted by Erich Kloss. 5.10, A Dialogue. Industrial Augsburg. 5.30, Talk: Karl Marx as a Political Economist. 5.50, Time, Weather, Market Prices, and Snow Report. 6.0, See Berlin (Königs Wusterhausen). 6.25, Choral Concert, conducted by Karl Kühn: Abendlied (Schumann); Wie schön blüht an der Maie (Folk Song, arr. v. Othegraven);

MARCH 17th

FRIDAY

continued

Gagliarde (Hasler); Das Scheiden (Goslar); Vogel, flieg weiter (arr. v. Othegraven); Es wollt ein Jägerlein jagen (arr. Thiessen); So grün als ist die Heiden (arr. Thiessen); Der Krähwinkler Landstürn (arr. Haas Gal); 6.45 (from Augsburg). The Augsburg Opera Season, 1932-33.—Concert by the Augsburg Municipal Theatre Orchestra and Soloist, relayed from St. Ann's College. 8.5 (from Nürnberg). In Franconia there stands an Old Castle—a Phantasmagoria (Alfred Graf), by the Nürnberg Madrigal Choir, a Guitar Quartet and Soloists. 9.20, Time, Weather, News, Sports Notes, and Snow Report. 9.50, Gramophone Report: What People are talking about in America, relayed from America.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—3.30 p.m., Orchestral Concert, relayed from the Grand Hotel; Overture, Euryanthe (Weber); Waltz, O schöner Mai (Joh. Strauss); Selection from Tosca (Puccini); Melody (Caesard); Hymn to the Sun (Rimsky-Korsakov); Ballet Music from Sylvia (Debussy). 4.30, Talk on Schools. 5.30, French Lesson. 6.0, Announcements, Weather and News. 6.30, English Lesson. 7.0, Time Signal. 7.1, Scene for Orchestra, Choir and Soloists (Eyvind Groven), after a Novel by Ingberg Relling Hagen, relayed from the Logen Hall. Conductor: The Composer. 8.30, Agricultural Report. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Reading.

OSTERSUND.—See Stockholm.

PALERMO

537.6 metres; 3 kW.—7.0 p.m., Dopolavoro Notes, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society, and Giornale Radio. 7.20, Variety Music. In an interval at 7.30, Time and Announcements. 7.45, Manon—Opera in Five Acts (Massenet). In the intervals, Talk and Announcements. After the Opera, News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Le Journal Parlé. 7.20, Weather Report. 7.30, Concert by the Symphony Orchestra, conducted by Edouard Flament; Soloist, R. Bas (Violin); First Movement from the Concerto in A for Violin and Orchestra (Mozart); Pupazzi (Schmitt); Rolla (Flament); Nocturne and Musette (Sibyllus). 8.15, Musical and Literary Programme for Young People. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Sponsored Talk. 8.0, Talk on Music. 8.15, Interval. 8.30, Concert of Old Dance Music by the Station Symphony Orchestra; Minuet and Sicilienne (Boccherini); German Dances (Beethoven); Gavotte (Lully); Gavotte (Martini); Rigaudon from Dardanus (Rameau); Ballet Music from Hippolyte et Aricie (Rameau); Le tombeau de Couperin (Ravel); English Suites (arr. Raband); Ballet Music from Armide (Gluck); Chanson à danser (Bruneau); Concerts royaux (Couperin); Dance Suite (Godard). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Jewish Talk. 12.30 p.m., Concert by the Kretzky Orchestra; Sonata No. 7 for Two Violins and Bass (Grieg); Allegro vivace and Andante con moto from the Italian Symphony (Mendelssohn); Turkish March (Mozart). 1.0 p.m., Exchange, News, and Weather. 1.5, Chopin Piano-forte Recital by Niedzielski; Prelude in D Flat; Scherzo in C Sharp Minor; Nocturne in C Sharp Minor; Four Etudes. 1.30, Exchange. 1.35, Orchestral Concert (contd.): Andante and Rondo from the Piano-forte Quartet (Beethoven); Abendlied (Schumann); Waltz (Chopin); Valse romantique (de Séverac). 2.0, Exchange. 3.45, Exchange and Market Prices. 4.30, Elementary English Lesson. 6.10, Agricultural Talk. 6.30, Review of New Books. 6.50, Review. 7.0, Talk: Von Bülow's Memoirs. 7.20, Concert by the Kretzky Orchestra; Lark's Serenade (Dicker); Soir d'Éliver (Schwaab); Serenade (Stalin); Sur l'eau (Steck); Catalana (Ruzgade); Ma mie Rosette (Lacôme); Extase (Ganne); Minuet (Volpatti). 7.45, Commercial Prices and News. 8.0, Literary Talk. 8.30, News and Weather. 8.40, Gastronomic Review. 8.45, Variety Music on Gramophone Records. 9.0, Tire-au-flanc—Vaudeville in Three Acts (Sylvane and Mouçy-Eon) relayed from the Dejazet Theatre.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by WSKX on 48.86 metres and 25.27 metres.—9.0 p.m., Talk by Dr. Emlyn Jones. 9.10, Business News. 9.15,

S.A.I. Musicale (Carnegie Tech. Chapter). 9.30, Weather Report. 9.32, Market Reports. 9.45, Johnny Muskrat. 9.50, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Musikunion College Music Clubs. 10.15, Programme to be announced. 10.30 to 11.15, New York Relay. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Our Daily Food, by George Rector and Judge Gordon. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45 to 3.30 a.m. (Saturday), New York Relay. 11.45, Today's News, by Lowell Thomas. 12.0 Midnight, Popsodent Amos 'n' Andy. 12.15 a.m., Bilda Burke (Soprano). 12.30, Five Star Theatre—Charlie Chan. 1.0, Nestlé's Programme. 1.30, Time Signal and Adventures in Health. 1.45, Howard Thurston the Magician. 2.0, The First Nighter. 2.30, Armour Programme. 3.0, Alice Joy with Kolliker. 3.15, Vic and Sade. 3.30, Bridge School of the Air by E. Hall Downes. 3.45, Bradley Kincaid. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News Flashes. 4.20, Smith Ballew and his Orchestra. 4.30, Henry Halstead and his Californians. 4.58, KDKA Artist Bulletin. 5.0, Cotton Club Orchestra, from New York. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Brno. 3.55, Talk: How Students Live. 4.5, Concert by the Odrick Quartet: Duet for Violin and Cello, Op. 14 (Vomacka); Trio in G, Op. 9, No. 1, for Violin, Viola and Cello (Beethoven). 5.5, Market Prices. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Talk on Diphtheria. 6.0, Chimes. 6.1, News Bulletin. 6.10, Talk. 6.30, Macbeth—Tragedy in Five Acts (Shakespeare). Translation by J. V. Sladec. Incidental Music by Otakar Jeremias. In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.1, News Bulletin. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW; LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.30 (from Geneva). Talk: The Industrial Labour Bureau and Unemployment Insurance. 6.0 (from Lausanne). Weather Forecast, News Bulletin and Announcements. 6.30, Lesson for Accountants. 7.0 (from Lausanne). Variety Concert. 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva). Talk: The Work of the League of Nations. 9.30 (approx.), Close Down.

RIGA

525 metres; 15 kW. 5.30 p.m., Latvian Lesson. 5.58, Weather Report. 6.0, Symphony Concert, conducted by J. Medins. Symphony in D (Mendels); Concerto in E for Violin (Bach); Fugue in A Minor (Bach); La Nonne (Vaschnig-gradsky). In the interval at 7.0, News, and at 8.0, Weather and News. 8.30, Dance Music. 9.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO; 441 metres; 50 kW. Relayed by Naples, 319 metres; and 2RO, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Concert from Turin. In the interval, from 12.30 to 12.45, Giornale Radio and Exchange. 3.0, Concert by the Poltronieri Quartet, relayed from the Royal Academy of Santa Cecilia. 6.0 (Naples), Shipping and Sports Notes. 6.10, Agricultural and Dopolavoro Notes. 6.20, Giornale Radio, and Light Music on Gramophone Records. 7.0, Time and Announcements. 7.5, Report of the International Institute of Agriculture (in Italian, French, English, German and Spanish). 7.30, Talk on Sport. Sports Notes, and Tourist Report. 7.45, Variety Concert: Overture, The Italian Girl in Algiers (Rossini); In the Steppes of Central Asia (Borodin); Autumn, from The Seasons (Glazunov); Selection from La Cabrera (Dupont); Cello Solos: (a) Intermezzo (Lalo), (b) Waltz (Hummel), (c) Song and Arab Dance (Mullé), (d) Concert Mazurka (Popper). 8.45, Il cavallino rosso—Musical Comedy (Bonavolonta). News after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by W2XF on 31.48 metres and by W2XAD on 19.56 metres.—7.30 p.m. to 12 Midnight, New York Relay. 7.30, Muted Strings. 7.45, Three Shades of Blue-Nude Trio. 8.0, Sonata Recital. 8.15, Famous Loves. 12 Midnight, New Kenmore Orchestra. 12.15 a.m. (Saturday), Stock Report. 12.30 to

1.30, New York Relay. 12.30, Twenty Fingers of Harmony. 12.45, The Goldbergs. 1.0, Cities Service Concert. 1.30, WGY Farm Forum. 2.0, K7, Secret Service Spy Stories from New York. 2.30, Poud's Programme, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; BASLE, 244.1 metres; and BERNE, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Zürich). Concert by the Small Radio Orchestra. 12.35 to 12.45 p.m., Weather and Exchange. 2.30 (from Zürich). Concert of Light Music by the Radio Orchestra. 3.30 (from Zürich). Programme for Children. 4.0 (from Zürich), Gramophone Concert of Variety Music. 4.30 to 4.35, Weather Report. 5.30 (from Berne). Readings. 6.0, Time Signal, Weather Forecast, Market Prices, Tourist Report and Sports Notes. 6.20 (from Berne), Book Review. 6.50 (from Berne), Introductory Talk on the following Transmission. 7.0 (from Berne). Manon Lescaut—Opera in Four Acts (Puccini), relayed from the Berne Theatre. 8.45 (approx.), Weather and News. 10.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.5 p.m. (from Sundsvall), Folk Music. 4.30, Reading. 5.0, Variety Music on Gramophone Records. 6.0, The Practical Corner. 6.30, Talk, relayed from Malmö, 231 metres. 7.0 (from Göteborg), Symphony Concert, Symphony in D (Haydn); Lieder eines fahrenden Gesellen (Mahler). 7.50, Talk on Foreign Politics. 8.10, Variety Programme. 9.0, Bettins—Comedy (de Musset). 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Variety Music. 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Popular Music on Gramophone Records. 2.0 to 4.45, Interval. 4.45, Talk in French on Molière. 5.0, Orchestral Concert conducted by Roskam; Overture, Le naufrage de la Méduse (Flo-tow); Waltz, Feuilles du soir (Offenbach); Chinese Intermezzo, Cherry Blossom Festival (Dicker); Selection from Madame Butterfly (Puccini-Berghs); La voix des cloches (Luigini); Ballet Music from Cimr Mars (Gounod); Fantasia, Echos Russes (Leopold). 6.0, Trio Concert relayed from Lille, 265.4 metres. 7.0, Topical Talk in German. 7.15, Talk in French on the Forty-Hour Week. 7.30, Time and News. 7.45, Concert of Jazz Music, conducted by Roskam. 8.45, Lottery Results. 9.0, Concert from the Conservatoire, Toulouse. Conductor: Aimé Kunc. Soloists: Suzanne Balaguerie (Songs) and Victorina Bucci (Piano-forte). 11.0 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—12.30 p.m., Concert from Langenberg. 1.0, Concert arranged by the Post Office. 1.30, Advanced English Lesson. 3.35, Talk: Daily Housework as a Beautifier. 4.0, See Frankfurt. 5.15, Time, Weather, and Agricultural Notes. 5.25, Medical Talk on the Value of Proper Nourishment. 5.50, Talk: Proposals for Sunday Rambles. 6.0, See Berlin (Königs Wusterhausen). 6.25, Time and News. 6.30, Talk: Great Orators V—Oliver Cromwell. 7.5, Wagner Concert by the Philharmonic Orchestra, relayed from the Liederhalle. Conductor, Leo Blech; Prelude to Parsifal; Good Friday Magic, from Parsifal; Prelude to Lohengrin; Overture, Tannhäuser; Prelude to The Mastersingers; Prelude to Tristan und Isolde; Overture, Rienzi. 9.0, Time, News, Weather, Snow Report, Programme Announcements, and Sports Notes. 9.25, Talk by Kurt G. Sell: What People are talking about in America, relayed from America. 9.40, Concert from Langenberg. 10.0, Der weisse Schlaf—An Elegy from Poems by Max Dauthendey for Speaking Voice and Organ (Wilhelm Locks), relayed from the Ufa Palast; Emil Hess (Recitations) and Wilhelm Locks (Organ). 10.40 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Music by an Argentine Orchestra. 6.30, Opera Music: Selection from (a) La Dame Blanche (Boieldieu), (b) Blue Beard (Offenbach). 7.0, Tourist Talk and Sound Film Music. 7.15, Racing Results, Market Prices, and News Bulletin. 7.25, Local News Bulletin. 7.30, Accordion Music. 7.45, Orchestral Music: Selection from (a) The Chocolate Soldier (Scaer Straus), (b) The Merry Widow

(Lehár). 8.0, Airs from Opera: (a) Samson and Delilah (Saint-Saëns), (b) The Valkyries (Wagner), (c) Il Trovatore (Verdi). 8.15, Violin Solos: (a) Danse frivole (Dulceroze), (b) La plus que lente (Debussy), (c) Arlequin (Lalo). 8.30, Opera-Music. 8.45, Cello Concerto (Dvorak). 9.15, Chansonnettes. 9.30, Concert of Light Music by a Viennese Orchestra. 10.0, Opera Music: Aria from Lakmé (Delibes); Drinking Song from Cavalleria rusticana (Mascagni). 10.15, North African News. 10.30, Concert for Listeners in Morocco: Sphärenklänge (Strauss); C'est une valse qui chante (Rosler); Sous les toits de Paris (Moretti); In a clock-store (Orth); Cavatina from Romeo and Juliet (Gounod); March (Farrigou). 11.0, Symphony Concert: Old Spanish Song (Aubert); The Moldau (Smetana); La Poupée d'Arlequin (Durey); Air from Sicilian Vespers (Verdi); Bourrée fantasque (Chabrier). 11.30 to 12 Midnight, Programme in English by the I.B.C., H. K. Hitchcock announcing. 11.30, I.B.C. Half-Hour: Serenade (Heykens); Please come back to me (Bray); Sitting at the Window (Hoskins); Stephanie Gavotte (Czibulka); The Skaters' Waltz (Waldteufel); One more Day (Pepper); Let's play at pretending (Pepper); Selection from A Waltz Dream (O. Straus). 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Saturday), Dance Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—3.0 p.m., See Rome. 5.35 to 6.0, See Turin. 6.0, Popular Music on Gramophone Records. 6.20 to 6.35, See Turin. 6.35, Light Music from the Café Dante. 7.0 (approx.), Till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—3.0 p.m., See Rome. 5.35, Giornale Radio; Agricultural and Dopolavoro Notes. 6.0, Gramophone Records of Popular Music. 6.20, Giornale Radio. 6.30, Time; Announcements; Report of the Royal Geographical Society; and Variety Music on Gramophone Records. 7.0, Giornale Radio; Weather and Gramophone Records (contd.). 7.37 (in an interval), Talk on Sport. 8.0, Symphony Concert, conducted by Fernando Previtali; Soloist: Arthur Rubinstein (Piano-forte); Talk in the interval. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in German. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—4.0 p.m., Concert by the Josef Mayer Aichhorn Orchestra. 4.55, Tourist Report. 5.5, Talk on Handball. 5.20, Sports Notes. 5.30, Talk: The Iron Industry in the Stubai-Tal. 5.55, Talk: The Warning of the World War. 6.20, Time, Weather, and Programme Announcements. 6.30, Popular Music by the Tautenhayn Quartet. 7.10, Mary Magdalene—Tragedy in Three Acts (Friedrich Hebbel). 9.10, News, Weather, and Programme Announcements. 9.25, Traffic Report. 9.30, Concert by the Silvester Schieder Orchestra; March, Frohe Zukunft (Payr); Overture, The Three Wishes (Zichner); Selection from Polenlied (Nedbal); Waltz, Auge d'amour (Waldteufel); Potpourri, Wiener Leben (Komzak).

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.20 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Aviation Notes and Anti-Gas Drill. 2.30, Naval and Colonial Report. 2.35, Review of Periodicals. 2.50, Popular Music on Gramophone Records. 3.20, Talk on History: The development of the Parliamentary System in England, relayed from Wino (563 metres). 3.40, Talk: Poland in the Seventeenth and Eighteenth Centuries, relayed from Poznan (335 metres). 4.0, Wind Instrument Concert: Suite in C Minor, Op. 80 (Rund); Rhapsody, Espana (Chabrier); Potpourri of Polish Melodies (Sidorowicz); Mountaineers' Dances from Halka (Moniuszko). In the interval, Announcements. 4.55, Programme Announcements. 5.0, Talk on Polish Literature: The Novels of the Nineteenth Century. 5.20, Topical News. 5.25, Light Music. 5.50, Skiing Report from Cracow (312.8 metres). 6.0, Miscellaneous Items. 6.20, Agricultural Press Review, relayed from Wino. 6.30, Talk. 6.45, Radio Journal. 7.0, Talk on Music. 7.15, Concert by the Warsaw Philharmonic Orchestra, conducted by I. Neumark; Soloist, I. Weissenberg (Violin); Symphony in G (Haydn); Violin Concerto in E (Bach); Symphony Poem, Don Juan (R. Strauss); Violin Concerto (Glazunov). In the interval, Talk on Poetry, with Illustrations. 9.40, Sports Notes. 9.45, Radio Journal. 9.55, Aviation Weather Report and Police Notes.

ZURICH.—See Schweizerischer Landessender.

SATURDAY MARCH THE EIGHTEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL Scotland v. England. Running commentary on Rugby Match, from Edinburgh. Students' songs. Vaudeville programme. LONDON REGIONAL Two miniature operas: "Bastien and Bastienne," and "The Impresario," by Mozart. MIDLAND REGIONAL Symphony concert. NORTH REGIONAL Running commentary on Rugby League Match, Warrington v. Halifax. The Yorkshire Mimmers. WEST REGIONAL A West Country programme. SCOTTISH REGIONAL Running commentary on International Rugby Match, Scotland v. England. "What's Intitl," feature programme. BELFAST Choral and Orchestral concert. ABROAD BRUSSELS (No. 1) 8 p.m. Lyrical drama: "Edénie," by Léon Dubois. COPENHAGEN 7.30 p.m. A Radio Ball for the Older Generation. PALERMO 7.45 p.m. Operetta: "Cin-ci-la," by Ranzato. STRASBOURG 5 p.m. Pachelbel symphony concert from the Theatre des Champs Elysées, Paris. 8.30 p.m. Military Band concert. TOULOUSE 9 p.m. Extract from "La Mascotte," by Audran. TURIN, and TRIESTE 8.10 p.m. Operetta: "The Last Waltz," by Oscar Straus. WARSAW 7 p.m. Polish folk music.

ALGIERS 363.3 metres; 13 kW.—7.10 p.m., Shipping Notes. 7.15, Agricultural Report and Weather Forecast. 7.20, Opera Music: Airs from: (a) La Belle Hélène (Offenbach), (b) Les Noces de Jeannette (Massé), (c) Ciboulette (Hahn), (d) Man'zelle Nitouche (Hervé). 7.55, News. 8.0, Time Signal. 8.2, Request Gramophone Concert. 8.30, Report of the Automobile Club. 8.40, News. 8.45, Sound Film Music. 9.30, News. 9.35, Two Melodies (Gretchaninov). 9.45, Clarinet and Saxophone Solos. 9.55, News. 10.0 (approx.), Close Down.

ATHLONE 413 metres; 60 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 6.15, Popular Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Talk. 7.45, Gaelic Talk. 8.0, The Station Orchestra: H. R. White in a Programme of his own Compositions. 8.30, Soprano Solos by Mme. Lilian Swann. 8.45, The Station Orchestra. 9.30, Illéann Pipe Solo by Sean Dempsey. 9.45, Baritone Solos by W. J. Lemass. 10.0, The Station Orchestra. 10.20, Time Signal, News, and Weather Report. 10.50, Relay of the National Cellidie from the Arcadia, Cork. 11.30 (approx.), Close Down.

BARCELONA RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Programme for Children. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations and Catalan Grammar Lesson. 8.0, Light Music on Gramophone Records, and News. 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 9.5, Concert by the Station Orchestra: Overture, Ricchi (Wagner); Montanesa (Frigoia); Song from Ma Poupée chérie (de Severac); Bachelade (Doret). 9.30, A Musical Comedy, relayed from Madrid (EAJ7). 11.0 (in an interval), News Bulletin.

BARI 269.8 metres; 20 kW.—7.0 p.m. Agricultural Notes, Tourist Talk, and Popolavoro Notes. 7.20, Giornale Radio and Weather. 7.30, Time and Announcements. 7.35, Concert of Operetta Music and Songs. In the interval, Art Notes. 9.30, Popular Music on Gramophone Records. 9.55, News.

BREMEN.—See Schweizerischer Landessender. BRATISLAVA 279 metres; 14 kW.—3.10 p.m., Popular Concert by the Station Orchestra, conducted by J. Odcházel. 4.10, See Prague. 4.20, Reading. 4.30, Light Music on Gramophone Records. 4.45, Choral Concert of Slovak Folk Songs. 5.45, Talk for Housewives. 6.0, See Prague. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

BRESENLAU 325 metres; 60 kW.; and GLEWITZ, 253 metres.—12.10 p.m., Gramophone Concert of Light Music. 12.45, Time, Weather, News and Exchange. 1.5, Popular Music on Gramophone Records. 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Film Review of the Week. 3.0, Topical Programme. 3.30, See Hamburg. 4.30, Talk: The History of a German Family in Russia. 4.55, Talk: Bismarck and German Socialism. 5.25, Concert of Old and New Dances on Gramophone Records: Ländler, Auf zum Tanz; Tango, La bella Tangelita (Abraham); Slow Foxtrot from Zehn Minuten Glück (Meisel); Valse bleue (Margis); Slow Foxtrot (Warren); Foxtrot from the Sound Film Ich bei Tag und du bei Nacht (Heymann); Johann Strauss Waltz Potpourri (Goldmann-Wobels). 6.30, Weather Forecast. 6.35, Programme to be announced. 7.0, Variety Concert with Music by the Station Orchestra, conducted by Franz Marszalek. 9.0, Time, Weather, News, Sports Notes and Programme Announcements. 9.30, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BREMEN.—See Schweizerischer Landessender. BERGAMO.—See Schweizerischer Landessender. BODEN.—See Stockholm. BODO.—See Oslo.

BORDEAUX-LAFAYETTE 304 metres; 13 kW.—7.40 p.m., Sports Notes. 7.45, Talk: France and the World Crisis. 8.0, News, Exchange, and Lottery Results. 8.5, English Lesson. 8.20, News and Weather. 8.30, Gramophone Concert of Variety Music. 9.0, Les deux hommes—Comedy (Capus).

BRUSSELS (No. 2) N.I.R., 338.2 metres; 15 kW.—Programme in Finnish. 12 Noon, Concert, conducted by André Felleman, relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Variety Music on Gramophone Records. 5.0, Concert by the Radio Orchestra, conducted by Franz André: Onestep, Pamplemousse (Jossot); Potpourri, Bitte recht freundlich (Ralph); Czardas (Monti); Italian Caprice (Tchaikovsky); Donauwellen (Ivanovici); Four Indian Love Lyrics (Woodforde-Finden); Pasodoble (Sentis). 6.0, Talk: The Works of Bengt Berg. 6.15, Talk: Stravinsky's Ballet, The Fire Bird. 7.15, Talk. 7.30, Film Review. 8.0, Concert by the Radio Orchestra, conducted by Franz André: Flemish Popular Songs (Schoemacher); Rondio (Poel); Norwegian Dances (Grieg); Two Popular Flemish Songs; Dances (Souris); Rhythm (Coates). 8.45, Siesta—Sketch (Baklanis). 9.0, Concert (contd.): Overture, Die Fledermaus (Joh. Strauss); Spanish Dances (Albeniz); Granados (Saragata and Turina); Two Songs; Russian Potpourri of Songs and Balalaika Solos; Cigány Music. 10.0, Le Journal Parlé. 10.10, Gramophone Records: Chromatic March (Courtade); Italian Fantasia (Delmas); Lang, lang ist's her (Dietrich); Egyptian March (Joh. Strauss). 10.30, Concert by Max Alexys and his Orchestra, relayed from the Ancienne Belgique. 12 Midnight (approx.), Close Down.

BRNO 342 metres; 35 kW.—5.25 p.m., German Transmission: News and Relay from the German Municipal Library. 6.0, See Prague. 7.30, Bagpipe Trio Concert. 8.0, See Prague. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

BRESENLAU 325 metres; 60 kW.; and GLEWITZ, 253 metres.—12.10 p.m., Gramophone Concert of Light Music. 12.45, Time, Weather, News and Exchange. 1.5, Popular Music on Gramophone Records. 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Film Review of the Week. 3.0, Topical Programme. 3.30, See Hamburg. 4.30, Talk: The History of a German Family in Russia. 4.55, Talk: Bismarck and German Socialism. 5.25, Concert of Old and New Dances on Gramophone Records: Ländler, Auf zum Tanz; Tango, La bella Tangelita (Abraham); Slow Foxtrot from Zehn Minuten Glück (Meisel); Valse bleue (Margis); Slow Foxtrot (Warren); Foxtrot from the Sound Film Ich bei Tag und du bei Nacht (Heymann); Johann Strauss Waltz Potpourri (Goldmann-Wobels). 6.30, Weather Forecast. 6.35, Programme to be announced. 7.0, Variety Concert with Music by the Station Orchestra, conducted by Franz Marszalek. 9.0, Time, Weather, News, Sports Notes and Programme Announcements. 9.30, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BRUSSELS (No. 1) 8 p.m. Lyrical drama: "Edénie," by Léon Dubois. 7.30 p.m. A Radio Ball for the Older Generation. 7.45 p.m. Operetta: "Cin-ci-la," by Ranzato. 5 p.m. Pachelbel symphony concert from the Theatre des Champs Elysées, Paris. 8.30 p.m. Military Band concert. 9 p.m. Extract from "La Mascotte," by Audran. 8.10 p.m. Operetta: "The Last Waltz," by Oscar Straus. 7 p.m. Polish folk music.

BUCHAREST 394 metres; 12 kW.—4.0 p.m., Light Music and Romanian Song by the Sibiacoano Orchestra. 5.0, News and Time Signal. 5.10, Talk. 5.25, Concert by the Sibiacoano Orchestra (contd.). 6.0, Talk: The Political Development of Romania. 6.40, Gramophone Records of Light Music. 7.0, Concert by the

Station Orchestra: Berceuse sur l'eau (Bournoyville); Tango (Leopold); Johann Strauss Potpourri (Weber); Spanish Serenade (De Michel). 7.45, Talk in Danish on Romania. 8.0, Concert by the Station Orchestra, conducted by M. Jora: Slow Minuet (Enesco); Berceuse (Jora); Christmas Carol (Jora); Two Popular Dances (Roguski). 8.20, Romanian Song Recital by Mme. Olga Solomoncano. 8.35, Romanian Music by a Cigány Band. 9.0, News.

BUDAPEST 550 metres; 18.5 kW., also relayed on 840 metres from 6.40 p.m. (approx.). 4.0 p.m., Concert by a Wind Instrument Orchestra conducted by B. Borsay: Song (Borsay); Selection from Orpheus in the Underworld (Offenbach); Waltz, The Blue Danube (Joh. Straus); Hungarian Fantasia (Borsay); Selection from La Traviata (Verdi); Selection from Lilac Time (Schubert-Berté); Selection from The Count of Luxembourg (Lühr). 5.10, Answers to Correspondents. 5.40, Pianoforte Recital by G. Zsigmondy: Sonata in C Sharp Minor (Beethoven); Ahed bei den Sklerna (Bartok); Song, Rhapsody (Liszt). 6.10, Review of Foreign Politics. 6.30, Relay from the Royal Hungarian Opera House: News in the interval. After the Relay, Music by the Lajos Kiss Cigány Band from the Café Baross. 11.0 (approx.), Close Down.

COPENHAGEN 281 metres; 0.75 kW.; and KALUND BORG, 1.153 metres; 7.5 kW.—11.0 a.m., Time and Chimes from the Town Hall. 11.5, String Ensemble Concert, conducted by A. Bendix, relayed from the Wivex Restaurant. 1.0 to 1.30 p.m., Interval. 1.30, Gramophone Concert: Maggie Teyte: Tu n'es pas bien, tu n'es pas riche, from La Périohole (Offenbach); Carl Neumann: Frühlingstraum (Schubert); Emilio de Gogorza: El Relicario (Pallilla); Henri Marteau: Hungarian Dance No. 6 (Brahms-Joachim); Sven-Olof Sandberg: Melody (Sylvain); Jenny Howard: Melody (Le Clercq); Stuart Ross and Joe Sargent: You can make my life a bed of roses (Brown-Henderson); The Three Ginx; While I dance with my girl (Barker-John-Keys). 2.5, Programme for Children. 2.30, Concert by the Radio Orchestra, conducted by Emil Reesen: Overture, The Daughter of the Regiment (Donizetti); Valse triste (Sibelius); Suite No. 1 from Carmen (Bizet); Melody from the Lyric Suite (Grieg); Entr'acte and Dance of the Barchanes from Philémon et Baucis (Gounod); Reading; Overture, Zigeunerblut (Fall); Selection from the Serenade for Strings (Herbert); Mandoline (Delussy); Selection from Sylvia (Delibes); Gallop, Nordiske Fostbrodre (Lumbye). 4.4, Exchange and Fish Market Prices. 4.50, Talk. 5.20, French Lesson for Beginners. 5.50, Weather Forecast. 6.0, News Bulletin. 6.15, Time Signal. 6.30, Talk. 7.0, Chime from the Town Hall. 7.5, Reading (W. Thackeray). 7.30, Radio Ball for the Older Generation. The Station Orchestra, conducted by Lanny Gründahl. Soloists: Anse Waldenström (Songs) and Viktor Fischer (Pianoforte). Selection (Lumbye): (a) Mac Mahon March, (b) Waltz Krolls Balkkings, (c) Polka Høstblomsten, (d) Polka-Mazurka, (e) Sophie Vals, (f) Gallop; Songs: (a) Dumme Peter (Rantau), (b) Folk Song, (c) Song (Metra); Eiffel March (Fahrbach); Polka (Fahrbach); Melody; Waltz (Ivanovici); Polka-Mazurka (Ivanovici); Waltz, Etincelles (Waldhufer); Mazurka, La Scandinavie (Ganne); Symfonistevle Galop (Fahrbach). 8.55, Reading. 9.15, News. 9.30, Concert (contd.): King Cotton March (Sonsa); Waltz (Harris); Ah du lieber Augustin (Fall); The Laureate, Tyrolese Waltz and Hopsa; Mazurka; Les Cigariéras; Den toppede Høne; Pianoforte Solos: (a) Polka-Mazurka, Josephine (Hornemann), (b) Waltz, Til Kullen (Lumbye), (c) Polka, Hilsen til gamle Venner (Nielsen); Swedish Masquerade; Polka (Lincke); Waltz, Les Sirènes (Waldteuffel); Rheinland Polka; Quadrille, Jorden mudt (Georg Lumbye); Waltz, Vejledalen (Iversen); Sekstür; Gallop, Bouquet-Royal (Lumbye). 11.0, Time and Chimes from the Town Hall.

CASSEL.—See Frankfurt.

DANZIG.—See Heilsberg. DRESDEN.—See Leipzig. FECAMP 225.9 metres; 10 kW.—12 Noon, Gramophone Concert of Variety Music. 12.30 p.m., News. 12.45, Concert of Light Music. 6.30 to 7.0, Programme in English by the I.B.C. Announcers: C. Danvers Walker, R. Chase and B. McNabb. 6.0, Pianoforte Recital for Folk-estate Listeners: Rhythm Selection; A Bench in the Park; Selection from Words and Music; Parts I and II; Song, Speak to me of Love; Duet, Leave the Pretty Girls Alone; Just Hummin' Along; Some more Rhythm. 6.30, Concert for Isle of Thanet Listeners: Orchestra: What's Next (arr. Finck); Songs: (a) Hoedn' (Richard), (b) The Village Blacksmith (Weiss), (c) I'm a Roamer (Mendelssohn), (d) Legnini (Stenard-Bonnet), (e) The Windmill (Nielsen), (f) The Company Sergeant Major (Sanderson). 7.0, News and Popular Music on Gramophone Records. 7.30, Radio

MARCH 18th

SATURDAY

continued

Gazette, 8.0, Answers to Correspondents, 9.0, Variety Concert, 10.0, Café Concert, 11.0, till Close Down, Programme in English by the I.B.C., 11.0, International Broadcasting Club, Concert: Medley of British Songs: Old Mother Hubbard; Mimi; Wanderer; How do you do, Mr. Brown?; Let's all be Fairies; Little Yvonne; On the Quarter Deck (Alford), 12 Midnight, Orchestral Concert: Colonel Bogey (Alford); The Rose Beetle goes a-wooing (Amandola); Wee Macgregor Patrol (Amers); Siciliana Serenata (Schmalstich); The Whistler and his Dog (Pryor); Babes in Toyland (Herbert); The Warbler's Serenade (Perry); Reconciliation (Drigo), 12.30 a.m. (Sunday), Celebrity Concert: Maurice Chevalier: (a) Paris stay the Same, (b) Nobody's using it Now; Stanley Holloway: (a) The Lion and Albert, (b) 'All 'oo goes there?; Maurice Chevalier: (a) Valentine, (b) My Love Parade; Stanley Holloway: (a) Three half-pence a foot, (b) Ole Sam, 1.0, Pianoforte and Song Recital; Pianoforte Solo: I found You (Noble); Songs: (a) Eleanor (Harley), (b) Never sweat a Fly (de Sylva), (c) That Night in Venice (Nicholls); Pianoforte Solo: Let Love take care of You; (van Phillips); Songs: (a) I'm in the Market for You (McCarthy), (b) Sitting on a Five-Barred Gate, (c) When I passed the old Church Door (Nicholls), 1.30, Variety Music: Sketch, Peter Perkins at the Races; Yodelling Love Song; If you can't Sing, Whistle; Sketch, Doon the Clyde; Song, Lena; They never go to bed in China, 2.0, Light Music: An Evening in Caroline; Now that you're gone; By the Sycamore Tree; Blues in my Heart; Now's the Time to fall in Love; Only me knows Why; Hot Coffee; Was that the Human Thing to Do?; Good-night Vienna; She didn't say "Yes"; Five Minutes to Twelve; Snap Your Fingers; Somebody Loves You; Struggled on your Shoulder; Majah General Thing-a-me-hoh, 2.57, I.B.C. Good-night Melody, 3.0, Close Down.

FLensburg.—See Hamburg.

Florence.—See Turin.

FRANKFURT

259.3 metres; 17 kW., CASSEL, 245.9 metres, and TRIER, 259.3 metres.—6.15 p.m., Time, Programme Announcements, Weather, and Economic Notes, 6.30, Reading from Andreas oder die Vereinigten (Hugo von Hofmannsthal), 7.5, Variety Concert in Aid of the Cassel Winter Relief Fund, relayed from the Town Hall, Cassel, 9.20, Time, News, Weather, and Sports Notes, 9.45, See Munich, 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

Freiburg.—See Stuttgart.

Geneva.—See Radio-Suisse Romande.

Genoa.—See Turin.

Gleiwitz.—See Breslau.

Göteborg.—See Stockholm.

Graz.—See Vienna.

Hamar.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW., Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 565 metres; and Kiel, 332.2 metres.—3.30 p.m., Concert by the Station Orchestra and the German Saxophone Quartet, conducted by Adolf Secker; Overture, Der Waffenschmied (Lortzing); Fantasia on the Folk Song, Ich hatte einst ein schönes Vaterland, Op. 51, No. 2 (Bumcke); Czardas from Der Geist des Wojwoden (Grossmann); Prelude and Scherzo in A Flat, Op. 20, No. 2 (Bumcke); Miniature Overture (Tchaikovsky); Fantasia on the Folk Song, Schön Rautenkönig, Op. 53, No. 2, for Saxophone Trio; Prelude (Jännefeldt); Rhapsody No. 3 (Liszt), 4.30, Talk on Unemployment, 4.55, The True Sea Story of the Week, 5.5, Choral and Instrumental Concert, relayed from the Educational Institute, Rostock, 6.0 (from Bremen), Talk: Australia, 6.25, Weather Forecast, 6.30, Report on the Fiftieth Anniversary of the German Rowing Clubs Association, 7.0, Variety Programme from Langenberg, 9.30, Time, Weather, News, Sports and Police Notes, 9.50, Topical Talk, 10.0, Dance Music, In an interval at 10.20, Ice Report.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW. and DANZIG, 453.2 metres.—12.5 p.m., Light Music on Gramophone Records, In the interval at 12.20, News, 1.30, Programme with Gramophone Records arranged by the Post Office, 2.0, Agricultural Prices and Exchange Rates, 2.30 (from Danzig), Handwork for Children, 3.0, Concert, In the interval at 3.50 (approx.) (from Danzig), Talk on Films, 4.35, Reading from the Diary of a Woman Teacher, 5.0, Programme Announcements, 5.10, Programme Announcements in Esperanto, 5.15, Agricultural Prices, 5.20, Ice Report, 5.30, World Market Report, 5.40, Talk: The Modern Amateur Photographer, 6.5, Gramophone Concert; Selection from La bohème (Rossini-Respighi); Song from Carmen (Bizet); Minuet from the Divertimento for Viola da Gamba and Harpsichord (Haydn); Song from Il re pastore (Mozart); Andante grazioso and Scherzo from the Trio Op. 33 (Goldmark); Song from Der Rosenkavalier (R. Strauss); Indian Lament

for Violin (Dvorak-Kreisler); Song from The Bird Fancier (Zeller); Waltz from The Arabian Nights (Joh. Strauss), 6.55, Weather and News, 7.5, See Frankfurt, 9.20, Weather, News and Sports Notes, 9.30 (approx.) Dance Music from Berlin (Witzleben), 10.30, Dance Music by Ambrose and his band relayed from London, 12 midnight (approx.), Close Down.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW., (7 kW. up to 4.40 p.m.)—Programme of the Workers' Radio Society (K.R.O.), 11.55 a.m., Concert by the Con Brio Trio: Tarantella (Smith); Serenata Diabolica (Cerr); Dutch Peasant Dances (Stip); Der Zweifel (Glinka); Aus Mozarts Reich (Urbach); Tambourin (Rameau), Gramophone Records: Potpourri (Kozak); Oh! Star of Eve from Tannhäuser (Wagner); Vers l'avenir (Vlossing), 12.25 p.m., Interval, 1.40, Programme for Young People, 2.10, Programme for Children, 3.40, Popular Music on Gramophone Records, 4.10, Concert by the K.R.O. Orchestra conducted by M. van 't Woud; March (Blon); Overture, Das Leben ein Traum (Eilenberg); Selection from The Daughter of the Regiment (Donizetti); Hesitation Waltz (Colwyer); Rhapsody Opéra (Chabrier), 4.55, Sports Notes, 5.10, Orchestral Concert (cont.); Selection from I Pagliacci (Leoncavallo); Sommerabend am Rhein (Zimmer), 5.30, Song Recital by Mlle. Mieke Dolmans, 5.40, Orchestral Concert (cont.); Modern Ballet Suite (Armandola); Parade des embouppistes (Aubert), 6.0, Review of Periodicals, 6.20, Orchestral Concert (cont.); Overture, Martha (Flotow); Selection from Die Meistersinger von Berlin (Lincke); Hurr! die Musik kommt (Zimmer), 6.50, Scientific Talk, 7.10, Police Report, 7.25, Sports Notes, 7.40, Concert by the K.R.O. Boys conducted by P. Lustenhouwer; Soloist, J. Müssel (Songs), 8.15, News, 8.20, Songs by H. Durand, 8.40, Song Recital by Mlle. Mieke Dolmans, 8.50, Concert by the K.R.O. Boys; Heut' reiss ich die Welt zusammen (Strauss); Man hielt nicht nur die Augen zusammen (Dessau); Waltz, Lotus zur Sommerzeit (Dessau); Die goldene Spieldose (Gildson); Die goldene Spieldose (Krone), 9.20, Songs by H. Durand, 9.40, Concert by the K.R.O. Boys; March Potpourri (Ciere); First Waltz (Nicholls); Film Uhr Tre bei Robert Stolz (Dostal); Selection from Zigeuner der Nacht (Abraham); Spanish Waltz (Sentis); Potpourri, Wir schlagen ein (Golwyn); Mach's mir nicht so schwer (Stran-sky); Tempo di marcia (Neumann), 10.40, News, 10.45, Popular Music on Gramophone Records, 11.40 (approx.), Close Down.

HOBBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW., 11.40 a.m. till Close Down, Programme of the Workers' Radio Society (V.A.R.A.), 11.40, Concert by De Notenkrakers, 1.40 to 1.55, Interval, 1.55, Light Music on Gramophone Records, 2.30, Talk, 2.50, Popular Music on Gramophone Records, 3.20, Wireless Technical Talk, 3.40, Concert by the V.A.R.A. Balalaika Orchestra, conducted by M. Powariel, Rakuska (Bojardino); Andante cantabile (Tchaikovsky); Czardas (Kempner); Ballet Music from Fiammetta (Minkus); Chanson triste (Tchaikovsky); Russian Melodies; Czardas (Mieliehl); Rakoczy March (Strauss), 4.10, Talk, 4.30, Concert by De Floedruiters, conducted by H. de Groot, Soloist: A. de Booy (Songs), Solidaritätslied (Eysler); Songs: (a) Der schönsten Gedanke (Abraham), (b) Eins, zwei, drei und vier (Abraham), (c) Ein bisschen Spass (Abraham); Piece (Brown); Im Schwarzwald geht ein Mühlenrad (Rust); Song from Viktoria and her Hussar (Abraham); Song (Abraham); Balloons (Magazine); Song, Wer nimmt die Liebe ernst (Gross); Rhythm like this (Bamberger); Signorina, ich liebe dich (Jurman); So ein Jägermann (Delmar); La Marseillaise (L'Isle-Remes), 5.20, Literary Talk, 5.40, Choral Concert, 6.10, Violin Recital by A. Knorre, 6.40, Talk: Karl Marx, 7.10, S.O.S. Announcements, 7.12, Light Music on Gramophone Records, 7.25, Organ Recital by J. Jong, with Songs by L. Fuld, 7.55, De Bill saint Revue (Meyer Hamel and Rido), 9.10, Address, 9.20, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot, March, The Liberty Bell (Souza); Moonlight on the Alster (Fetras); In a Turkish Bazaar (Dreyer); Selection from No. No, Nette (Yonmans), 9.40, The Village Barber, 9.55, Concert (cont.), Overture, Pique Dame (Suppé); Marechiaro (Festi); Song (de Groot); Chinesische Strassenszene (Niede); Selection from Rose Marie (Friml); Perpetuum mobile (Strauss), 10.40, Announcements and News, 10.55, Concert (cont.), March Potpourri (Ciere); Kind, du kannst tanzen (Fall); Selection from The Love Parade (Selertinger); In a Chinese Temple Garden (Ketchey); Mariska and Czardas (Lehár); Overture, Zampa (Hérold), 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., Announcements and Gramophone Records, 6.10, Talk, 6.30 to 10.25, See Warsaw, 10.25, Dance Music on Gramophone Records.

KIEL.—See Hamburg.

KLagenfurt.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 40 kW., and HELSINKI, 368.1 metres.—5.35 p.m., The Bayadere—Operetta (Kälman), relayed from the Workers' Theatre, Tampere, 560 metres. In the interval at 8.10, News in Finnish and Swedish, followed by Dance Music from the Kämp Restaurant.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert, conducted by Wolf; Overture, Die Felsenmühle (Reissiger); Waltz, Geschichten aus dem Ems-Tal (Pachernegg); Suite from The Merchant of Venice (Sullivan); Réverie (Vieuxtemps); Italian Caprice (Tchaikovsky); Boston, Vineta-Glocken (Lind-say-Thelmer); Potpourri, Tonwollen (Mamfred), In the interval at 1.0 p.m., News, 1.35, Gramophone Concert of Light Music, 2.30, Economic Notes and Time, 2.50, Programme for Children, 3.10, Reading: Himmlische Landschaft (René Schickele), 3.30, English Reading, 4.0, Choral Concert from Bielefeld, In the interval, Concert by a Mandoline Quartet, from Bad Aachen, with Songs to the Lute, 5.20, Talk for Women: Difficult Children from the Age of Ten to Fourteen, 5.45, Weather, Time, Economic Notes, and Sports Results, 6.0, Talk: What Everyone should know about the Telephone Book, 6.25, Talk, 6.55, News, 7.0, Variety Concert, 9.5, News and Sports Notes, 9.30, Serenade, conducted by Wolf, 10.30, Dance Music from London, 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres, 120 kW., and DRESDEN, 319 metres.—11.5 a.m., Gramophone Concert: Extracts from Undine (Lortzing); Extracts from Der Freischütz (Weber); Overture and Ocean Aria from Oberon (Weber), 12 Noon, News, Weather, Snow Report and Time, 12.15 p.m., Gramophone Concert: Potpourri of Rheinisch Marching Songs; Salzburg Carillon; Waldeszauber (Kollmaneck); Sedan March (Lange); España Waltz (Waldteufel); Wenn Rosen erwachen (Kreitzfeld); Dream Waltz (Müllcker); March, Tritt gefasst (Windsch); The Loreley (Sülicher); Hungarian Folk Song Potpourri (Por); Halling (Halvorsen); Heugst Waltz (Halvorsen); Torero Ramon (Kostal); Neapolitan Serenade (Bayer), After the Concert, Exchange Quotations, 1.0, Wireless Hints, 1.10, Wireless News, 1.30, Programme for Children, 2.15, Talk: Denominational Religion, 2.45, Exchange Quotations, 3.0, See Berlin (Witzleben), 4.15, Romantic Music by Johannes Brahms, by a Choir conducted by Heinrich Werle and Soloists, 4.45, Talk on Music, 5.0, Talk for Young People: Three German Boys discover Sweden, 5.30, Talk: German Idiom and Metaphor, 5.50, A Modern Dictionary, 6.0, Talk on Finance, 7.0, The Bird Fancier—Operetta in Three Acts (Zeller), In the interval, First News, 9.10, Second News, 9.25 (approx.), Dance Music by the Emily Orchestra, 11.0 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 7 kW.—6.0 p.m., Talk: The History of Philosophy, 6.30, Talk on Sociology, 7.0, Guitar Recital, 8.0, Song Recital by Mme. Levienik, 8.30, Quintet Concert, 9.0, Time, News, and Light Music.

LWOW

381 metres; 16 kW.—6.10 p.m., Miscellaneous Items, 6.30, See Warsaw, 11.0 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East, 8.30, Madame Pompadour—Operetta (Fall), relayed from Paris (Ecole Supérieure) (447.1 metres), News after the Programme.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—6.0 to 8.0 p.m., Programme for Listeners in the Canary Islands, Guinea, and America, 6.0, Concert of Popular Music, 7.45, Talk, 7.30, Dance Music, 8.0 to 10.30, Interval, 10.33, Variety Music, 10.45, Radio Chronicle, 11.0, Variety Music (cont.), 11.40, Light Music, 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, and Request Gramophone Records, 8.15, News Bulletin, 8.30 to 9.0, Interval, 9.0, Linguaphone English Lesson, 9.30, Chimes,

Time Signal, and Transmission of a Musical Comedy, 11.45, News Bulletin, 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—5.25 p.m., Concert by School Children, 6.0, See Prague, 7.30, See Brno, 8.0, Military Band Concert, conducted by F. Michalek, 9.0, See Prague, 9.15, Concert of Light Music by the Station Orchestra, conducted by J. Plichta, 10.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—3.0, Talk: The Peasants' Revolt, 5.30, Concert, relayed from the Radio Theatre, 8.0, Talk in French: The Paris Commune.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW., Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—4.0 p.m., The Gregorian Chant—Talk with Illustrations, 4.35, Two Talks for Girls, 5.10, Talk: Motoring during a Thaw, 5.25, Hops and Malt—a Fantasia (Frauz Weichmayer and Wilfrid Feldmüller), 6.25, Wireless Hints, 6.40, Wireless Technical Talk, 7.0, Böhmische Musikanten (Bohemian Musicians)—Musical Play in Three Acts (Beruland Grün), 9.20, Time, Weather, News and Sports Notes, 9.45, Serenade, conducted by Erich Kloss, 11.0, (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW., Relayed by Fredrikstad, 355.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—3.30 p.m., Popular Music on Gramophone Records, 4.15, Programme for Children, 5.15, Song and Hardanger Fiddle Recital of National Music, 5.45, Economic Talk, 6.0, Announcements, Weather and News, 6.30, Talk: The Care of the Teeth, 7.5, Cabaret Programme, 8.40, Weather and News, 9.0, Topical Talk, 9.15, Cabaret Programme (cont.), 9.45, Dance Music on Gramophone Records, 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

537.6 metres; 3 kW.—7.0 p.m., Doppolavoro Notes, Tourist Talk, Agricultural Notes, and Giornale Radio, 7.20, Sports Notes, 7.25, Popular Music on Gramophone Records, In an interval at 7.30, Time and Announcements, 7.45, Cin-ci-li—Operetta in Three Acts (Ranzato), In the intervals, Book Review and Amusement Guide: After the Operetta, News.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW., Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot signals)—5.45 p.m., La Journal Paris, 7.20, Weather Report, 7.30, Dramatic Programme: "Don Juan"—Play (Molière), with Music by Mozart, 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Paris, 7.0, Answers to Correspondents, 7.5, Popular Music on Gramophone Records, 8.0, Talk: The Event of the Week, 8.5, Theatre Notes, 8.15, Interval, 8.30, Concert of Chamber Music, 9.0, Interval, 9.10, Dance Music by the Sonora Orchestra, conducted by Fred Hoffmann, 11.0, Dance Music on Gramophone Records, 12 Midnight (approx.), Close Down.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture, 7.30, Weather and Physical Culture (cont.), 7.45, Light Music on Gramophone Records, 8.0, Press Review and Weather, 9.0, Concert relayed from the Conservatoire, 12 Noon, Concert by the Radio Paris Orchestra: Chant sans paroles (Tchaikovsky); Castilian Dance (Turina); Zine-Zine (Vidal); Intermezzo (Vulliamy); Spünung (Chous from The Flying Dutchman (Wagner); Selection from Preciosa (Weber); Legend (Wieniawski); Selection from Il Trovatore (Verdi); Le Carnaval de Venise (Thomas); Piece (Silver); Hungarian Impromptu (Schubert); Piece (Sudess); Gipsy Dance from Henry VIII (Saint-Saëns); Selection from Le bon roi Dagobert (Roussau). In the intervals at 1.0, Exchange, News and Weather, and at 1.30, Exchange, 2.0, Exchange, 3.0, Programme for Children, 3.45, Exchange and Market Prices, 3.50, Dance Music by the Radio Paris Orchestra, 6.30, Market Prices, Weather, Agricultural Report, and Exchange, 7.0, Legal Talk, 7.20, Agricultural Talk, 7.45, Commercial Prices and News, 8.0, Popular Programme, 8.30 News and Weather, 8.40, Review by Dorin, 8.45, Authors and Musicians of the Ardennes—Literary and Musical Programme, In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA); 306 metres; 25 kW. Relayed by W8XK on 48.96 metres and 25.27 metres.—9.0 p.m., Dance Masters from New York. 9.30, Concert Favorites from New York. 10.0, Programme to be announced. 10.15, Hotel Sherman Orchestra, from New York. 10.30, Weather Report. 10.32, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from New York. 11.0, Programme to be announced. 11.15, Time Signal. 11.16, Temperature Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Weather Report. 11.30, Programme to be announced. 11.45, A Recital by Bill and Alex, of the Downtown Y.M.C.A. 11.59, Time Signal. 12 Midnight, Fields and Hall, from New York. 12.15 a.m. (Sunday), Atkinson String Ensemble. 12.30, Programme to be announced. 12.45 to 4.0, New York Relay. 12.45, Townsend Murder Mystery. 1.0, American Taxpayers' League. 1.15, The Boston Symphony Orchestra. 3.15, Sulan Singers. 3.50, Cuckoos. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Messages to Presbyterian Missionaries. 5.20, Messages to Dwellers of the Far North.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—5.20 p.m., Song Recital. 6.20, Miscellaneous Items and News. 6.45, See Warsaw. In the interval, Theatre Notes and Programme Announcements. 9.0, Time, Sports Notes and Police Announcements. 9.5, See Warsaw. 9.40, News. 9.50, Dance Music from the Café Polonia. 10.50 (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Bratislava. 4.10, Talk on Economics. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Popular Music on Gramophone Records. 5.5, Agricultural Report. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission; Talk: Richard Wagner and Prague. 6.0, Chimes. 6.1, News Bulletin. 6.10, Talk: How to become a Reporter. 6.25, War and Peace in Marches—Programme by the Prague Wind Instrument Orchestra, conducted by Professor A. Mohr, and Students of the Academy of Dramatic Art; Two Marching Scenes from the Napoleonic Wars; Congress is marching—Radio Play of the Year 1815; Wellington's Victory—Impressions of the Concert conducted by Beethoven in the Vienna University Hall on December 8, 1812; Incidental Music: Wellington's Victory, Op. 91 (Beethoven). 7.30, Concert of Light Music. 8.0, Time Signal. 8.1, Popular Programme of Dance Music and Light Music. 9.0, Time Signal. 9.1, News Bulletin. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.30 p.m., Book Review. 6.0 (from Geneva), Weather Forecast, News Bulletin, and Announcements. 6.30 (from Geneva), Talk on Films. 7.0 (from Geneva), Talk: The History of Cycling in Geneva. 7.35 (from Geneva), Variety Programme; Part I—Radio Fantasies—in a Prologue and Seven Scenes; Part II—Caharet Programme, arranged by Ruy Blag. In the interval: News Bulletin.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Concert by the Station Quartet and Choral Music on Gramophone Records. After the Programme, Dance Music. 1.0 a.m. (Sunday), Close Down.

RIGA

525 metres; 15 kW.—5.0 p.m., French Lesson. 5.30, Agricultural Talk. 6.0, Weather Report. 6.5, Humorous Songs and Duets. 6.40, Sketch. 7.0, News. 7.20, Instrumental Music. 8.0, Weather and News. 8.15, Sketch. 8.30, Choral Concert. 9.0, Dance Music. 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 190, 441 metres; 50 kW. Relayed by Naples, 319 metres, and 290, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Orchestral Concert: Only your Love (Lopez); Song (Nicholls); Selection from The Count of Luxembourg (Lohar); Melody (Ray-

MARCH 18th SATURDAY continued

mond); First Arabesque (Debussy); Saxophone Solo, Lasciato suonare (Escobar); Intermezzo from William Ratcliff (Massagni); Scherzo (Bucchi); Autumn (de Curtis); Melody (Moore); Pupazzetti giapponesi (Ranzato); (20 Mariotti). In the interval at 12.30, Giornale Radio and Exchange. 3.45, Children's Radio Review and Programme for Young People. 4.0, Exchange, Announcements, and Report of the Royal Geographical Society. 4.15, Reading. 4.30 to 5.15, Orchestral Concert: Overture, The Siege of Corinth (Rossini); Serata a Parigi (Giorgi); Commedia (Escobar); Pianoforte Solo, Nina Nanna (Scarlino); Le smanie di Colombina (Carly); Improvisation for Pianoforte (San-toliquido); Pianoforte Solo, Polichinelle (Rachmannov); Willy (Hayos). 6.0 (Naples), Shipping and Sports Notes. 6.10, Lesson in Morse. 6.20, Giornale Radio and Agricultural Report. 7.0, Time, Announcements, and Light Music on Gramophone Records. 7.45, Relay from a Theatre. In the intervals, Review of Books, Literary Notes, and News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—12 Midnight, El Tango Romantico, from New York. 12.15 a.m. (Sunday), Stock Report. 12.30, Lady Fingers (Planis). 12.45 to 3.0, New York Relay. 12.45, The World Today, by James G. McDonald. 1.0, Echoes of the Palisades. 1.30, The Economic World Today. 2.0, The Blue Danube. 2.30, Oldsmobile Programme—Olsen's Orchestra. 3.0, Lucky Strike Hour, followed by Programme Resumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; BASEL, 244.1 metres; and BERNE, 245.9 metres.—9.20 a.m., Nordbald André—Radio Play (Paul Lang). 11.28, Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Berne), Variety Music on Gramophone Records. 12.35 p.m., Weather and Exchange. 12.45 (from Basle), The Listeners' Half-hour. 1.0 (from Basle), Book Review. 1.30 (from Basle), Choral Music on Gramophone Records. 2.0 (from Basle), Talk on Dentistry. 2.30 (from Basle), Lesson in Chess. 3.0 (from Basle), Concert by the Matschi-Vergelli Accordion Sextet. Soloist: Max Husi. 3.40 (from Basle), Talk in English: Delightful Holidays spent at Basle. 4.0, Cinema Organ Music on Gramophone Records. 4.30 to 4.35, Weather Forecast. 5.30 (from Basle), Talk for Women: Beautifying the Home. 6.0 (from Zürich), Chimes from the Zürich Churches, followed by Time Signal, Weather Forecast and Market Prices. 6.15 (from Basle), Talk: Occupation and Leisure. 6.45 (from Basle), Concert by the Basle Choral Society. 7.5, The Skiers Paradise—Four Humorous Scenes (Richard Rheinberger). 7.50 (from Basle), Concert (cont'd.). 8.10 (from Basle), Orchestral Music on Gramophone Records. 8.30, Weather and News. 8.40 (from Basle), Old and New Dance Melodies on Gramophone Records. In the intervals: Songs. 10.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.5 p.m., Programme for Children, relayed from Malmö, 231 metres. 4.40, Popular Music on Gramophone Records. 5.30, Talk, relayed from Karlstad, 217 metres. 6.0, Song Recital by Oscar Tiernberg. 6.30, Talk, relayed from Uppsala, 453.2 metres. 7.0, Old Dance Music. 7.45, Variety Programme. 9.0, Dance Music. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Orchestral Concert, conducted by M. de Villers. 12.45 p.m., News Bulletin. 1.0, Time and Exchange Quotations. 1.5, Variety Music on Gramophone Records. 2.0 to 3.0, Interval. 3.0, Military Band Concert. 3.45, Talk on Music: Brahms and Clara Schumann. 4.0, Dance Music on Gramophone Records. 4.45, Legal Talk in German. 5.0, Pasdeloup Symphony Concert, relayed from the Theatre des Champs-Élysées, Paris. 7.0, French Lesson. 7.15, Horticultural Talk. 7.30, News. 7.45, Light Music on Gramophone Records. 8.20, Lottery Results and Announcements. 8.30, Military Band Concert relayed from the Municipal Theatre, Thionville; Mon beau Pays d'Alsace (Sellenéck); Overture, La Prin-

cesse Jeanne (Saint-Saëns); Trio for Flute, Clarinet, and Cor Anglais (Beethoven); Good Friday Music from Parsifal (Wagner); Dance in Old Style from Le Roi s'amuse (Debussy); Les Grenadiers de la Garde à Waterloo; Selection from Carmen (Bizet); First Movement from the Norwegian Rhapsody (Lalo); Saxophone Quartet: Avoxal (Matheo-Briard); Song: Souhait à la France (Passard); Ballet Music from Javotte (Saint-Saëns); Arabesque (Renaud); March (Fritsch); Talk in the interval. 10.30, Dance Music from the Savoy Dance Hall. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—12.30 p.m., Orchestral Concert: March, Tren wie Gold (Wiesmeier); Suite, Luxus-telegramme (Hollaender); Waltz, Frühlingsschneek (Fueik); Volksliedchen (Komzak); Märchen (Komzak); Waltz Potpourri (Schneider); Zwan-zinette from Eva (Lehar). 1.30, Time, News, Weather, and Programme Announcements. 1.45, Hugo Wolf and Richard Strauss Song Recital by Karl Jantz (Tenor): Songs (Wolf), (a) Verborgeneheit, (b) Verschwiegene Liebe, (c) Der Gärtner; Songs (Strauss), (a) Breit über mein Haupt, (b) Ständchen, (c) Zueignung. 2.10, Italian Folk Music on Gramophone Records. 2.30, Programme for Young People. 3.30 (from Karlsruhe), Zither Recital. 4.0, Programme to be announced. 5.0, A discussion between Rudolf Ismayr, the Winner of the Weight Lifting Competition at Olympia, and Carl Struve. 5.15, Time and Sports Notes. 5.25, Talk on the Twenty-Fifth Anniversary of the Death of Eduard Zeller. 5.50, Talk: Defective Goods. 6.15, Time, News, Weather and Snow Report. 6.30 (from Freiburg), Radio Report on the Weekly Market in the Münsterplatz. 7.5 (from Freiburg), Military Band Concert, relayed from the Festhalle. 9.0, Time, News, Weather, Snow Report, and Programme Announcements. 9.20, Radio Report on the Riding and Jumping from the Town Hall. 9.45, See Munich. 10.30, Dance Music from London. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Opera Music: Selection from (a) Manon (Massenet), (b) Fortunio (Massenet), (c) Carmen (Bizet), (d) La Bohème (Puccini). 6.30, Prelude and Death of Isolde, from Tristan and Isolde—Opera (Wagner). 6.45, Accordion Music. 7.0, Popular Melodies. 7.15, Racing Results and News. 7.25, Local News Bulletin. 7.50, Opera Music: Hungarian March from The Damnation of Faust (Berlioz); Scene from Lohengrin (Wagner); Polonaise from Boris Godunov (Mussorgsky). 7.45, Extracts from Grand Films. 8.0, Concert by a Viennese orchestra. 8.20, Opera Music: Airs from: (a) Giaschelli (Massenet), (b) The Valkyries (Wagner), (c) Faust (Gounod). 8.45, Organ Recital. 9.0, Extracts from La Mascotte—Opereita (Andran), followed by Symphony Music: Air from La Princesse Jeanne (Saint-Saëns); Ronde villageoise (Chabrier); Minuet in G (Paderewsky); Air from The Desert Song (Romberg); Melody from Schwanda the Pipe (Weinberger); Sphinx (Popy); Potpourri (Zimmer). 10.15, North-African News. 10.20, Concert for Listeners in Morocco: Classical Souvenirs; Air from Louise (Charpentier); Overture, Morning, Noon and Night (Suppé); Melody (Borel Clerc); Xylophone Solo: American March (Souza). 11.0, Request Concert: Air from Nina Rosa (Romberg); Aria from Werther (Massenet); Quand on s'aime bien tous les deux; Violin Solo: Berceuse: Je sais que vous êtes jolie (Christine); Violin Solo: Hindu Song (Rimsky-Korsakov); Overture, Post and Pesant (Suppé). 11.30 to 12 Midnight, Programme in English by the I.B.C. H. K. Hildebeck announcing. 11.30, I.B.C. Half-hour: Waltz, Gold and Silver (Lohar); Down in the Fields where the Buttercups grow; Runnin' up and down our Street; Waltz Poppies; Sandy the Doctor; I hear you calling me; Sweethearts of Yesterday. 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Sunday), Tangos. 12.15, Military Music. 12.39 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.10 to 6.0 p.m., See Turin. 6.0, Light Music on Gramophone Records. 6.20 to 6.35, See Turin. 6.35, Recital of Music by Zoltan Kodaly, with Introductory Talk: Sonata for Cello and Pianoforte, Op. 4. 7.0 (approx.) till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—4.10 to 5.0 p.m., Dance Music from the Savoia, Turin. 5.35, Giornale Radio, Agricultural and Dopolavoro Records. 6.0, Light Music on Gramophone Records. 6.20, Giornale Radio. 6.30, Time, Announcements, and Variety Music on Gramophone Records. 7.0, Giornale Radio and Weather. 7.15, Talk: Events and Problems, followed by Gramophone Records (cont'd.). 7.45, Reading from and Commentary on the Fourteenth Canto of the Inferno. 8.10, The Last Waltz—Opereita in Three Acts (Oscar Straus). In the interval, Review of Books and Announcements. Giornale Radio after the Programme. 10.5, Dance Music from the Rajola, Florence. 10.50 (approx.), Close Down.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—19.0 to 19.15 a.m., Religious Announcements in Different Languages. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 215.9 metres; and Salzburg, 218.5 metres.—4.55 p.m., Concert by the Oscar Jascha Orchestra; Soloist, Josef Kozler (Violin); Overture, Hans Heiling (Marschner); Träumwälder (Müllner); Violin Solos, (a) Hymn to the Sun (Rimsky-Korsakov-Kreisler), (b) Serenade (Piemé); Selection from The Rose of Stambul (Fall); Waltz, Jugendideale (Lohar); Russian Dances from Tatiana (Lohar); Overture, Wiener Geschichten (Heller-Schberger-Jascha). 6.0, Topical Talk. 6.20, The Maxim. 6.35, Time, Weather, Sports Notes, and Programme Announcements. 6.4, Concert of Opereita Music by the Alois Dostal Orchestra; Soloist, Maja Rajic (Soprano); Overture, The Land of Smiles (Lohar); Waltz from Madame Pompadour (Fall); Song from Katja the Dancer (G. Bert); Vera's Song, from The Last Waltz (O. Straus); Selection from Viktoria and her Hussar (Abraham); Margaret's Song, from Die goldne Meisterin (Eysler); Song, from Waltzes from Vienna (Strauss-Bittin-Korn-gold); Selection from Der Teufelsreiter (Kálmán). 8.10, Mass in G (Weber), by the Hofmusikkapelle, conducted by Carl Luze. 8.50, News, Weather, and Announcements. 9.5, Dance Music by the Isy Geiger Band, relayed from the Café Splendide; Soloist, Hans Grünhut (Songs).

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.10 p.m., Weather Forecast. 12.15, Programme relayed from Lwow, 381 metres. 12.55 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Military Notes. 2.35, Programme for Young People. 3.0, Light Music on Gramophone Records. 3.20, Talk on History. 3.40, Talk: Marshal Joseph Pilsudski. 4.0, Suite, Becha (Debussy), on Gramophone Records. 4.30, Topical Talk. 4.55, Programme Announcements. 5.0, Talk on Polish Literature: The Historical Novel of the Nineteenth Century. 5.20, News. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Talk. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Concert of Polish Folk Music. The Station Orchestra, conducted by Nawrot. Soloists: L. Szezapanska (Soprano), M. Janowski (Tenor), and C. Olesinski (Accordian). In the interval, Sports Notes and Radio Journal. 9.5, Chopin Pianoforte Recital by J. Toczyński; Impromptu in G flat; Polonaise in E flat Minor; Two Waltzes, Op. 64 (a) in D sharp Minor, and (b) in E flat; Three Mazurkas, Op. 56; (a) in B, (b) in C, and (c) in G Minor; Tarantella. 9.40, Reading. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music. In the interval at 10.30, News for Members of the Polish Polar Expedition.

WILNO

563 metres; 16 kW.—6.0 p.m., Reading. 6.10, Miscellaneous Announcements. 6.25, Talk. 6.30 till Close Down. See Warsaw. 10.0 (approx.), Close Down.

ZAGREB

307 metres; 0.75 kW.—5.30 p.m., Talk in Esperanto. 6.40, Announcements. 7.0, Vocal Concert. 8.0, Concert by the Station Orchestra. 9.0, News and Weather. 9.10, Light Music, relayed from the Esplanade Hotel. 10.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.



—there will be a **pianoforte recital by—**

The piano is one of the acid tests of the quality of your reception —human speech is the other. If you would have every note, from one end of the keyboard to the other, reproduced clearly, cleanly and with greater fidelity, give your set

ATONIC



THE SUPERCHARGED RADIO BATTERY

The reserve of power this very fine battery provides, brings out the utmost degree of quality in your set. It imparts new life and vigour. Clear as a bell; clean as a whistle; these things become more than a wish when you give your set ATONIC.

IF YOUR DEALER CANNOT SUPPLY
WRITE TO:—

THE
ALTON BATTERY COMPANY
LTD.

THE
ALTON HANTS
LTD.

Telephone: ALTON 67.

Telegrams: "BATTERY, ALTON."



Westinghouse

metal rectifiers

in your A.C. MAINS SET are a guarantee of your satisfaction. This trademark on a rectifier indicates that it will deliver a constant and unceasing high-tension supply for years without replacement.

Official non-stop life tests, taken on full load, show that even after 45,600 hours, Westinghouse Metal Rectifiers show no falling off in output. This represents 21 years of life when used 6 hours per day, and no other method of rectification can show the smallest approach to such a standard of performance and efficiency.

The Westinghouse Brake & Saxby Signal Co., Ltd.
92, York Road, King's Cross, London, N.1.
Telephone: NORTH 2415.



Get Original Tone



Tone is the one certain quality in radio about which you can safely form your own opinion. It tells its own story. Sound experts believe that after thirty years of intensive research, Columbia's latest development—ORIGINAL Tone—completes the final step towards perfect reproduction. But we invite YOU to judge its superiority by actual comparison.

Test this wonderful new radiogram with any other; preferably at home. After you have tried its radio performance thoroughly, hear how vastly different your records sound. And note how attractive a modern floor cabinet can be in rich polished walnut. Let us send you complete particulars.

USE THE COLUMBIA DEALER SERVICE

Expert advice on local radio conditions and service after sales.

Columbia Radiograph Four

32 gns. (A.C. or D.C.)

or delivered on first payment of **£3 . 7s.**

Columbia RADIO-GRAPHOPHONES



W.W. 20/3/33.

CUT OUT AND POST TO-DAY!
Please send me fullest particulars of Columbia Model 620 and other Columbia instruments from £4 . 7 . 6 to 90 gns. (write in block capitals).

NAME

ADDRESS

Columbia Graphophone Co., Ltd.,
98, Clerkenwell Road,
London, E.C.1.

The Wireless World

4^D

THE PRACTICAL RADIO JOURNAL

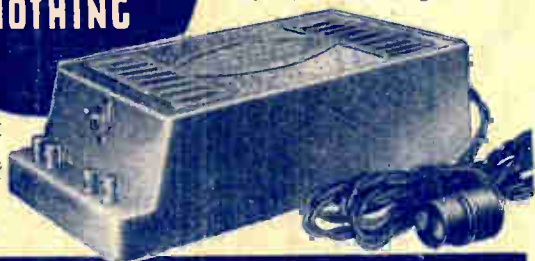
with

Complete Foreign Programmes

Friday, March 17th, 1933.

**HIGH TENSION
FOR
NEXT TO
NOTHING**

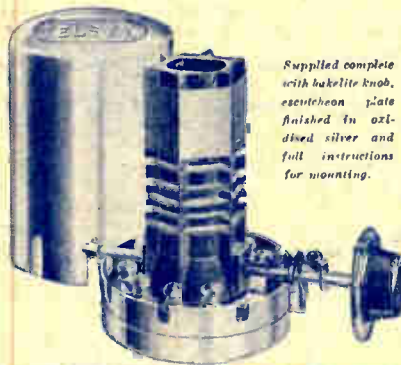
Why spend money on H.T. Batteries when you can run your set through a BurTon ALL-MAINS Unit with practically no increase in your Electric Supply account. No mains 'Hum' and your set permanently at peak of perfection. A.C. Models from £2-12-6. D.C. Models from £1-8-6. Trickle Charger £1-18-0.



Ask your dealer for BURTON All-Mains Units, or write for List to the makers—
C. F. & H. BURTON,
Progress Works,
WALSALL.

**BURTON ALL-MAINS
UNITS**

TELSEN SCREENED TUNING COILS



Supplied complete with bakelite knob, escutcheon plate finished in oxidised silver and full instructions for mounting.

SUITABLE as aerial coils, or as anode coils, following a S.G. valve, giving selectivity comparable with a well-designed band-pass filter. Single Screened Coil 8/6
Twin Matched Coils..... 17/-
Triple Matched Coils..... 25/6



TELSEN RADIO COMPONENTS ARE 100% BRITISH

Announcement of the TELSEN ELECTRIC Co. Ltd., Astoa, BIRMINGHAM

Determine THE TRUTH

The AvoDapter enables all valves and valve circuits to be tested externally, and disposes once and for all of the difficulty of making tests inside the set. The patent convertible 4 and 5-pin plug is inserted in the valve holder and the valve under test is plugged into the AvoDapter base. A switch enables all required readings to be taken without change of connections. Fully descriptive pamphlet free on request.

AUTOMATIC COIL WINDER & ELECTRICAL EQUIPMENT CO., LTD., Winder House, Douglas Street, London, S.W.1.

Price Complete **25/-**

It's easy with **7/6**

The **AVODAPTER**



THE COLVERDYNE

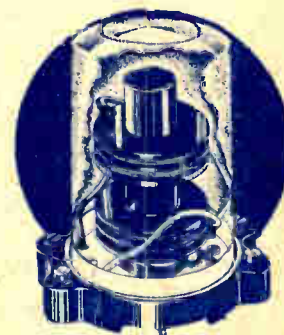
PRICE 12/6

Band Pass Intermediate Frequency Transformer for Super Heterodynes.

Write for Colvern Booklet Radio List No. 10.

COLVERN LIMITED

Advt. Colvern Limited, Mawneys Road, Romford.



ATWATER KENT

Considered by many to be
THE GREATEST VALUE IN RADIO-GRAMS
obtainable to-day

This Masterly Radio-Gram by Atwater Kent is a powerful, beautifully toned and marvelously selective instrument, as well as a piece of furniture of which anyone would be proud.

The cabinet, made in London of figured walnut to the design of a leading English

Artist, is a fine piece of craftsmanship. It is the belief of many who have closely examined this model and heard it with critical ears that at 45 Gns. it represents the greatest value in Radio-Grams obtainable to-day. Ask your Radio dealer for a demonstration.

PRICES OF VARIOUS ATWATER KENT MODELS :—

137	TABLE MODEL 7-VALVE RADIO, 25 Gns.	480 C.	CONSOLE MODEL Short and Medium Waves 10-VALVE RADIO, 45 Gns.
137 C.	CONSOLE MODEL 7-VALVE RADIO, 32 Gns.	812 C.	CONSOLE MODEL 12-VALVE RADIO, 55 Gns.
137 R.G.	7-VALVE RADIOGRAM (as illustrated), 45 Gns.	812 R.G.A.	12-VALVE RADIOGRAM with Automatic Record Changer, 85 Gns.
137 R.G.A.	7-VALVE RADIOGRAM with automatic Record Changer, 52 Gns.		

(These prices do not apply in Irish Free State)

G. A. BRITAIN LTD. Showrooms, 5, Hanover Square, London, W.1.

Telephone: MAYHILL 3466 7. Telegrams: AtwaterKent, West-Lo, London.
 Also Sole Distributors for Irish Free State. Dublin Depot: 40, Dawson Street.



Model 137 R.G.

Model 137 R.G. is a 7-Valve super-heterodyne, covering 200 to 2,000 metres. It has Automatic Volume Control (which successfully prevents fading)... Three-point tone Switch... Large Mains Energised M.C. Loud Speaker... the latest type pure Induction Motor with fully automatic stop... and it is fitted with a pick-up giving compensated response from 50 to 5,000 cycles. **45 Guineas.**

COMPLETE GRAMOPHONE AMPLIFIER



Here is a piece of apparatus for which many have been waiting—a complete Gramophone Amplifier of a compact and more or less portable nature, comprising a quality Amplifier of 25 watts, a high grade electric motor and pick-up, volume control, switch, connecting plugs, etc. The whole is enclosed in a light steel case and can be locked up. In operation it will be found ideal for home use where considerable power is required, for dancing, cafes, hotels, entertainments, shops and many other uses. Several Speakers can be operated, which may be placed in different rooms if desired, thereby adding considerably to its usefulness.



PARTRIDGE & MEE LIMITED

Aylestone Park, LEICESTER
 AYLESTONE 487.

74, New Oxford St., LONDON, W.C.1
 MUSEUM 5070.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

The Wireless World PROGRAMMES from ABROAD

BROADCASTING STATIONS ARRANGED IN ORDER OF WAVELENGTH

TIMES AND DETAILS OF FULL WEEK'S FOREIGN TRANSMISSIONS

Metres.	Kc.	kW.	Station.	Tuning Positions.	Metres.	Kc.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania) ..		453.2	662	0.25	Agen (France) ..	
1875	160	8.5	Hilversum (Holland) ..		447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Rjukan (0.15 kW.), Notodden (0.08 kW.) (Norway) (relays Oslo).	
1796	167	40	Lahti (Finland) ..		441.2	680	50	Rome, IRO. (S.-W. Station, 2 RO on 25.4 m.)	
1725	174	75	Radio Paris, C.F.R.		435.4	689	55	Stockholm, SASA (Sweden) ..	
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (S.-W. Stn. DJA on 31.38 m.)		430.4	697	2.5	Belgrade (Yugoslavia) ..	
1554.4	193	30	Daventry National		424.3	707	2	Madrid, EAJ7 (Union Radio). (After 7.0 p.m.)	
1538	195	7	Ankara (Angora) (Turkey) ..		424.3	707	100	Moscow, Imini Stalina (Russia)	
1481	202.5	100	Moscow, RVI (Old Komintern) (Russia)		419.5	715	1.5	Berlin, No. 1, Witzleben (Germany) ..	
1446	207.5	13	Eiffel Tower, FL, Paris		418.4	720.5	5	Rabat (Morocco)	
1412	212.5	120	Warsaw 1 (Poland)		413	725	60	Athlone (Irish Free State)	
1380	217.5	100	Novosibirsk, RV6 (Russia)		408.7	734	16	Katowitz (Poland)	
1354.4	221.5	30	Motala (Sweden). (Relays Stockholm)		403.8	743	25	Sottens (Radio Suisse Romande) (Switzerland)	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)		388.9	752	25	Midland Regional	
1275	235	0.5	Tunis-Kasbah (Tunisia)		394.2	761	12	Bucharest (Roumania) ..	
1230	244	0.8	Boden (Sweden). (Relays Stockholm)		389.6	770	120	Leipzig (Germany)	
1200	250	5	Stamboul (Turkey)		385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
1200	250	21	Reykjavik (Iceland)		385.1	779	10	Stalino, RV26 (Russia) ..	
1170	256	25	Tashkent, RV11 (Russia)		381	788	16	Lwow (Lemberg) (Poland)	
1154	260	7.5	Kalundborg (Denmark). (Relays Copenhagen)		376.4	797	50	Scottish Regional (Falkirk)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)		372.2	806	1.5	Hamburg (Germany) ..	
1083	277	60	Oslo (Norway) ..		370.1	810.5	0.8	Radio, LL, Paris	
1071	280	85	Tiflis, RV7 (Russia)		368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Hel- sinki (10 kW.) (Finland) (relays Lahti); Kharkov, RV20 (10 kW.) (Russia).	
1035	290	36	Kiev, RV9 (Russia)		365.8	821	0.7	Fredriksstad (Norway). (Relays Oslo)	
1000	300	100	Moscow (Russia)		364.1	824	1	Bergen (Norway) ..	
938	320	20	Kharkov, RV4 (Russia)		363.6	825	13	Algiers (Algeria)	
857	350	100	Leningrad (Russia)		360.6	832	60	Mühlacker (Stuttgart) (Germany)	
840	357	18.5	Budapest (Hungary)		355.9	843	50	London Regional (Brookmans Park) ..	
825	363.6	50	Sverdlovsk, RV5 (Russia)		352.1	852	7	Graz (Austria). (Relays Vienna)	
770	389	0.8	Ostersund (Sweden). (Relays Stockholm)		348.8	860	7.8	Barcelona, EAJ1 (Spain)	
780	395	1.3	Geneva (Switzerland). (Relays Sottens)		348.8	860	10	Leningrad, RV70 (Russia)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)		345.2	869	11.5	Strasbourg, PTT (France)	
690	434.6	1.5	Oulu (Uleaborg) (Finland)		341.7	878	35	Brno (Brunn) (Czechoslovakia)	
680	441.2	0.8	Lausanne (Switzerland). (Relays Sottens)		338.2	887	15	Brussels II, Velthem (Belgium). (In Flemish)	
574.7	522	0.7	Hamar (Norway). (Relays Oslo)		335	896	5	Cadiz (Spain) ..	
574.7	522	7	Ljubljana (Yugoslavia)		334.4	897	1.9	Poznan (Poland)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (Relay Stn.)		331.5	905	50	Milan (Italy). (Relays Turin)	
568.1	528	2	Grenoble (France)		328.2	914	60	Poste Parisien (France)	
566	530	0.25	Hanover (Germany). (Relays Hamburg)		325	923	60	Breslau (Germany)	
563	533	16	Wilno (Poland). (Relay Station)		321.9	932	10	Göteborg (Sweden). (Relays Stockholm)	
560	536	0.25	Augsburg (Germany). (Relays Munich)		318.8	941	0.25	Dresden (Germany). (Relays Leipzig)	
560	536	1.5	Kaiserslautern (Germany). (Relays Munich)		318.8	941	1.5	Naples, INA (Italy). (Relays Rome) ..	
558.6	537	1	Tampere (Finland). (Relays Helsinki)		315.8	950	1.8	Marseilles, PTT (France)	
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)		312.8	959	1.7	Cracow (Poland)	
542	554	10	Sundsvall (Sweden). (Relays Stockholm)		309.9	968	10	Genoa, IGE (Italy). (Relays Turin) ..	
537.6	558	3	Palermo (Italy) ..		307	977	1	Cardiff	
533	563	60	Munich (Germany)		307	977	0.75	Radio Vitus (Paris). (S.-W. Stn. on 43.75 m.)	
525	571	15	Riga (Latvia)		304	986	13	Zagreb (Yugoslavia)	
517	580	15	Vienna (Rosenhügel) (Austria)		301.5	995	50	Bordeaux Lafayette, PTT (France)	
509	589	15	Brussels No. 1, Velthem (Belgium). (In French)		298.8	1004	11	North National (Manchester) ..	
500.8	599	20	Florence, IFI (Italy). (Relays Turin)		296.1	1013	20	Tallinn (Esthonia)	
495.8	605	1.2	Trondheim (Norway)					Huizen (Holland). (After 4.40 p.m.) .. (Exchanges wavelengths with Hilversum every three months.)	
488.6	614	120	Prague, No. 1 (Czechoslovakia)		293.5	1022	0.7	Limoges, PTT (France)	
480	625	50	North Regional (Manchester) ..		293.5	1022	2.8	Kosice (Czechoslovakia)	
472.4	635	60	Langenberg (Germany)		291	1031	10	Viipuri (Viborg) (Finland). (Relays Helsinki)	
467	642	0.4	Aalesund (Norway)		288.3	1040	50	Scottish National (Falkirk)	
465.8	644	1.5	Lyons la Doua, PTT (France) ..		288.3	1040	—	British Relays (Bournemouth, Plymouth)	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland).		286	1049	0.8	Montpellier (France)	
453.2	662		San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (relays Heilsberg); Klagenfurt (0.5 kW.) (Austria) (relays Vienna); Porsgrund (0.7 kW.) (relays Oslo); Tromsø (0.1 kW.) Bodø (0.5 kW.) (Norway); Uppsala (0.15 kW.) (Sweden) (relays Stockholm).		285.1	1052	0.7	Lyons (Radio-Lyon) (France)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Table with columns: Metres, Kc., kW., Station, Tuning Positions. Lists various international broadcasting stations and their technical specifications.

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent G.M.T.)

Large table with columns: Metres, Kc., Call Sign., Station, Tuning Positions. Lists principal short-wave stations with their call signs and transmission times.

FOREIGN SUNDAY PROGRAMMES

MARCH THE NINETEENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** "God and the World Through Christian Eyes," by Miss Maude Royden. Orchestral concert.
- LONDON REGIONAL** Roman Catholic Service from Manchester. Orchestral concert.
- MIDLAND REGIONAL** Vocal and instrumental concert.
- NORTH REGIONAL** Roman Catholic Service from Manchester. Brass Band.
- WEST REGIONAL** Concert from the Park Hall, Cardiff.
- BELFAST** Evensong from St. James's Parish Church.

ABROAD

- ATHLONE** 8.30 p.m. Concert from the Gaiety Theatre, Dublin.
- BORDEAUX-LAFAYETTE BRUSSELS (No. 1)** 4.30 p.m. Padeloup symphony concert from Paris.
- COPENHAGEN HAMBURG** 8.35 p.m. Operetta: "Madame Pompadour" (Fall), from Verviers.
- HILVERSUM** 7 p.m. Military Band.
- LANGENBERG RADIO-PARIS** 7 p.m. The Symphony Orchestra, conducted by R. Richter.
- ROME** 2.10 p.m. Concert conducted by P. Monteux, from Amsterdam.
- STRASBOURG VIENNA** 4 p.m. Choral and orchestral music.
- VIENNA** 7.30 p.m. Popular concert.
- VIENNA** 7.45 p.m. Operetta: "Les Brigands" (Offenbach).
- VIENNA** 7.45 p.m. Concert of Polish music.
- VIENNA** 6.25 p.m. Relay of the Workers' symphony concert.
- WARSAW** 11.15 a.m. Concert in honour of Marshal Pilsudski.

BRESLAU

325 metres; 60 kW.; and **GLEIWITZ**, 253 metres.—10.30 a.m., See Leipzig. 1.0 p.m., News Bulletin. 1.10, Talk: Rowing as a Popular Sport in Germany. 2.15, Talk: Albrecht von Hanngwitz. 2.30, Programme for Children. 3.0, Talk: The English Disarmament Policy. 3.30, Sports Results. 4.5, Concert conducted by Franz Marszałek. 5.55, Sports Notes. 6.0, Humorous Readings (Fritz Reuter). 6.30, Weather for Farmers. 6.32, Max Reger Concert on the Sixtieth Anniversary of the Composer's Birth: Serenade in D for Flute, Violin and Viola, Op. 77; Andante semplice con variazioni; Aus meinem Tagebuch—Pieces for Pianoforte. 7.0, Annaberg—Radio Play (Kurt Eggers) on the Twelfth Anniversary of the Upper Silesian Plebiscite. 8.25, News Bulletin. 8.35, Rilke-Kreis—for Mezzo-Soprano, two Flutes, two Violas and two Cellos (Karl Marx), conducted by the Composer: Rilke Kreis, Op. 8, from Early Poems of Rainer Maria Rilke: (a) Vor lauter Lanseneln und Stannen sei still, (b) du musst das Leben nicht verstehen, (c) Ich will nicht laugen nach dem lauten Leben, (d) Gebst du aussen die Mauer entlang, (e) Träume, die in deinen Tiefen wallen; The New Rilke-Kreis, Op. 17—from Rilke's Buch der Bilder: (a) Eingang, (b) Bangnis, (c) Herbst, (d) Vergefüh, (e) Abend. 9.10, Time and News. 9.35, Gramophone Report from the Upper Silesian Patriots Demonstration in the Schiesswaidersaal. 10.20, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BRNO

342 metres; 25 kW.—10.30 a.m., Concert by the Station Orchestra, conducted by B. Bakala. 11.0, See Prague. 1.0 to 1.15, Agricultural Talk. 2.30, See Prague. 3.0, See Bratislava. 4.30, Pianoforte Recital by Anna Skalicka. 5.0 to 5.45, Two Sonatas for Violin and Pianoforte: (a) Sonata (Mozart), (b) Sonata in C Minor, Op. 30. No. 2 (Beethoven). 6.0, Variety Programme. 6.40, Popular Concert by the Radio Schrammel Quartet. 7.20, Concert of Russian Music. 7.50, See Prague. 8.5, See Moravská-Ostrava. 9.0, See Prague. 10.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R.; 509 metres; 15 kW.—10.0 a.m., César Franck Pianoforte Recital, on Gramophone Records. 10.30, L. Devocht Concert by the New Concert Society and the Cecilia Choir, relayed from Antwerp. Conductor, The Composer. Soloist, Mia Peltenburg (Songs). 12.30 p.m., Variety Music on Gramophone Records. 1.0, Le Journal Parlé.

BUCHAREST

394 metres; 12 kW.—9.15 a.m., Programme for Children. 9.30, Bible Reading. 9.45, Choral Concert of Sacred Music. 10.0, Concert by the Dumitrescu Orchestra. 11.0, Gramophone Concert of Popular Music. 11.0, In the interval at 11.45, News and Time Signal.

4.0 p.m., Light Music and Romanian Music by the Marco Orchestra. 5.0, News and Time Signal. 5.10, Talk. 5.25, Concert (contd.). 6.0, Talk: The Future of Romanian Culture. 6.40, Light Music on Gramophone Records. 7.0, Dramatic Programme. 8.0, Choral Concert. 8.45, News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 840 metres from 7.0 p.m. till Close Down.—10.0 a.m., Sacred Music and Address, followed by Time, Weather, Tides Report, and Concert by the Budapest Concert Orchestra. 1.0 p.m., Gramophone Concert of Popular Music. 2.0, Agricultural Talk. 2.45, Educational Programme. 3.30, News, followed by Military Music, with Commentary. 4.45, Concert from the Academy of Music. 6.45, Sports Notes and Racing Results. 7.0, Hungarian Folk Songs, with Cigány Band Accompaniment. 8.0, Concert of Jazz and Cigány Music with Songs, relayed from the Café Ostende. 9.20, Time and Sports Notes. 9.30, Scandinavian Concert, conducted by Ernst Dolmányi. Soloist: Emil Frey (Pianoforte). Symphony (Berwald); Pianoforte Concerto in A (Grieg); Carnaval à Paris (Svendensen); Second Peer Gynt Suite (Grieg).

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and **KALUNDBORG**, 1,153 metres; 7.5 kW.—11.0 a.m., Time Signal and Chimes from the Town Hall. 11.2, Orchestral Concert, conducted by Launy Gröndahl, relayed from the Axelborg Studio. 12 Noon, Talk in English: The Grand Tour of England. 12.30 p.m., Talks and Readings in German: The Works of Clara Wiebig. 12.40, Reading in French. 1.25, Variety Music on Gramophone Records. 1.55, Programme for Children. 2.25, Orchestral Concert relayed from the Axelborg Studio; Conductor, Fritz Mahler; Soloist, Mary Alice Therp and Marius Jacobsen (Songs): Overture, The Merry Wives of Windsor (Nicolaï); Waltz, Tales from the Vienna Woods (Joh. Strauss); Ballet Music in G from Rosamund (Schubert); Overture, Die Fledermaus (Joh. Strauss); Two Arias from La belle Hélène (Offenbach); Arias from Die Fledermaus (Joh. Strauss): (a) Rosalinde's Aria from Act. I, (b) Duet of Alfred and Rosalinde; Waltz, Roses from the South (Joh. Strauss); Pizzicato Polka (Joh. Strauss); Overture, Orpheus in the Underworld (Offenbach-Binder). 4.0 (also relayed by Skamleback on 31.38 metres), Divine Service, relayed from the Castle Church, Christiansborg. 5.20, Talk for Workers. 5.50, Weather. 6.0, News. 6.15, Time and Sports Notes. 6.30, Talk: A Child's Perception of the World. 7.0, Time Signal from the Town Hall. 7.1, Military Band Concert. 7.30, The Hensen Family—Sketch (Jens Locher). 7.45, Military Band Concert (contd.). 8.15, Reading. 8.35, Military Band Concert (contd.). 9.5, News. 9.15, Songs by Alfred Pieciver on Gramophone Records. 9.30, Military Band Concert (contd.). 10.0, Dance Music by the Teddy Petersen Band, relayed from the Restaurant Wivex. In an interval at 11.0, Time Signal and Chimes from the Town Hall. 11.30 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—4.0 to 8.0 p.m., Programme in English by the I.B.C. C. Danvers-Walker, B. McNabb and F. Lamping announcing. 4.0, Programme for Children. 4.30, Children's Club Concert. 5.0, International Broadcasting Club Concert for Newcastle Listeners: Ben Hur March; By the Swanee River; Message from Captain Leonard Plugge, President and Founder of the Club; The Bandmaster March; Duet: Leave the Pretty Girls Alone; Pomp and Circumstance; A Merry Hunting Day; Cinderella's Wedding Day; Duet: Don't marry a Widow; Waltz, Gold and Silver (Lehar); Hands across the Sea; Selection from The Merry Widow (Lehar); I don't want to go to bed; Cadet March. 6.0, Military Band Concert: War March of the Priests, from Athalia (Mendelssohn); By the Blue Hawaiian Waters (Ketchey); Coronation March; Selection from Cavaleade (Coward); The Entry of the Gladiators (Fucik); The Changing of the Guard; March from Tannhäuser (Wagner). 6.30, Orchestral and Vocal Concert; Waltz, O Frühling wie bist du so schön (Lincke); Patiently Smiling, from The Land of Smiles (Lehar); Songs of Araby (Clay); Sari-Waltz (Kálmán); The Rose-beetle goes a-wooing (Armandola); Songs my Mother taught me (Ljovrak); You are my Heart's Delight (Debar); The Dancing Doll (Poldini). 7.0, Popular Concert on Gramophone Records; Song of the Highway, by Graecie Fields; Old King Cole, by the Western Brothers; Blonde Women, by Marlene Dietrich; I travel the Road, by Peter Dawson; Do Daddy, by Harry Hemsley and Emmie Joyce; Goodnight, by Jeanette Macdonald; Pianoforte Solo:

ATHLONE
413 metres; 60 kW.; and **CORK**, 224.4 metres.—8.30 p.m., Time Signal. 8.32, Concert relayed from the Gaiety Theatre. 10.0, The Adventures of Ellis Palmer, presented by I. P. Mitchell and Company. 10.45, Variety Music on Gramophone Records. 11.0, Time Signal, News, Weather and Close Down.

BARCELONA

RADIO-BARCELONA; Call **EAJI**; 348.8 metres; 8 kW.—11.0 a.m., Chimes from the Cathedral, and Weather Forecast. 1.0 p.m., Light Music on Gramophone Records. 1.30 (in an interval), Theatre Notes. 2.0, Film Review, followed by Concert by the Station Sextet. 3.0, Programme for Hospitals and other Benevolent Institutions, with Gramophone Records. 4.0 to 5.30, Interval. 5.30, Popular Music on Gramophone Records. 6.0, Agricultural Talk in Catalan. 6.15, Dance Music from the Hotel Ritz. 7.45, Concert by the Station Orchestra. Soloists: Margarita Romero (Soprano) and Ramon Allaga (Bass). 9.0, An Opera, on Gramophone Records. 10.45, Chess Lesson. 11.0 (approx.), Close Down.

BARI

270 metres; 20 kW.—9.45 a.m., Agricultural Report. 10.5, Sacred Music. 10.30, Talk and Bible Reading. 12 Noon, Giornate Radio. 12.10 to 1.15 p.m., Variety Music on Gramophone Records. In the intervals at 12.55, Weather, and at 1.0, Time and Announcements. 4.30 to 5.30, Popular Music on Gramophone Records. 7.0, Sports Notes and Giornate Radio. 7.30, Time and Announcements. 7.35, Variety Concert. In the Interval, Notes on Art. 9.30, Dance Music from the Grand Hotel Moderno. 9.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,636 metres; 60 kW.—10.30 a.m. to 12 Noon, See Leipzig. In the interval at 11.55, Time Signal. 12 Noon, See Hamburg. 1.0 p.m., Talk for Parents. 1.30, Programme for Children. 2.0, Talk by Flight-Captain Merz: With the Do-X across the Atlantic. 2.30, Max Kretzer reads from his own Works. 2.50, Quartet for Flute, Guitar, Viola and Cello (Sehbert). 3.20, Talk: Art Centres and Art Treasures of the Nation—Frederick the Great as a Collector. 3.45, Concert from Heilsberg. 4.30, Programme in Memory of Max Reger: Introductory Talk; Songs; Flute Trio in G, Op. 141a. 5.35, Talk on Winter Relief. 6.0 to 7.40, See Heilsberg. 7.40, Concert from Langenberg. 9.0 (approx.), Weather, News and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—10.30 a.m., See Leipzig. 11.55, Radio Report on the Commercial Clerk's Vocational Difficulties. 12.10 p.m., Concert from Leipzig. 12.45, Gymnastics Contest, Berlin-Hamburg-Leipzig, relayed from the Schauspielhaus. 1.0, Talk for Parents. 1.30, Fairy Tales for Children. 2.0, May we advise you?—Answers to Listeners' Questions on Various Subjects. 2.15, At the Grave of Frederick the Great. 2.40, Concert of Light Music. In the interval at 3.0, Topical Talk. 4.35, Talk: The World at the Turning Point?—National Art. 5.0, Chamber Music Concert from Monbijou Castle. Conductor and Soloist: Edwin Fischer (Pianoforte). Concerto in F Minor for Pianoforte and String Orchestra (Bach); Concerto in D Minor for Two Violins and String Orchestra (Bach); Three Arias for Contralto: (a) Come ragazzo di sol (Antonio Caldara), (b) Agnus dei, (c) Aria from Julius Caesar (Händel); Concerto in D Minor for String Orchestra (Vivaldi, arr. Sam Franko). 6.20, A Variety Programme. 7.20, Sports Notes. 7.15, Announcement. 7.20, Concert by the German Symphonic Wind Orchestra, conducted by Arthur Jander. 7.55, Report on International Affairs. 8.15, Concert (contd.). 9.0, Weather, News and Sports Notes, followed by Dance Music. 11.0 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BRATISLAVA

279 metres; 14 kW.—3.0 p.m. Orchestral Concert. 4.30, Provincial Programme from Spiska Nova Ves, relayed from Kosice. 5.40, Slovak Music and Songs for Bagpipes, Two Violins and Cello. 7.20, Talk. 7.35, Popular Music on Gramophone Records. 7.50, See Prague. 8.15, Variety Music on Gramophone Records. 8.50, Symphony Concert from Spiska Nova Ves, relayed from Kosice. 9.0, See Prague. 10.0 (approx.) Close Down.

BREMEN.—See Hamburg.

MARCH 19th

SUNDAY

continued

She didn't say Yes, by Edith Baker; After the Ball, by Bertha Wilmott. 7.30, Organ Recital: Overture, Poet and Peasant (Suppé); To a Wild Rose (Macdowell); Spirit of America (Garcenik); Menuet antique (Walling); Le Cygne (Saint-Saëns); Bells across the Meadow (Ketilbey); La Serenata (Braga). 8.0, Concert of Opera and Operetta Music. 9.0 till Close Down. Programme in English by the I.B.C.: An International Orchestral Half-Hour: Sunday on the Rhine (Schumann); Spanish Serenade (Herbert); Chinese Serenade (Herbert); Souvenir de Capri (Bece); In the Sudan (Sebek); Memories of Paris (Moretti); Cuban Serenade (Herbert); Oriental Serenade (Herbert); Argentina Amor (Blum); Waltz, The Blue Danube (Joh. Strauss). 9.30, Concert of Light Music: By the Swanee River (Myddleton); Soprano Solo: Down in the Forest (Landon Ronald); Pianoforte Solo: Popular Melodies; Bass Solo: The Mighty Deep (Jude); Gipsy Moon (Borganov); Selection from Patience (Sullivan). 10.0, Tango Band: Te fuiste ja ja; La Paloma; Adios Argentina; Tesoro mio; Corazon; Plegaria; Todavia; Madrid. 10.30, Concert of Popular Music: The Japanese Sandman; Young and Healthy; Well, Well, Well; Drifting and Dreaming; Zigeuner, you have stolen my Heart; Old Father Thames; It's Winter again; Selection from Wild Violets (Stolz). 11.0, Vocal Trios: Selection from Song of the West; Blondy; To-day's a Sunny Day; Selection from The Love Parade; If I had a Girl like you; Louise. 11.30, Hawaiian Band Concert: On a little Street in Honolulu (Sherman); Serenata (Toselli); Palikiko Blues (Traditional); Speak to me of love (Lenoir); Somehow (Hackforth); Lazy Louisiana Moon (Donaldson); Mania Moon (Gaston); Silvery Moon (Frazzini). 12 Midnight, International Broadcasting Club Concert for New-castle Listeners: Bon Hur March; By the Swanee River; Message from Captain Leonard Plugge, President and Founder of the Club; The Bandmaster March; Duet, Leave the Pretty Girls Alone; Pomp and Circumstance; A Merry Hunting Day; Cinderella's Wedding Day; Duet: Don't Marry a Widow; Waltz, Gold and Silver; Hands across the Sea; Selection from The Merry Widow (Lehar); I don't want to go to bed; Cadet March. 1.0 a.m. (Monday), Variety Programme: A Highland Sing-Song; Rabbits; I lift up my Finger and I say "Tweet Tweet"; The Lodger; The Cruel World; What is Home without Mother?; Tesoro Mio. 1.30, Songs: Ah, Sweet Mystery of Life; I bring a Love Song; The Song of Songs; African Lament; You are my Heart's Delight; You will remember Vienna; Just two Hearts and a Waltz Refrain; Mama Inez. 2.0, Light Music: So ashamed; Open up dem pearly Gates; Southern Serenade; Sailin' on the Robert E. Lee; The London Fire Brigade; Rock your Cares away; A Bed-time Story; Nightfall; How deep is the Ocean?; Please, Mr. Hemingway; Just because you're you; I guess I'll have to change my Plans; Wanderer; I don't want to go to bed. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259.3 metres; 17 kW.; CASSEL, 245.9 metres; and TRIER, 259.3 metres.—10.30 a.m., See Leipzig. 11.0, See Munich. 12 Noon, See Langenberg. 1.0 p.m., Talks arranged by the Wiesbaden Board of Agriculture. 1.10, Rural Programme: Two Talks. 2.0, See Stuttgart. 3.0, Concert from the Kurhaus, Wiesbaden. Conductor, Herbert Albert. Festmarsch (R. Strauss); Overture, Le Corsaire (Berlioz); Ballet Music from Rosamunde (Schubert); Selection from Sylvia (Delibes); Waltz, Seid umschlungen Millionen (Joh. Strauss); Selection from The Bartered Bride (Smetana); Overture, Prince Methusalem (Joh. Strauss); Selection from Paganini (Lehar). 5.0, Talk: The Little-known parts of the Eiffel. 5.25, An Interlude. 5.55, Talk: What is there behind the new word Technocracy? 6.20, Sports Notes. 6.30, Gramophone Records: Concerto in A Minor for Four Pianofortes and String Orchestra (Vivaldi-Bach); Suite in B Minor, No. 2 (Bach). 7.15 to 9.10, See Stuttgart. 9.10, Time and News. 9.35, See Breslau. 9.45 (approx.), Programme from Langenberg. 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—10.30 a.m., See Leipzig. 11.0, Young Poets from Central Germany—Reading of Verse by Rudolf Habetin and Hans Eich. 11.15, Vital Energy—a Radio Play (Giese, Music by Ernst Koster). 11.55, Time and Weather. 12 Noon, Military Band Concert

from the Ufa Palast. 1.0 p.m., Programme by the Hamburg Group of the League of the Grioux. 2.0, Programme for Children. 2.30, Mandoline Concert. 3.0, See Berlin (Witzleben). 4.0, We want to help—A Cabaret Programme. 5.10, Reading from the Works of Hans Friedrich Blunck. 5.30 (from Kiel), Recital of Regér's Early Music, with Introductory Talk. 6.30, Talk: The Development of the Collapsible Boat Sport in North Germany. 6.40, Sports Notes. 6.55, Weather Report. 7.0, Concert of German Music by the Hamburg Philharmonic Orchestra, relayed from the Musikhalle; Conductor, Richard Richter; Soloist, Lisa Jungkind (Songs); The Brandenburg Concerto in G, No. 7 (Bach); Aria from Der Schauspieler-director (Mozart); Arioso for String Orchestra (Handel); Movement in G from Rosamund (Schubert); Overture, Egmont (Bret-hoven); Overture, The Merry Wives of Windsor (Nicolaï); Agatha's Aria from Der Freischütz (Weber); Siegfried's Rhine Journey from The Twilight of the Gods (Wagner); Two Army Marches. First General News in the Interval. 9.0, News Bulletin. 9.10, Topical Talk. 9.20, Dance Music from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—11.0 a.m., See Leipzig. 1.0 p.m., Talk on Chess. 1.30, Tales for Young People. 2.0, Agricultural Report from the Auktionshalle, Instertburg. 2.20 (from Elbing), Mandoline and Balalaika Concert. 3.20, Sports Notes. 3.30, Concert by the Königsberg Opera House Orchestra, conducted by Werner Franz. 5.0, Talk: The Care and Protection of Birds in the Spring. 5.30, Reading from the Works of Reinhard Braun. 6.0, Hermann von Balcke—Pasticcio—Opera (Handel), written in 1737 for the Fifth Centenary of the Town of Elbing, relayed from the Königsberg Castle. 7.0, Elbing—A Picture of a German Town (arr. Ernst Freissler). 7.40, Concert from Langenberg. 9.15 (approx.), News and Sports Notes, followed by Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

HILVERSUM

(Announced HUIZEN); 296.1 metres; 20 kW (7 kW up to 4.40 p.m.).—9.30 a.m., Programme of the Christian Radio Society (N.C.R.V.): Divine Service Relay and Organ Recital. 11.55 to 4.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert. In the interval at 12.40, Talk. 1.20 (approx.), Talk: The Agricultural Crisis. 1.40, Choral and Orchestral Concert. 4.10, Programme for Invalids. 4.40 to 7.25, N.C.R.V. Programme. 4.40, Sacred Music on Gramophone Records. 5.30, Divine Service, relayed from Nijmegen. 6.55, Organ Recital by Simon Kleinloch: Sonata No. 3 (Mendelssohn); Choral and Variation on Vater unser im Himmelreich (Mendelssohn); Prelude (C. Franck); Toccata and Fugue (Brandts-Buys); Improvisation on an Evangelical Hymn (Kleinloch). 7.25 till Close Down, K.R.O. Programme. 7.25, Talk on Architecture. 7.50, Football Results. 7.55, A Radio Play. In the interval, News. 9.25, Orchestral Concert: Soloist: Mlle. M. Vroemen (Soprano); Overture, The Ruins of Athens (Beethoven); Song, Bella mia flamma addio (Mozart); Bacchanale from Samson and Delilah (Saint-Saëns); Selection from L'Enfant prodigue (Debussy); Eight Popular Russian Songs, Op. 58 (Ljadov). In the interval at 9.55, News. 10.20, Epilogue by the Little Choir, conducted by J. H. Pickkers. 10.40 (approx.), Close Down.

HOBBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—11.40 a.m. to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.41, Talk. 12.10 p.m., Concert of Light Music by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte, and Interlude by a Male Voice Choir. 1.40, Weekly Book Talk. 2.10, Concert by the Concertgebouw Orchestra, conducted by Pierre Monteux, relayed from the Concertgebouw, Amsterdam. Soloist: Gino Francescatti (Violin). 3.40, Talk: The Forthcoming Studio Performance of Galsworthy's Play, Justice. 4.10, Popular Music on Gramophone Records and Sports Notes. 4.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 4.40, Programme for Children. 5.40, Concert by the V.A.R.A.; Children's Choir conducted by Mlle. L. Hulscher. 6.10, Organ Recital by Johan Jong. 6.30, The Adventures of Messrs. Wakker and Tropicant. 6.50, Concert by De Filierfluiters, conducted by Hugo de Groot. 7.40 to 11.40, A.V.R.O. Programme. 7.40, Time Signal. 7.41, Sports Notes and News. 7.55, Concert by the Wireless Orchestra, conducted by Albert van Raalte. Soloists: Henriette Sala (Soprano) and Henk Viskil (Tenor). 8.40, Recitations. 9.0, Concert (cont'd.). 10.10, Concert of Light Music by Cornelius Codolban and his Orchestra.

10.40, Light Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

473 metres; 60 kW.—10.30 a.m., See Leipzig. 11.5, Relay from the East Prussian Demonstration in the Town Hall, Hagen. 11.50, Talk: The Music of the Week. 12 Noon, Concert, conducted by Eysoldt. 1.30, Short-hand Dictation. 1.50, Chess Lesson. 2.20, Talk: Rare Plants Native to Germany. 2.45, Talk: Town and Country in West and South Germany. 3.10, Legends and Tales of Rhineland and Westphalia—St. Albans and St. Bardo. 4.0, Choral and Orchestral Concert. 5.0, Talk: People of the Mountains. 5.15, Talk on Ernst Moritz Arndt. 5.35, Talk: Instinct and Intellect in the Works of Shakespeare. 6.0, Variety Programme. 6.45, Sports Notes. 7.0, Concert of Dances and Marches by the Station Orchestra, conducted by Kühn. 9.5, News and Sports Notes. 9.30, Concert and Dance Music conducted by Eysoldt. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319 metres.—10.30 a.m., Schet, wir geh'n hinauf gen Jerusalem—Cantata (Bach) by the Gewandhaus Orchestra, the Choir of St. Thomas's, and Soloists. 11.0, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer; Soloist, Walter Schulz (Cello). 11.55 (in the interval), Talk on Josef Hoffmann. 1.0 p.m., Weather and Time. 1.5, Programme Announcements. 1.25, Agricultural Notes. 1.40, Suite for Two Violins and Pianoforte (Ries-Sitt). 2.15, Adolf von Hatzfeldt reads from his own works. 2.30, Trio in E Flat, Op. 40, for Pianoforte, Violin, and French Horn (Brahms). 3.5, From Bagpipes to Aether Wave Music. Talk with Gramophone Illustrations. 4.0, Mandoline Concert, relayed from Bitterfeld. 5.0, Talk: The Crocuses are blooming—Spring in the Erzgebirge. 5.15, Blühdienst auf Szene 13—a Moral Play on the Evil of Slander, arranged from Mojid Jokl's Film, followed by Dialogue between the Film Director and Dr. Hans Vogel. 6.0, Radio Reports: (a) Relay from the Fiftieth Anniversary Celebrations of the German Rowing Club's Association, (b) Part Relay of the International Football Match, Germany versus France, from Berlin. 6.50, Topical Talk. 7.0, See Heilsberg. 7.30, See Vienna. 9.5, News bulletin. 9.20 (approx.), Dance Music. 11.0 (approx.), Close Down.

LINZ.—See Vienna.

LWOW

381 metres; 16 kW.—6.5 p.m., Miscellaneous Items. 6.25, See Warsaw. 8.20, Sports Notes. 8.30, See Warsaw. 11.0 (approx.), Close Down.

MADRID

ARANJUEZ (EAO); 30.43 metres; 20 kW.—10.30 p.m., Variety Music. 10.45, Humorous Talk. 11.0, Variety Music (cont'd.). 11.35, Talk. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—8.0 to 9.0 a.m., Topical Review. 2.0 p.m., Chimes, Time, Theatre Notes, and Concert by the Artys Orchestra. 4.0 to 7.0, Interval. 7.0, Chimes and Dance Music relayed from the Ritz Hotel. In the interval at 7.30, Agricultural Talk. 8.30 to 9.30, Interval. 9.30, Chimes and Time Signal. 9.35, Soprano and Baritone Song Recital by Luisa Nere and Franco Mar, followed by Interlude by Ramon Gomez de la Serna. Argentine Songs by Angel las Heras, and Pipa and Pipa before the Microphone. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—6.0 p.m., See Brno. 6.40, See Prague. 8.5, Military Band Concert, conducted by V. Karel. 9.0, See Prague. 10.0 (approx.), Close Down.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—4.30 p.m., Literary Programme. 5.30, Concert relayed from the Conservatoire. 8.0, Talk in English: The Work of a Printer.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürn-

berg, 239 metres.—10.30 a.m., See Leipzig. 11.0, Concert conducted by Erich Floss. 12.5 p.m., Time, Weather and Programme Announcements. 12.15, Agricultural Talk. 12.35, Gramophone Concert of Classical Music. 1.30, Elementary Chess Lesson. 2.10 (from Nürnberg), Hymnus (Heinz Schubert), for Soprano, Mixed Choir, Orchestra and Organ. 2.50, Report on the Spring Grand Prix, relayed from Dagfling. 3.10, Concert by the Rasso Raudolf-Mutzbauer Orchestra. 4.25, Travel Talk: From the Koclesee to the Chiemsee. 4.45, The Old Scoundrel—Comedy in Three Acts (von Harsanyi). 6.15, Weather and Sports Notes. 6.25, Talk by Paul König, the U Boat Captain: With German Country People in the United States of America. 6.55, Orchestral Concert, conducted by Karl List. Soloist: Irene Ziegler (Contralto). 8.30, A Short Italian Journey—Musical and Literary Sequence (Weniger). 9.20, Time, Weather, News and Sports Notes. 9.45, Concert from Langenberg. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 53.2 metres; and Rjukan, 447.1 metres.—9.20 a.m., Chimes and Divine Service, relayed from the Fagerberg Church. 12 Noon, Skiing Competition Results. 4.0, Concert by the Station Orchestra, conducted by Hugo Kramm. 5.0, Reading. 5.30, Talk. 6.0, Parliamentary Notes. 6.15, Weather and News. 6.30, Cello and Song Recital by Karl Andersen (Cello) and Sigurd Hoff (Tenor). 7.0, Time Signal. 7.1, Choral Concert for the Seventy-fifth Anniversary of the Nydalen Choir, relayed from the Logen Hall. Soloists: Theodor Andersen (Tenor), Oivind Fjellstad (Violin), Arne Melsom (Cello), and Waldemar Arne (Pianoforte). 8.40, Weather and News. 9.0, Topical Talk. 9.45, Variety Music on Gramophone Records. 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—9.25 a.m., Bible Reading. 9.40, Sacred Music. 10.5, Talk. 11.45, Gornale Radio. 12 Noon, Concert by the Sunny Band Quartet. 12.30 (in an interval), Time Signal, Announcements, and Weather Forecast. 4.30 to 5.30, Variety Music. 7.0, Denopolavoro Notes and Giornale Radio. 7.20, Sports Notes. 7.30, Time Signal and Announcements. 7.45, Symphony Concert, conducted by Armando la Rosa Parodi. Soloist: Maria Castellunovo Tedesco (Pianoforte). Overture, Bisbetia domata (Castellunovo Tedesco); Concerto for Pianoforte and Orchestra (Castellunovo Tedesco), with the Composer at the Pianoforte; Pianoforte Solo: Viennese Rhapsody (Castellunovo Tedesco); Three Symphonic Sketches, La Mer (Debussy). In the interval, Talk on Giuseppe Monforte, the Sicilian Poet. After the Concert, Song Recital. 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—12.30 p.m., Concert relayed from Paris (Ecole Supérieure, 447.1 metres). 1.0 to 2.0, Concert by the Rex Orchestra. 5.45, Le Journal Paris. 6.45, Programme for Children. 7.20, Weather Report. 7.30, Gramophone Concert: Part I: Verdi Programme. Part II: Light Music. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—9.45 a.m., Bible Reading. 10.0, News. 10.5, Sponsored Concert. 11.15, Film Stars—Sponsored Programme. 11.40, Sponsored Gramophone Concert. 12.15 p.m., Sponsored Concert. 12.45, Half-an-hour of Fantasy by Paul Weill. 1.15, Interval. 1.30, Sponsored Concert. 2.0 to 6.45, Interval. 6.45, Journal Paris. 7.0, Sports Notes. 7.15, Popular Music on Gramophone Records. 7.40, Catholic Review. 8.0, Interval. 8.15, Variety Music on Gramophone Records. 8.45, Interval. 9.0, Le langage des sonnets—Radio Play (Carlos Larronde). 9.30, Interval. 9.40, Orchestral Concert: Gala March (Allier); Overture, William Tell (Rossini); Ballet Music from Les deux pigeons (Messager); Au soleil naissant (Cambelle); Valse des petits oiseaux (Douard). 10.40, News.

PARIS

RADIO PARIS; Call CFR; 1,725 metres; 75 kW.—7.45 a.m., Light Music on Gramophone Records. 8.0, Press Review and Weather. 8.30, Physical Culture. 10.0, Elementary Book-keeping Lesson. 10.20, Advanced Book-keeping Lesson. 10.40, Spanish Lesson. 11.0 to 11.30, Interval. 11.30 to 12 Noon, Programme in English. I.B.C. Concert of Gramophone Records. Mr. T. St. J. Ronald announcing: The Teddy Bear's Picnic, by the Commodore Grand Orchestra, conducted by Joseph Muscant; Little Nell (Comic Melodrama, by Bobbie Combar (Comedian); A Boy and a Girl were dancing, by Roy Smeek and his 'Vita' Trio; Pla-

PRAGUE

488.6 metres; 120 kW.—9.30 a.m., Programme in commemoration of the Gustav Habrman, the First Minister of Education in Czechoslovakia, relayed from Pilsen. Addresses, Programme of Music and Recitations, and Unveiling of a Memorial. 10.30, See Brno. 11.0, Chimes. 11.5, Military Band Concert. 12.30 p.m., Agricultural Programme. 1.15, Talk: Social Insurance. 2.30, Slovak Songs by Otakar Marak (Tenor). 3.0, See Bratislava. 4.30, Talk on Iceland. 4.45, Light Music on Gramophone Records. 5.0, German Transmission: Baroque Songs by Walter Kaufman and his Orchestra. Soloists: Käthe Walter and Rudolf Baudler. 6.0, See Brno. 6.40, Popular Music on Gramophone Records. 7.5, Concert by the Commercial Choral Society on the Inauguration of the Prague Sample Fair, relayed from the Smetana Hall. Conductor, B. Fromm. Soloist, J. Urbanec (Organ). 7.50, Talk by Karl Scheinpfug. 8.0, Time Signal. 8.1, See Moravská-Ostrava. 9.0, Time Signal. 9.1, News Bulletin. 9.20, Jazz on Two Pianos, by Ervin Schulhoff and O. Letfus. 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—8.55 a.m. (from Lausanne), Chimes. 9.0 (from Lausanne), Protestant Service. 10.0 (from Geneva), Light Music on Gramophone Records. 11.0 (from Geneva), Readings. 11.30, News Bulletin and Weather Report. 11.40 (from Geneva), Popular Music on Gramophone Records. 1.0 to 2.0, Interval. 2.0, Concert from the Temple du Bas Neuchâtel. 5.30 (from Geneva), Catholic Address. 6.0 (from Geneva), Organ Recital by William Mühlert, relayed from St. Joseph's Church. 6.40 (from Lausanne), Sports Talk, News and Announcements. 7.0 (from Lausanne), Clarinet and Pianoforte Recital. 7.40 (from Lausanne), Printemps—Comedy in One Act (Marelle Manrette). 8.15 (from Lausanne), Song and Violin Recital by Mire Grein Rumbeli-Trokay (Songs) and M. André Loew (Violin). 9.0, News Bulletin and Weather Forecast. 9.15 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—11.40 a.m., Weather Report. 12 Noon, Divine Service. 4.50

p.m., Afternoon Concert. 7.45, Programme for Children. 8.30, Weather Forecast. 8.40, Musical Programme. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Symphony (Bruckner) on Gramophone Records, followed by Dance Music. 1.0 a.m. (Monday), Close Down.

RJKAN.—See Oslo.

ROME

Call 1RO, 441 metres; 50 kW. Relayd by Naples, 319 metres; and 2RO, 25.4 metres.—9.10 a.m., News, Sports Notes and Amusement Guide. 9.30, Agricultural Report. 9.45, Bible Reading. 10.0 to 11.0 and 11.30 to 1.30 p.m., See Turin. In the interval at 12 Noon, Time and Announcements. 2.01, See Turin. 6.30, Football Results, Dopolavoro Notes and News. 7.0, Time and Announcements. 7.30, Sports Notes. 7.45, Les Brigands—Operetta in Three Acts (Offenbach). In the intervals, Talk and Announcements. News after the Operetta.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 379.5 metres; 50 kW. Relayd at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—7.0 p.m. to 12 Midnight, New York Relay. 7.0, International Radio Forum. 7.15, Clyde Doerr and his Saxophone Octet. 7.30, Musical Programme. 8.0, Wayne King's Orchestra. 8.30, Hour of Worship. 12 Midnight, Dr. Frank Sill Rogers (Organist). 12.15 a.m. (Monday), Wheatona Ville—Sketch, from New York. 12.30, Horse Sense Philosophy. 12.45 to 2.30, New York Relay. 12.45, Smith Brothers. 1.0, Chase and Sunborn Hour. 2.0, General Electric Sunday Circle Concerts. 2.30, American Album of Familiar Music, followed by Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; BASEL, 244.1 metres; and BERNE, 245.9 metres.—10.0 a.m. (approx.) (from Zürich), Concert of Chamber Music by Otto Rehm by the Radio Orchestra and Soloists. 11.0

(from Zürich), Concert by the Radio Orchestra. Soloist: Mela Feuerlein (Songs to the Lute). 11.25, Time and Weather. 11.30, News. 11.40, Orchestral Concert (cont'd.). 12.30 p.m., Talk on the Einsiedeln Convent, with a Musical Setting, by the Convent Choir, relayed from Einsiedeln. 1.0, Two Scenes from The Stage of the World (Calderon), with Final Chorus. 1.30, Reading by Dr. Meinrad Lienert, with a Recital of his Songs set to Music by Volkmar Andreae, Friedrich Niggli, Hans Jcimoli, and Others, by the Meinrad Lienert Quartet. 2.15, Interval. 3.0 (from Zürich), Popular Music on Gramophone Records. 4.0 to 5.30, Interval. 5.30 (from Zürich), Talk in English: The English of the English. 6.0, Time, Weather, and Sports Notes. 6.15 (from Zürich), Talk, Schaba, the Swiss Colony by the Black Sea. 7.0 (from Zürich), Concert by the Einsiedeln Musical Society, Male Voice Choir, and Mixed Choir, the Meinrad Lienert Quartet, and Meinrad Lienert, with Address by Herr August Bettschart. 8.30, Weather and News. 8.40 (from Einsiedeln), Concert of Ländler Music and Songs by a Yodel Quartet. 9.30, Sports Notes. 9.40 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayd by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—8.30 a.m., Programme for Country Children. 9.0, Talk. 9.30, Programme for Workers. 10.0, Divine Service. 11.45, Weather Report. 1.0 p.m., Running Commentary on the Wrestling Championship, relayed from Helsinki, 368.1 metres. 2.0, Light Music on Gramophone Records. 3.0, Talk, relayed from Uppsala, 453.2 metres. 3.30, Choral Concert. 4.5, Programme for Children, relayed from Sundsvall. 4.30, Reading, from Malmo, 231 metres. 5.0, Even-song. 6.30, A Play (Axel Breiddahl and Axel Frische). 7.55, Orchestral Concert. Soloist: Kayla Mitzel (Violin); Concerto in A Minor, for Violin and Orchestra (Goldmark); Intrata from Divertimento, Op. 22, for Wind Instruments (Gál); Slav Rhapsody No. 1 in D (Dvorák). 9.0, Light Programme. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—9.30 a.m., Orchestral Concert of Popular Music. 10.45, Protestant Address in French. 11.30, Catholic Service in German. 12 Noon, Gramophone Concert of Classical Music. 12.45 p.m., News Bulletin. 1.0, Time Signal. 1.1, Light Music on Gramophone Records. 1.15, Radio Re-

Fiddle, Play, by Tom Burke; There's Something about a Soldier, from Soldiers of the King, by Jack Payne and his Band; Lily of Laguna, by Musical Dawson's Famous Choir of Canaries—Genuine Bird Singing with Orchestra; Big Hits of Big Hits, Part II, by Bob and Alf Pearson; Behold the Lord High Executioner, from the Mikado, by the Band of H.M. Welsh Guards. 12 Noon, Religious Address. 12.20 p.m., Sacred Music: Basse et dessus de trompette en dialogue (Clérambaut); In dulce júbilo (Buxtehude); Pastorale (Buxtehude); Toccata (Böckmann). 12.30, Bilboquet. 12.45, Press Review, News, and Weather. 1.0, Orchestral Concert of Light Music. 1.30 to 3.30, Programme in English by the I.B.C. 1.30, Concert of Gramophone Records. 3.0, Orchestral Concert: March, Old Comrades (Teike); Selection from The Quaker Girl (Monckton); Selection from Gipsy Love (Lehár); Selection from The Gondoliers (Sullivan); Selection from The Desert Song (Bombier). 3.30, Variety Concert. 4.0 to 5.0, Programme in English by the I.B.C. Tea-time Variety Hour. Mr. S. H. C. Williams announcing. 5.0, Third Lenten Sermon by the Reverend Father de la Boulaye, relayed from Notre Dame, Paris; Jesus, the Carpenter of Nazareth. 6.30, Variety Concert. 7.30 to 8.0, Programme in English by the I.B.C. Film Fans' Hour. Mr. S. H. C. Williams announcing. 8.30, News, Sports Notes, and Weather. 8.45, Orchestral and Vocal Concert. In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayd by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Programme to be announced. 9.30, Vesper Services, from Shadyside Presbyterian Church. 10.30, Pages of Romance, from New York. 11.0, Sealed Power, from New York. 11.30, Time Signal. 11.31, Weather Report. 11.32, Teaberry Sport Review. 11.37, Press News Reeler. 11.42, Strange Facts. 11.44, Temperature Report. 11.45, Don Lucas—Piano Opera. 12.0 Midnight, Time Signal and KDKA Orchestra. 12.30 to 3.45 a.m. (Monday), New York Relay. 12.30, Great Moments in History. 1.0, L'Heure Exquise. 1.30, Mexican Symphonic Marimba Orchestra. 2.0, Twenty Thousand Years in Sing Sing. 2.30, Walter Winchell. 2.45, The Pickens Sisters. 3.0, D. W. Griffith's Hollywood. 3.15, Lopez and the Two Doctors' Comic Congress. 3.45, The Westinghouse Glee Club. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News. 4.20, Alexander Roy (Tenor). 4.30, Jesse Crawford (Organist), from New York. 5.0, Time Signal and Good-night.

PORSGRUND.—See Oslo.

The World's Finest Radio Gramophone



Pre-eminent in design, construction and performance, the R.G.D. is the supreme achievement in Radio Gramophones.

Model 701, illustrated, is a 7 valve superheterodyne instrument having 7 tuned circuits. Tuning is by a single illuminated dial. This model is "little brother" to the famous Model 901, and its performance is similar. It is, however, produced at a lower price.

Price in Walnut 48 Guineas.

Model 901 is a 9 valve Supersonic instrument of amazing selectivity, sensitivity and quality of reproduction. The 9 tuned circuits are tuned by a single illuminated dial. Two balanced loud speakers are incorporated, thus ensuring amazing fidelity of reproduction. The volume control is effective in both radio and gramophone. Equipment includes a Garrard Electric Motor and K.G.D. Pick-up.

Price in Oak 80 Guineas.

Automatic Record Changer available on both models. Write for fully descriptive literature.

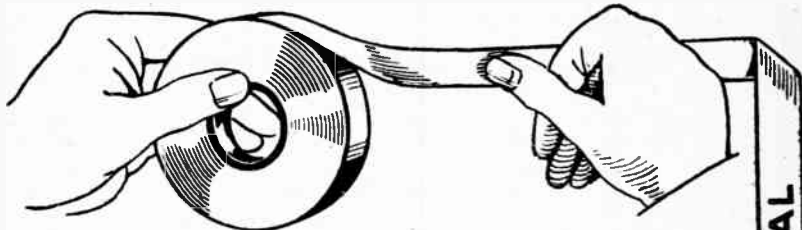
RADIO GRAMPHONE DEVELOPMENT Co. Ltd., 17/20, Frederick Street, Birmingham.

Manchester—17, Bridge St. London—40, Doughty St., W.C.



Model 701 D.C. or A.C.

R.G.D. the Hall Mark of Perfect Reproduction



Just press it up—anywhere

and it sticks. No staples or nails required, no wetting—just press it up around the room above the picture rail, up the staircase to the loft—in fact anywhere. One pull and it's down and leaves no mark. It is invisible when fitted. The PIX Invisible Aerial has a large conductive surface completely insulated. A

60ft. length is as good as an outside aerial if fitted at the same height inside the house. No wires to rust or corrode. The PIX Invisible Aerial does away with expensive outside poles, insulators and lead-in tubes. Use the world's most convenient and cheapest complete aerial—PIX. Beware of inferior imitations.

Ask your dealer for 2' length 3/6. Double length 3/6.

PIX INVISIBLE AERIAL

THE BRITISH PIX COMPANY, LTD., (Dept. 460), 118/26, Southwark Street, S.E.1.

PIX INVISIBLE AERIAL

MARCH 19th **SUNDAY** continued

port, relayed from the **Tour aux Pucés, Thionville**. 1.30 to 2.45, Agricultural Talk in French. 3.0, Concert of Italian Music by the Orchestra and Choir of the Conservatoire and Soloists, relayed from **Nancy**; Requiem Mass for Soloists, Choir and Orchestra (**Verdi**); Symphonic Fragments from *Le Concert sur l'eau* (Casella); Symphonic Poem, *Le Fontaine di Roma* (Respighi). In the interval, Talk on the Conservatoire of Music at Nancy. 5.15, Sacred Concert, relayed from St. Paul's Church, with a Bible Reading and Address. 6.15, Medical Talk in French: Serums and Vaccines. 6.30, Sports Talk. 6.45, Dance Music by the Station Orchestra. 7.30, Time Signal, News Bulletin and Sports Results. 7.45, Concert of Polish Music in Honour of Marshal Pilsudski, with an Address by the Polish Consul. Soloists: M. Lurici (Pianoforte) and M. Podgorski (Songs). Pianoforte Solo: Potpourri of Polish Music (arr. Lurici); Songs: (a) *Stach* (Noskowsky), (b) *Krakowiak* (Niwialowski); Pianoforte Solos: (a) *Kujawiak* (Wieniawsky), (b) *Mazurka*, Op. 7, No. 1 (Chopin); Songs: (a) *The Soldier's Song* (Moniuszko), (b) *Song of the First Brigade*. 8.45, Lottery Results and Announcements. 9.0, *Le Misanthrope*—Comedy in Verse in Five Acts (Molière). 11.0, Quintet Concert, relayed from **Radio-Coloniale (Paris)** (25.63 metres). 12.0 **Midnight** (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG**, 570 metres.—10.30 a.m., See **Leipzig**. 11.0, God's Praise from Children's Lips—Der geheiligte Tag—A Sequence of Children's Prayers and Chorals, Op. 25 (Franz Philipp), from the Festhalle, **Karlsruhe**. 11.45, Talk: The People's Theatre at Württemberg. 12 **Noon**, Topical Talk. 12.15 p.m., Gramophone Concert of Light Music. 1.5 (from **Karlsruhe**), Agricultural Talk. 1.30, Pianoforte Variations on the *Deutschlandlied*, Op. 18 (Alfred Reiff), played by the Composer. 2.0, Play for Young People, after a Book by Captain Marryat. 3.0, See **Frankfurt**. 3.55, Christian von Ompfeda recites from the Works of his Father, Baron Georg von Ompfeda-Krenz. 4.20, Accordion Concert. 5.0, Reading from the Works of Karl Maertin. 5.20, Clarinet Recital by Prof. Dreisbach. Pieces for Clarinet and Pianoforte, Op. 73 (Schumann); Variations for Clarinet and Pianoforte (Weber). 5.50, Sports Notes. 6.10, Choral Concert by Boys of the Black Forest, relayed from **Billingen**. 6.35, Folk Music on Gramophone Records. 7.15, Justus Kerner at Weinsberg—a Radio Sequence (Felix Buttersack). 8.15, Concert of German Music by the Stuttgart Philharmonic

Orchestra, conducted by Arthur Haessig. Triumphant March for Kullner's Tarpeja (Beethoven); Gavotte from *Idomeneo* (Mozart); Ballet Music from *Rosamund* (Schubert); War March from *Athalia* (Mendelssohn); Invitation to the Dance (Weber); *Albumbliatt* (Wagner); Two Hungarian Dances (Brahms); *Valse d'amour* (Reger); *Waltz from Der Rosenkavalier* (R. Strauss). 9.10, Time, News and Programme Announcements. 9.45, Programme from **Langenberg**. 11.0 (approx.), Close Down.

SUNDSVALL.—See **Stockholm**.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—12.15 p.m., News Bulletin. 12.30, Catholic Service. 1.0, Amusement Guide and Market Prices. 1.5, Orchestral Music. 1.15, Sound Film Music. 1.30, Accordion Solos. 1.40, Agricultural Report. 1.45, Protestant Service. 2.15, News Bulletin. 2.20, Orchestral Music. 2.45, Opera Comique Music: Duet from *Manon* (Massenet); *Vincenette à votre âge*, from *Mirella* (Gounod); *Les Clochettes* from *Lakmé* (Delibes); *Clair de lune* from *Werther* (Massenet); *Je suis très tendre*, from *Fortunio* (Messager). 3.15, News and Racing Results. 3.20, Viennese Music. 3.30, Airs from Opera: *Bacchante* from *Tannhauser* (Wagner); *Triumphant March* from *Aida* (Verdi). 3.45, Sound Film Music. 4.0, Music by an Argentine Orchestra. 4.15, Racing Results and News. 4.20, Popular Songs. 4.30, Dance Music. 5.0, Orchestral Music. 5.15, News and Racing Results. 5.20, Songs from Operetta. 5.30, Overture, *William Tell* (Rossini), by the Symphony Orchestra. 5.45, Melodies. 6.0, News Bulletin. 6.15, Cello Solos. 6.30 to 7.0, Programme in English by the I.B.C.; Concert of Dance Music: *Till To-morrow*; *Always in my Heart*; *Bon Voyage*; *Wheezy Anna*; *Sweetheart, I'm dreaming of you*; *Hey, young Fella*; *There's Something about a Soldier*; *Happy Times*; *Have you ever been Lonely?* 7.0, Airs from Opera. 7.15, News, Racing Results, and Market Prices. 7.25, Local News. 7.30, Accordion Solos. 7.45, Opera-Comique Songs. 8.0, Popular Songs. 8.15, Military Music. 8.30, Choral Music. 8.45, *Lehar Waltzes*. 9.15, Sound Film Music. 9.30, Orchestral Concert. 10.0, Songs from Opera-Comique. 10.15, North African News, followed by Concert for Listeners in Morocco. 10.30 to 12 **Midnight**, Programme in English

by the I.B.C. 10.30, **Paget Concert of Light Music**. Pianoforte Solo: *Memories of Maurice Chevalier*. Vocal Duets: (a) *When we are alone*. (b) *My Baby just cares for me*. Accordion Duet: *Poppies*; *Song, A little Love Nest for Two*; *Song, Body and Soul*; Pianoforte Solo: *Selection from Wonder Bar*; *Song, When your Hair has turned to Silver*; Vocal Duets: (a) *When Yuba plays the Kumba on the Tuba*. (b) *Little old Church in the Valley*; Accordion Duet: *Waltz, Gold and Silver*; Songs: (a) *Just a little Lady*, (b) *I certainly don't need you*; Pianoforte Solo: *Selection from White Horse Inn*. 11.30, Dance Music: *Marching along together*; *Mad about the Boy*; *She was only Somebody's Daughter*; *The Younger Generation*; *Marry me*; *Round the Bend of the Road*; *After To-night we say Goodbye*; *Love is the sweetest Thing*. 11.57, I.B.C. Good-night Melody. 12 **Midnight**, Weather and Announcements. 12.5 a.m. (**Monday**), Dance Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—8.40 a.m., See **Rome**. 8.55 to 10.0, Mass from the Cathedral of San Ginsto. 10.0 to 10.20, Agricultural Talk. 11.0 till Close Down. See **Turin**.

TRONDHEIM.—See **Oslo**.

TURIN

273.7 metres; 7 kW. Relayd by **Milan**, 331.5 metres; **Genoa**, 312.8 metres; and **Florence**, 500.8 metres.—8.40 a.m., **Giornale Radio**. 8.55 to 9.40, Interval. 9.40, Agricultural Talk. 10.0, Mass from the Church of the Annunciation, Florence. 11.0 to 11.5, Bible Reading. 11.30, Orchestral Concert. In the interval at 12 **Noon**, Time and Announcements. 12.30 to 1.30, Orchestral Concert of Light Music. 2.0, Transmission of an Opera. Sports Notes in the intervals. After the Opera, Football Results. 6.0, *Dopolavoro* Notes. 6.5, Light Music on Gramophone Records. 6.30, Time, Announcements, and Gramophone Records of Variety Music. 7.0, *Giornale Radio*, Sports Notes, and Gramophone Records (contd.). In the intervals, Talk, Theatre Notes, and **Giornale Radio**.

VIENNA

517 metres; 15 kW. Relayd by **Graz**, 352.1 metres; **Innsbruck**, 283 metres; **Klagenfurt**, 453.2 metres; **Linz**, 245.9 metres; and **Salz-**

burg, 218.5 metres.—10.30 a.m., Concert by the Vienna Symphony Orchestra, conducted by Anton Konrath; Soloist: Wilhelm Winkler (Cello); *Overture, Così fan tutte* (Mozart); *Concerto, Op. 66, for Cello and Orchestra* (Schubert); *Fourth Symphony in F Minor* (Tchaikovsky). 11.50 to 1.0 p.m., Orchestral Concert of seldom-played Works. 2.0, Time and Programme Announcements. 2.5, Book Review. 2.30, Talk on the *Neusiedler See*. 3.0, Military Band Concert, relayed from **London**. 3.55, Talk: Touring in Sicily. 4.25, Chamber Music: String Quartet in D Minor (Weigl); String Quartet in A (Mozart). 5.25, Heinrich B. Kranz reads from his own Works, with Introductory Talk by Oscar Bondiener. 5.55, A Guessing Competition, Chess and Bridge Lessons. 6.25, Time, Programme Announcements, and Sports Notes. 6.35, Part Relay of the Workers' Symphony Concert, from the *Konzertsaal*; Conductor, Dr. Anton Wern; Soloist, Desider Kovacs (Baritone); *Meine Blasmusik*, Op. 70a (Krenek); *Cantata*, Op. 28, for Voice and Orchestra, *Campagna* (Soprano), M. Saleck; (Tenor), and A. Vielhorski (Pianoforte). In the interval, Talk. 1.0 p.m., Veterinary Talk. 1.20, Police Band Concert. In an interval at 1.40, Talk. 3.0, Programme for Children. 3.25, Popular Music on Gramophone Records. 3.45, Talk: Marshal Pilsudski as a Commandant. 4.0, Military Songs. 4.20, Violin Recital by Mme. Uminska. 4.55, Programme Announcements. 5.0, Light Music. In the interval, News. 6.0, Miscellaneous Items. 6.25, Talk. 7.0, Concert. 8.20, Sports Notes. 8.30, Pianoforte Recital by Cludiva Arrau; *Sonata in G* (Mozart); Pictures from an Exhibition (Mussorgsky); *El Perto* (Albeniz); *Triana* (Albeniz). 9.15, Dance Music. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Weather Forecast. 11.15, Marshal Pilsudski Festival Programme, arranged by the Warsaw Rifle Club. An address followed by Concert by the Warsaw Philharmonic Orchestra, conducted by J. Oziminski, and Soloists: Ine. Czerniawska (Recitations), L. Szezepanska (Soprano), M. Saleck; (Tenor), and A. Vielhorski (Pianoforte). In the interval, Talk. 1.0 p.m., Veterinary Talk. 1.20, Police Band Concert. In an interval at 1.40, Talk. 3.0, Programme for Children. 3.25, Popular Music on Gramophone Records. 3.45, Talk: Marshal Pilsudski as a Commandant. 4.0, Military Songs. 4.20, Violin Recital by Mme. Uminska. 4.55, Programme Announcements. 5.0, Light Music. In the interval, News. 6.0, Miscellaneous Items. 6.25, Talk. 7.0, Concert. 8.20, Sports Notes. 8.30, Pianoforte Recital by Cludiva Arrau; *Sonata in G* (Mozart); Pictures from an Exhibition (Mussorgsky); *El Perto* (Albeniz); *Triana* (Albeniz). 9.15, Dance Music. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music.

ZURICH.—See **Schweizerischer Landesender**.



If you prefer a Cork-Tipped Cigarette.. SMOKE THE BEST

PLAYER'S

CORK TIPPED



10 for 6⁰ 20 for 11⁰

WHY Buy a new set? **ETA VALVES** make your old set like new!

These are not times to disregard economies. Other valves may cost more than ETA valves, but they give you no more for your money. **FREE:** Ask for the ETA "Comparative Table" No. 11b showing which ETA valves to use in place of your old ones. Technical advice gladly given. Write to

THE ELECTRICAL TRADING ASSOCIATION
Aldwych House, Aldwych, W.C.2.
SCOTTISH AGENTS: RADIOVISION LTD., 233, St. Vincent Street, GLASGOW, C.2.

AMERICAN SETS.
There are ETA valves for all types of American Sets.

PRICES FROM 5'6

ETA
THE INTERNATIONAL VALVE

As low in price as a really good valve can be

ATHLONE

413 metres; 60 kW.; and Cork, 224.4 metres.—1.30 to 2.0 p.m., Time, Weather, Stock Report and Popular Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.32, Gaelic Talk. 7.45, Talk by the Minister for Local Government: Housing in the Irish Free State. 8.0, Organ Recital by George Harrison, relayed from St. George's Church. 8.30, Contralto Solos by Eilis Denn. 8.50, Accordion Solos by Michael Grogan. 9.0, Tenor Solos by P. J. O'Toole. 9.20, Sketch presented by May Carey and Co. 9.50, The Station Orchestra. 10.30, Time, News, Weather and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 6.30, Quintet Concert, relayed from the Café de la Rambla. 7.20, Sports Notes. 7.30, Exchange Quotations and Talk in Catalan. 8.0, Light Music on Gramophone Records. 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations and Market Prices. 9.5, Humorous Review of the Week in Verse. 9.15, Concert of Sardanas. 10.0, Albeniz Concert by the Station Orchestra. 10.30, Catalan Radio Gazette. 11.0, News followed by Concert by the Station Orchestra. 11.30, Dance Music, relayed from the Excelsior Dance Hall. 12 Midnight (approx.), Close Down.

BARI

270 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Talk and Dopolavoro Announcements. 7.20, Giornale Radio and Press Review. 7.30, Time and Announcements. 7.35, Rigoletto—Opera (Verdi) on Gramophone Records. In the intervals, Talk and Theatre Notes. After the Opera, News.

BASLE—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.8 kW.—4.0 p.m., Dialogue in German. 5.55, Time Signal and Programme Announcements.—6.0, Recital of Folk Songs. 6.40, Popular Music on Gramophone Records. 6.50, Introductory Talk to the following Relay. 7.0, Relay of an Opera from the National Theatre. In an interval at 8.30 (approx.), News.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert from Berlin (Witzleben). 2.0, Talk for Women: Making Lace-edged Table Cloths. 2.30, Weather and Exchange. 2.45, Review of Books. 3.0, Talk: The Elementary Schools. 3.30, Concert from Berlin (Witzleben). 4.10, Talk: Dangerous Insects and their Stings. 4.30, Chamber Music—Old Arias and Cantatas: Sacred Concerto, Lobgesang (Heinrich Schütz); Aria with Flute (Bach); Bin ich denn so gar verlassen? (Telemann); Aria with Flute (Bach). 5.0, Talk: The Burning Question of the Expatriated Germans in Europe. 5.30, Making Music with Invisible Partners. 5.55, Weather and Announcements. 6.0, French Lesson. 6.30, A Poem. 6.35, Concert from Munich. 7.0, Hölderlin—A Radio Play (Veit Rosskopf). 8.0, Schubert Pianoforte Recital by Johannes Strauß: Moments musicaux, Op. 94, Sonata in G; Fantasia, Op. 78. 9.0, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—3.30 p.m., Concert by the Arthur Damp Orchestra: March, Hoch Heidecksberg (Herzen); Aus der Rügenischen Volkssuite (Damp); Waltz, An der schönen grünen Aranta (Kozak); Selection from Gri-gri (Lincke); Reverie (Leoncavallo); Selection from La Traviata (Verdi). 4.30, Dialogue: The Camera as a Political Weapon. 4.50, Talk for Young People on Water Sports. 5.10, Talk: The Upper Silesian Plebiscite. 5.55, The Witzleben Station informs its Listeners. . . . 6.0, Topical Talk. 6.10, Gramophone Concert: March, In Trene aliezeit (Pöhlend); Zither Quartet: (a) Waltz, Der Weg zum Herzen; (b) Ländler, Schwandladerhöher (Fremdhofer); Waltz, Moonlight on the Alster (Petras); March, Mein Regiment (Blankenburg). 6.30, Talk on Music. 6.40, Announcement. 6.45, The Call—a Radio Picture (Hermann Kasack, arr. Ottoleinz Jahn), Music by Karl Kuauer. 8.0, Variations on a Scottish Folk Melody, Op. 23 (Günther Raphael), by the Berlin Wireless Orchestra, conducted by Eugen Jochum. 8.20, Max Reger Commemoration, Introductory Talk, Variations and Fugue on a Theme by Mozart, Op. 132, by the Berlin Wireless Orchestra, conducted by Eugen Jochum. 9.10, Weather, News, and Sports Notes, followed by Dance Music from the Europa Pavilion. 11.0 (also relayed by

MONDAY

MARCH THE TWENTIETH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL B.B.C. chamber concert. "Pleasure Cruise," feature programme by John Watt. Guards Band programme. Light orchestral concert.

LONDON REGIONAL

MIDLAND REGIONAL Military Band concert from Bingley Hall. Chamber music from Queen's College, Birmingham.

NORTH REGIONAL

Three plays: "The Alarm," by Whittie Kerr, "Hotel Palatial," by G. Morley Swain, and "Advertising Drama," by George Beaumont.

ABROAD

BARI 7.35 p.m. Opera: "Rigoletto" (Verdi), on gramophone records.

BERLIN 8 p.m. Schubert pianoforte recital by J. Strauss.

BRUSSELS (No. 2) 8 p.m. The Symphony Orchestra, conducted by A. Meulemans.

EIFFEL TOWER 7.30 p.m. Concert arranged by the Composers' Society.

HAMBURG 6 p.m. Opera: "Lohengrin" (Wagner), from Bunswick.

LWOW 7 p.m. Opera: "Don Carlos" (Verdi), from the Municipal Theatre.

PALERMO PRAGUE 7.45 p.m. Chamber music. 6.30 p.m. Two comic operas: "A Painter's Downfall" (Zich), and "The Pig-Headed Peasants" (Dvorak).

ROME 4.30 p.m. Concert from the Royal Philharmonic Academy. 9 p.m. Light music.

STRASBOURG 8.30 p.m. Chamber music by the Cercle Artistique de l'Est.

WARSAW 7 p.m. Opera: "Don Carlos" (Verdi), from Lwow.

Zeesen on 31.38 metres, Röntgen—the History of a Discovery (arr. Werner Damprecht) on Gramophone Records.

BERNE—See Schweizerischer Landessender.

BEROMUNSTER—See Schweizerischer Landessender.

BODEN—See Stockholm.

BODO—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News, Exchange, and Market Prices. 7.40, Talk: Bordeaux a Hundred Years Ago. 7.55, Lottery Results. 8.0, Health Talk. 8.15, Charades. 8.20, News and Weather. 8.30, Concert of Classical and Modern Music; Soloists: Germain Dyrville (Soprano), M. Cahmpell (Violin), M. Baronk (Cello), M. Duffour (Oboe), and M. Grange (Pianoforte).

BRATISLAVA

279 metres; 14 kW.—3.10 p.m., Orchestral Concert: Overture, J. K. Tyl (Dvorak); Overture, The Kiss (Smetana); Overture, The Secret (Smetana); Overture, In the Well (Biodek); Overture, Matej Kopecky (Kricka); Overture (Weinberger); Slav Overture (Til). 4.10, See Prague. 4.50, Popular Music on Gramophone Records. 5.0, Pianoforte Trio Op. 102 (Reger) for the Sixtieth Anniversary of the Composer's Birth. 6.0, See Prague. 6.10, Talk for Women. 6.20, See Prague. 9.15 (approx.) Close Down.

BREMEN—See Hamburg.

BRESLAU

325 metres, 60 kW.; and GLEIWITZ, 253 metres.—12.5 p.m., Weather for Farmers. 12.10, Gramophone Concert of Marches and Dances from Opera. 12.45, Time, Weather, News, and Exchange. 1.5, Gramophone Concert of the International Dance Band. 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Market Prices. 2.40, Silesian History and Archives Commission. 3.0, Talk: The Work of the International Dance Band. 3.20, Orchestral Concert, conducted by Hermann Behr. 4.30, Market Prices. 4.35, Talk: The Technical Application of Acoustics. 4.55, News for the Intellectual World. 5.15, English Lesson. 5.40, Topical Talk. 6.0, Talk: The German Populations in the East European States. 6.25, Weather and Market Prices. 6.30, Organ Recital from the Sandkirche: Prelude in G (Bach); Allein Gott in der Höhe sei Ehr (Bach); Es ist das Heil uns kommen her (Bach); Lobt Gott, ihr Christen allzugleich (Buxtehude); Tocatta and Pastorale (Pachelbel); Tocatta in D Minor (Reger). 7.0, The Silent Fatherland—

Literary Programme. 8.0, Concert of Chamber Music from London. 9.0, Time, News, and Programme Announcements. 9.30, Answers to Technical Queries. 9.40, Impressions of a Journey in the East—through Mukden, Korea, and Japan in Two and a Half Days. 10.0 (approx.), Close Down.

BRNO

342 metres; 35 kW.—5.25 p.m., German Transmission: News, Elementary French Lesson, and Talk for Young People. 6.0, See Prague. 9.15, Talk in Esperanto. 9.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Variety Music on Gramophone Records. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by P. Lecmans: Corteggio d'Eroi (Scheinelli); Almeria (Mahy); Potpourri of Millöcker's Music (Morena); Pianoforte Solos (Paques): (a) Hot Piano, (b) Jazz-o-piano; Serenade (Padilla); Tango (Porces-Rollins); Dixie Night (Repper); Foxtrot-Fantasia (Kochmann). 2.0, Educational Programme. 5.0, Gramophone Concert of Folk Music from Belgium, Russia, America, Tahiti, Spain, Catalonia, Poland, Hungary, Armenia and France, and Hebrew Folk Songs. 6.0, Talk: Accidents at Work and Occupational Diseases. 6.15, Saxophone Solos on Gramophone Records: Rhapsody for Orchestra and Saxophone (Debussy); Schön Rosmarin (Kreisl); Golliwog's Cake Walk (Debussy). 6.30, Concert by the Small Station Orchestra, conducted by P. Lecmans: Selection from Sicilian Vespers (Verdi); Suite (Chavarrri); Serenade (Godard); Barenrolle for Pianoforte (d'Agreves); Two Pieces for Violin (Callémien); Selection from Quo Vadis? (Nougès). 7.15, Talk: The Colonisation of the Belgian Congo. 7.30, Theatre and Film Review. 8.0, Concert by the Radio Orchestra, conducted by Franz André. Soloist: Lola Martini. Match Parade (Wehle); Lying in the Hay. 8.15, Scenes from Volpone—Drama in Five Acts (Jules Romain-Stofan Zweig) after Ben Jonhson. 9.35, Concert (cont.). Three Songs (Jacobs); Jazz Fantasia (Caudrix). 10.0, Le Journal Parlé. 10.10, Hot Jazz with Commentary. 10.30, Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Lecmans. Soloist: M. Gilman (Flute). Overture, Tancredi (Rossini); Suite Lorraine (Bols. defferre); Au matin (Godart); Selection from Cavalleria Rusticana (Mascagni); Humorous

esque for Flute (Sary); Mattinata (d'Ambrosio); Foxtrot Bolero, Speak Easy (Geusler); Selection from L'ahaut (Yvain). 1.0 p.m., Journal Parlé. 1.10, Gramophone Concert: March, Pomp and Circumstance (Elgar); Hungarian Rhapsody (Popper); Norwegian Bridal Procession (Grieg); Spanish Dance No. 6 (Granados); Baci di Bombola (Tagliaferrri); Intermezzo from L'amico Fritz (Mascagni); Apres un rêve (Faure); Soirées de Vienne (Schubert-Liszt); Chanson villageoise (Popper); The Nursery Suite (Inghelbrecht); Visione lirica (Mascagni); Coronation March (Saint-Saëns). 2.0, Programme for Schools. 5.0, Concert by the Radio Orchestra, conducted by Franz André: March from Sigurd Jorsalfar (Grieg); Ballet Music from Milenka (Blocky); Valse triste (Sibelius); Humoresque (Dvorak); Malaguena (Sarasate); Negro Spirituals; Tuegos (Turina). 5.45, Programme for Children. 6.30, Gramophone Concert: Quartet in F (Haydn); Pagodes (Debussy); Russian Airs (Wienlawski); Rhapsodie limousine (Billaut); Valse romantique (Debussy); Overture, La farce du envier (Dupont). 7.15, Talk on the Youth Movement. 7.30, Programme by Pirreke Pirrewit. 8.0, Concert by the Symphony Orchestra, conducted by Arthur Meulemans. Soloist: Walter Weyler (Songs). Symphony No. 2 in B (Borodin); Dances from Prince Igor (Borodin); Selection from Der Rosenkavalier (R. Strauss); Songs; Petite suite (Rocls); Songs; Rhapsody, Piet Hein (Anrooy); March, Librado (Alpaerts). In the interval at 8.45, Talk: Women in Modern Society. 10.0, Journal Parlé. 10.10, Gramophone Concert of Dance Music.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra: March (Scheinelli); Waltz, Sobre las Olas (Rosas-Paschernegg); Overture, Rosamund (Schubert); Suite, Un Bal costumé (Rubinstein); Selection from The Rose of Stamboul (Fall). 5.0, News and Time Signal. 5.10, Talk. 5.25, Concert (cont.): Potpourri of Folk Tunes (Dron); Potpourri of Dances (Niemann). 6.0, Talk on Roumania; Her Folk Literature. 6.40, Light Music on Gramophone Records. 7.0, Quartet in D flat (Dohnanyi). 7.30, Talk. 7.45, Harp Recital. 8.5, Chamber Music: Prelude for Violin, Violin and Cello (Enesco); Serenade for Pianoforte, Violin and Cello (Sibiano). 8.35, Light Music and Romanian Music, relayed from the Enesco Restaurant. 9.0, News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 840 metres from 6.30 p.m. till Close Down. 4.0 p.m., Orchestral Concert. 4.40, Talk: Hungary's Share in the Art of the Renaissance. 5.10, Choral Concert. 6.0, Talk. 6.40, Concert by the Philharmonic Orchestra, conducted by Ernst Dohnanyi, the Palestrina Choir, and a Boys' Choir; Soloists: Frau Maria Bastides and Miska Lewitzky: Pianoforte Concerto in A Minor (Schumann); Third Symphony (Mahler). 9.0, News Bulletin. 9.15 (approx.), Dance and (igany Music, with Songs, relayed from the Café Patria.

CASSEL—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—11.0 a.m., Time Signal and Chimes from the Town Hall. 11.2, Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. 1.0 to 2.20, Interval. 2.20, Talk for Housewives. 2.30, Concert by Louis Prell's Instrumental Ensemble. Soloist: Sören Stein (Songs). Spanish March (Gyldmark); Waltz (Moe); Rogné Song Fantasy (Stohart); Anelido d'amore (Leoncavallo); Indian Love Song, By the Waters of Minnetonka (Lienraence); Slav Rhapsody (Friedemann); Neapolitan Serenade (Rivelli); Spanish Gipsy Dance (Marquina); Five Songs: The Woman in the Shoe (Brown); Serenade No. 2 (Heykens); Pfannkuchens Geburtstag (Link); Valse Impromptu (Oldenburg-Poulsen); The Red and Blue Blues (Edwards); First Suite (Rosenberg); Melody (Fall); Nächtliche Kunde (Urback). 4.40, Exchange and Fish Market Prices. 4.50, Talk: Educational Literature in the New Russia. 5.20, English Lesson. 5.50, Weather. 6.0, News. 6.15, Time Signal. 6.30, Talk: World History in Personalities. 7.0, Time Signal from the Town Hall. 7.1, Relay of a Meeting of the Workers' Radio Society and the Danish Radio Club. 10.0 News. 10.15, Dance Music by the Jens Wary Band, relayed from the Nimb Restaurant. In the interval at 11.30, Time Signal and Chimes from the Town Hall. 11.30 (approx.), Close Down.

CORK—See Athlone.

DANZIG—See Heilsberg.

DRESDEN—See Leipzig.

FECAMP

225.9 metres; 10 kW.—6.0 to 7.0 p.m., Programme in English by the I.R.C. C. Danvers-Walker, F. Lamping and B. McNapp announcing. 6.0, Military Band Concert for Hastings Listeners. Carry on (Dundas); Cupid's Army (Sievier); The Mad Major (Alford); The Elephant March (Ord Ilme);

MARCH 20th

MONDAY

continued

Down South (Myddleton); The Whistler and his Dog (Pryor); In the Sudan (Sebek); The Middy March (Alford). 6.30, Concert for Eastbourne Listeners. Pianoforte Solo: Whoopee Medley (Kahn); Songs: (a) When I met Sally at the Seaside (Tilsey), (b) I miss a little Missy (Coots), (c) You used to be my Sweetheart (Towers), (d) Going to Europe, gone (Evans), (e) They all make love but me (Dannré), (f) You don't have to tell me (Donaldson); Pianoforte Solo: Selection from Monte Carlo (Rohin). 7.0, Programme in French. 10.0 p.m. till Close Down, Concert of Dance Music. I'm following you; The Web of Love; I'm still at your Beck and Call; Livin' in the Sunlight, lovin' in the Moonlight; Paris; What good am I without you?; One little drink; Falling in love again; Parisienne Doll; With you; The Woman in the Shoe; Steppin' along; I may be wrong; Just an hour of Adoration; Do something. 11.0, Orchestral Concert. Maurice Chevalier Medley; Sous les toits de Paris (Moretti); When the Lilac blooms again (Rotter); In the Night (Tate); My Sunshine is you (Stolz); Happy Days and Lonely Nights (Fisher); Good-night, Sweetheart (Noble). 11.30, Plantation Songs. Bye and bye; I got a Robe; O dem Golden Slippers; Go down, Moses; Deep River; Poor old Joe; Nobody knows de Trouble I've seen; Every Time I feel de Spirit; River stay 'way from my Door. 12 Midnight, Music Hall Sketches. The Plumber's Mate; Duet, Getting a Job; Doo the Watter; Duet, Getting the Sack; Days of the Dugouts. 12.30 a.m. (Tuesday), Concert of Popular Songs. Ain't it great to be Home again (Gilbert); Cheer up and smile (Conrad); Silvery Moon (de Frank); Here comes Emily Brown (Conrad); I'm feathering a Nest (Milton); Every little Girl be seas (Akt); This is Heaven (Akt); Nobody cares if I'm blue (Clarke). 1.0, Organ Solos. The Kiss Waltz (Dubin); It happened in Monterey (Wayne); Steln Song (Vallee); Moonlight reminds me of you (Kahn); Roses of Yesterday (Berlin); Ah sweet Mystery of Life (Herbert); Rhapsody in Blue (Gershwin). 1.30, Concert of Popular Songs. I'm in the Seventh Heaven (de Sylva); Wishing and Waiting for Love (Clarke); Little Pal (Henderson); Am I blue? (Akt); Just Plain Folk (Gilbert); Sleep, Baby, Sleep (Tucker); The Heart of the Sunset (Nicholls); Take your to-morrow (Razof). 2.0, Concert of Dance Music. You just you; We just couldn't say Good-bye; Don't say Good-bye; In a Shanty in Old Shanty Town; When the Band goes marching by; She was only Somebody's Daughter; Bravo, Jim; Marching along together; After to-night we say Good-bye; Silver Hair and Heart of Gold; Good-bye Blues; Song of the Bells; Yes, Mr. Brown; Take a Spot of Happiness. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259.3 metres; 17 kW.; CASSEL, 245.9 metres; and TRIER, 259.3 metres.—12.30 p.m., Concert from Langenberg. 1.0, News. 1.10, Sponsored Concert. In the interval at 2.0, Weather Report, and at 2.10, Time and Exchange Quotations. 3.50, Exchange. 4.0, See Munich. 5.15, Exchange. 5.25, Talk: Industry and Public Burden. 5.50, English Lesson. 6.15, Time, Programme Announcements, Weather and Exchange. 6.20, Talk: Post horns. 6.45, See Berlin (Witzleben). 7.45, Trio in E Flat for Piano-forte, Violin and French Horn (Brahms), relayed from the Saalbau. 8.25, Love Poems read by Paul Lavens. 8.50, Tales of the War 1870-71, by Hessian Veterans. 9.10, Time, News, Weather and Sports Notes. 9.45, Serenade by the Station Orchestra, conducted by Hans Rosshard. Soloist: Udo Dammert (Pianoforte); Dance of the Flowers (Max von Schillings); Piano-forte Concerto, Op. 9 (Karl Marx); Love Scene from Romeo and Juliet (Berlioz); Variations on a Theme by Paganini (Brahms); Overture, Die Feen (Wagner). 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayed by Bremen; 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—5.45 p.m., Frankfurt Exchange and Hamburg Market Prices. 5.55, Weather Report. 6.0 (from Hanover), Lohengrin—Opera in Three Acts (Wagner), relayed from the Landestheater, Brunswick, in the intervals, Talk by Prof. Ludwig Leichtweis and News. 10.0, Time and News. 10.10, Topical Talk. 10.20, Ice Report. 10.25, Concert relayed from the Hotel Reichshof. MANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—12.5 p.m., Gramophone Concert of Italian Opera Music. March and Finale from Aida (Verdi); Duet from Aida (Verdi); Soprano and Baritone Duet from I Pagliacci (Leoncavallo); Serenade; Vocal Quartet from La Bohème (Puccini); Selection from Cavalleria rusticana (Mascagni); Bass Aria from Don Carlos (Verdi); Soprano Aria from Lucia di Lammermoor (Donizetti); Duet from Madam Butterfly; Overture, Susanna's Secret (Wolf-Ferrari). In the interval at 12.20, News. 1.30, Exchange Rates. 2.0, Market Prices. 2.30, Talk: Women in German Life—Old Questions and New Answers. 3.0, Concert by the Small Station Orchestra conducted by Eugen Wilcke. Overture, Lestocq (Anber); Suite, Sketches of Spain (Börschel); Selection from The Barber of Seville (Rossini); Sensualism (Hintze); Humoresque (Lalo); Overture, Ein Opernball (Henberger); Waltz, Wellen und Wogen (Joh. Strauss); Selection from Fatinitza (Suppé). 4.30, Talk: Do you speak German? 4.45, Review of Books. 5.15, Market Prices. 5.20, Ice Report. 5.30 (from Danzig), Talk: Street Music in Old Danzig, with Illustrations. 5.55, Talk: Memorable Days of the Week. 6.5, Elementary English Lesson. 6.35, Weather and News. 6.45, See Berlin (Witzleben). 8.0, Concert, by the Berlin String Quartet. Quartet in D, Op. 20, No. 4 (Haydn); Quartet in C, Op. 59, No. 3 (Beethoven). 8.50, Recitations from the Works of Friedrich Castelle. 9.15, Weather and News.

HILVERSUM

Announced HILVERSUM, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Christian Radio Society (N.C.R.V.). 12.10 p.m., Organ Recital from Amsterdam. 1.40, Talk for Schools. 2.15, Talk by A. J. Herwig. 2.55, Dressmaking Lesson. 3.25, Programme to be announced. 3.40, Programme for Seamen. 4.40, Vocal and Instrumental Concert. 6.10, Question Time. 7.10, Police Notes. 7.25, News Bulletin. 7.40, Concert by the Dutch Choral Society: Con Amore. 8.40, Talk by Dr. le Coindre. 9.0, Band Concert of Sacred Music. Soloist: A. de Vink-Verschoor (Soprano). In the interval at 9.35, News. 10.10, Gramophone Concert: Overture, Fingal's Cave (Mendelssohn); Scherzo from the Third Symphony in D Minor (Bruckner); Till Eulenspiegel's Merry Pranks (R. Strauss); Overture, The Mastersingers (Wagner); Piston Solo with Organ Accompaniment: The Holy City (Adams); Tenor Solo: Sei getreu bis in den Tod (Mendelssohn); Madrigal Choir: Wie wohl ist mir, o Freund der Seelen (Bach); Dank nu den Heer voor al Zijn zegeningen. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 5.5 kW.—11.40 a.m. till Close Down. Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Concert by the Small V.A.R.A. Orchestra, conducted by P. Duchant; Russian March (Strauss); Legend No. 4 (Dvorak); Pavane (Heckler); Suite (Ramsay); Minuet (Bocherini); Sine nomine (Altnik); Gramophone Records; Suppé Potpourri (Urbach); Réve (d'Ambrosio); Chimère (Fresco); Comedy Overture (A-letter); Gramophone Records: Selection from Hansel and Gretel (Humperdinck); Zoo zingt Holland (Slyuter-Hoogenboom); March (Lehár). 1.40 p.m., String Quartet Concert. 2.50, Recitations. 3.10, Concert by De Flierefluiter, conducted by H. de Groot. Gramophone Records in the intervals. 4.20, Programme for Children. 4.50, Variety Concert by the Vladimir Pique Trio. 6.25, Recitations. 6.40, Talk on Music. 7.35, S.O.S. Announcements. 7.40, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot. Soloist: Cora de Lange-van Rijn (Soprano). Selection from The Secret Marriage (Cimarosa); Songs with Orchestral Accompaniment: (a) Ah mio cor schernito sei (Handel), (b) Scbben crudele (Caldera), (c) Chi vuol la Zingarella (Paisiello); German Rocooc (Giinther). 8.10, The Voice of the Earth—Radio Play (Menzel). 9.40, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot. Soloist: Cora de Lange-van Rijn (Soprano). Serenade for String Orchestra (Volkman); Song with Orchestral Accompaniment, from Die Zerstörung Jerusalems (Klughardt); Réve (Vieuxtemps); Overture, Die Fledermaus (Joh. Strauss); Selection from Sylvia (Delibes). 10.30, News. 10.40, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., Talk on the Dead Sea. 6.15, Announcements and Popular Music on Gramophone Records. 6.25, Hunting Notes. 6.30 till Close Down, See Warsaw.

KAUNAS

1,935 metres; 7 kW.—6.0 p.m., Time Signal, Weather Forecast and News Bulletin. 6.30, Popular Concert. 7.0, Biological Talk. 7.20, Concert of Chamber Music. 7.50, Talk on Finance. 8.10, Variety Programme. 8.50, Sports Talk. 9.0, Concert. 9.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 40 kW.; and HELSINKI, 368.1 metres.—4.0 p.m., Talk. 4.20, German Lesson. 4.59, Time and Weather. 5.10, News in Swedish. 5.15, Agricultural Report. 5.25, A Sport Report (to be announced). 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert conducted by Wolf: Overture, Stradella (Flotow); Waltz, Dorfeschwalben aus Osterreich (Jos. Strauss); Four Indian Love Lyrics (Woodforde-Finden); Selection from Halka (Moniuszko); Shadow Dance from Dinorah (Meyerheer); Prelude, Chorus and Dance from Das Pensionat (Suppé); Spanish Rhapsody (Chabrier); Selection from The Little Dutch Girl (Kälman). In the interval at 1.0 p.m., News. 1.30, Meat Market Prices. 2.30, Economic Notes and Time. 2.50, Programme for Children. 3.20, Talks for Young People. 4.0, See Munich. 5.0, Talk: How long does a Book live? 5.25, Talk for Women. 5.45, Weather, Time, Economic Notes and Sports Results. 6.0, Talk: In Memory of the Upper Silesian Plebiscite in March, 1921. 6.30, News. 6.45, See Berlin (Witzleben). 8.0, Symphony in C (Schubert), by the Station Orchestra, conducted by Buschfütter. 9.5, News and Sports Notes. 9.25, Serenade, conducted by Wolf. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319 metres.—11.5 a.m., Concert of Folk Music on Gramophone Records. 12 Noon, News, Weather, Snow Report and Time. 12.15 p.m., Gramophone Concert of Classical Music. Exchange Quotations after the Concert. 1.0, Art and Film Review. 1.30, Advice for the Unemployed. 1.45, Anecdotes about the Musicians, Bruckner and Nibisch. 2.5 to 2.15, Agricultural Notes. 2.35, Exchange and Market Prices. 3.0, Instrumental Concert. 4.30, Weather and Time. 4.50, Exchange Quotations. 5.0, Talk: Disciplinary Problems in the Secondary Schools. 5.30, Pianoforte Recital by Janka Weinkauf. 5.50, Programme Announcements. 6.0, Talk: Social Politics in Italy. 6.30, Upper Silesia Programme on the Twelfth Anniversary of the Plebiscite. 7.0, The Fjords and Cliffs of Norway—Radio Sequence (Alfred Matusche). 8.0, News Bulletin. 8.10, Max Reger Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Soloist: Johanna Egli (Contralto). Hymnus der Liebe, Op. 136, for Contralto and Orchestra; Serenade in G, Op. 95, An die Hoffnung, Op. 224, for Contralto and Orchestra. 9.10, News Bulletin. 9.30 (approx.), Concert by the Dresden Soloists: Ensemble: Osokony Overture (Keler-Bela); Finnish Suite, In the Land of the Thousand Lakes (Juel-Frederiksen); Immortellen (Gungl); Andante from the First 'cello Concerto, Op. 14 (Göllermann); Norwegian Bridal Procession (Grieg); Gondoliera (Bossi); Nürmelades Lürthen (Jensen); Zigeuner - Sehnsucht (Nieklas - Kempner); Waltz, Op. 245 (Waldteufel); Egyptian March from Cleopatra (Oscar Strauss); Selection from Der Rastelbinder (Lehár). 10.30 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 7 kW.—5.30 p.m., Esperanto Lesson. 6.0, Serbo-Croatian Lesson. 6.30, Talk on Hygiene. 7.0, Symphony Concert, relayed from the Union Hall. 9.0, Time, News and Light Music.

LWOW

381 metres; 16 kW.—6.30 p.m.—See Warsaw. 7.0, Don Carlos: Opera (Verdi) relayed from the Municipal Theatre; In the first interval, News from Warsaw; In the second interval, Talk. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio-Gazette for Lyons and the South-East. 8.45, Concert relayed from the Con-

servatoire. Conductor: M. Charles Strouy. Soloist: M. Alexandre Bramin (Baritone), in Songs by Mozart, Respighi, Rubinstein, Rimsky-Korsakov, Vladimir Fohl and Glau-nov. News after the Concert.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—10.30, Popular Concert. 10.45, Radio Chronicle. 11.0, Popular Concert (contd.). 11.45, Sports and Bull-fighting Notes. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Soprano and Tenor Song Recital, and Request Gramophone Records. 8.15, News. 8.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—5.30 p.m., German Transmission: Reading by Anna Goldstein from her own Works, and Talk: The Treatment of Insanity in the Past and To-day. 6.0, See Prague. 9.15 (approx.), Close Down.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—4.25 p.m., The Swan Lake: Ballet (Tchaikovsky, relayed from the Grand Theatre. 8.0, Talk in English: The Work of a Railway Employee.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—4.0 p.m., Orchestral Concert. 5.15, Talk: People and Books. 5.45, Talk for Workers. 5.55, Time, Weather and Agricultural Notes. 6.5, Talk on the German Navy. 6.25, Variety Programme. The Station Choir and the Small Station Orchestra. Soloists: Gudrun Müller (Soprano), Ingeborg Röss (Coloratura Soprano), Robert Hager (Baritone) and Edmund Samaló (Tenor). Prelude to Hansel and Gretel (Humperdinck); Two Ballads for Baritone (Loewe); (a) Fredericus Rex, (b) Tom the Rhymer; Schlierintermezzo from Mona Lisa (Schillings); Aria from Guglielmo (Thillier); Prelude to As you like it (Zieher); Waltz Scenes from Intermezzo (R. Strauss); Reading of Anecdotes about Actors, Singers and Famous Conductors (Noether); Selection from The Tales of Hoffmann (Offenbach). 7.45, Reading of a Speech on Patriotism (Fichte). 8.5, Symphony Concert, conducted by Hans A. Winter. Soloist: Emanuel Gatscher (Organ). Brandenburg Concerto No. 2 in F for Trumpet, Flute, Oboe, Violin and Strings (Bach); Concerto in Three Movements for Organ and String Orchestra (Förster); Variations for Full Orchestra on a Theme by Mozart (Reger). 9.20, Time, Weather, News and Sports Notes. 9.45, Concert from Frankfurt. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 452.2 metres; and Rjukan, 447.1 metres.—4.0 p.m., Concert by the Radio Ensemble. Trot de Cavalerie (Rubinstein); Boston, Asa (Königsberger); Barcarolle (Tchaikovsky); Scandinavian Intermezzo (Söderman); Gipsy Song (Borganov); Cavatina (Raiff); Selection from Once upon a Time (Lang-Müller); Barcarolle (Mozzilli); Two Melodies (Zerkovitz). 5.0, German Lesson. 5.20, Talk. 6.0, Announcements, Weather and News. 6.30, Educational Talk. 7.0, Time Signal. 7.1, Pianoforte Recital by Mm. Thora Bratt. 7.0, Recitations. 7.55, Jazz Melodies, sung by the Two Jazz Troubadours. 8.10, Political Review. 8.4, Weather and News. 9.0, Topical Talk. 9.15, Light Music on Gramophone Records. 9.45 (approx.), Close Down.

OSTERBUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—7.0 p.m., Dopplavolo Notes, Tourist Talk, Agricultural Society and Giornale Radio. 7.20, Light Music on Gramophone Records. In the interval at 7.30, Time Signal and Announcements. 7.45, Concert of Chamber Music. G. Scala (Pianoforte), M. Pollini (Mezzo-Soprano), Rosa Alfano (Harp) and S. Gallesi (Oboe). Pianoforte Solo: Theme with Variations (Amani); Mezzo-Soprano Solos: (a) Chi tardi arriva (Pieraccini), (b) E uno e due e tre (Pieraccini); Harp Solo: Autumn (Thomas); Concerto for Oboe

MARCH 20th

MONDAY

continued

and Pianoforte (Prestini); Harp Solo: Hallad (Hasselmanns); Mezzo Soprano Solos (Pieraccini): (a) E lo mio diano, (b) Beppino Rubacaroni, (c) Fior di mortello; Pianoforte Solos: (a) Etude (Chopin), (b) Waltz ('Chopin), (c) Polka (Glazunov). After the Concert, Light Music on Gramophone Records. 9.55, News Bulletin.

PARIS

EFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and six-dot signals).—5.45 p.m., Le Journal Parlé. 7.20, Weather Report. 7.30, Concert arranged by the Composers' Society: String Quartet (Luty); Andante and Scherzo for Oboe, Bassoon and Pianoforte (Plancl); Songs: Les heures du foyer (Pié), with the Composer at the Pianoforte; Sonata for Pianoforte and Violin (Chapuis). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Hot Jazz on Gramophone Records. 7.30, Sponsored Concert. 8.0, Medical Talk. 8.5, Talk on Aviation by Maurice Bourdet. 8.15, Interval. 8.30, Sponsored Concerts. 10.40, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont.). 7.45, Gramophone Records: Selection from The Miracle (Huc); Adagio from the Fifth Symphony (Mahler). 8.0, Press Review and Weather. 12 Noon, Concert of Opera Music by the Radio Paris Orchestra: Overture: Tamer (Rossini); Selection from A Masked Ball (Verdi); Gramophone Records: Three Arias from Hamlet (Thomas); Selection from Patrie (Paladilhe); Overture: Sigurd (Royer). 1.0 p.m., Exchange; News and Weather. 1.5, Cello Recital by M. de Vlioger. 1.30, Exchange. 1.45, Ballet Music by the Radio Paris Orchestra; Ballet Music from Feramors (Rubinstein); Kermesse flamande from Milena (Blocks). 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Report. 6.30, Elementary English Lesson. 6.50, Film Review. 7.0, Review of New Books. 7.20, Concert by the Radio Paris Orchestra: Overture: Joseph (Méhul); French Suite (Perillon); Petites musiques (Schmitt). 7.45, Commercial Prices and News. 7.50, Gardening Talk. 8.0, Literary and Dramatic Programme. In the intervals at 8.30, News and Weather; at 8.40, Review by Paul Reboux and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W5XK on 48.86 metres and 25.27 metres.—8.15 p.m., U.S. Marine Band, from New York. 9.0, Work-a-Day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Report. 9.45, Blue Ridge Buddies. 9.57, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Programme to be announced. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Booth Tarkington's Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Temperature Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Weather Report. 11.30, KDKA Orchestra. 11.45 to 3.30 a.m. (Tuesday), New York. 11.45, Today's News, by Lowell Thomas. 12.0 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Tastyest Jesters. 12.30, Five Star Theatre—Marx Brothers. 1.0, Cluquet Club Eskimos. 1.30, Time Signal and Don Carney—Talk for Dog Lovers. 1.45, Phillips Lord in The Country Doctor. 2.0, Sinclair Minstrels. 2.30, Jack Frost Melody Moments. 3.0, The Sizzlers. 3.15, Vic and Sade. 3.30, Bridge School of the Air, by E. Hall Downes. 3.45, Sannel Di Prinio (Tenor). 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Smith Ballou and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, Hotel Bismarck Orchestra, from New York. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Bratislava. 4.10, Talk. 4.20, Talk. 4.30, Programme for Children. 4.50, Light Music on Gramophone Records. 5.5, Agricultural Programme. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Two Talks: (a) The Protection of Birds, (b) Films. 6.0, Chimes. 6.1, News Bulletin. 6.10, English Lesson. 6.20, Talk on the following Transmission. 6.30, Report from the National Theatre. Part I: A Painter's downfall—Comic Opera in One Act (Zich); Part II: The Pig-headed Peasants—Comic Opera in One Act (Dvorák). In the interval, Time Signal. 9.0, Time Signal. 9.1, News Bulletin. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE, 680 metres;** and **GENEVA, 760 metres.**—5.30 p.m. (from Lausanne), German Lesson. 6.0 (from Geneva), Weather Forecast, News Bulletin and Announcements. 6.30, (from Lausanne), Lesson for Farmers. 7.0 (from Lausanne), Concert of Light Music, relayed from the Bel-Air Metropole. 7.35 (from Lausanne), Mandoline and Guitar Concert. 8.0 (from Lausanne), Variety Programme. 9.0, News Bulletin and Weather Forecast. 9.15 (from Lausanne), Arcis—Opéra-Ballet in One Act (Lagarde), relayed from the Municipal Theatre. 10.30 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Popular Concert by the station Quartet with Songs.

RIGA

525 metres; 15 kW.—6.5 p.m., Concert, relayed from the Conservatoire. Introductory Talk by Professor J. Medins. Two Extracts from the String Quartet (Wihlols). Songs: Trio (Smetana). 7.30, News. 8.0, Weather and News. 8.10, Popular Concert, conducted by J. Medins. 9.0 (approx.), Close Down.

RJKAN.—See Oslo.

ROME

Call IRO, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 2RO, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30 a.m., Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Concert from Turin. In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30, Quartet Concert from the Royal Philharmonic Academy. 6.0 (Naples), Shipping and Sports Notes. 6.10, Agricultural and Dopolavoro Notes. 6.20, Giornale Radio. 7.0, Time, Announcements, and Light Music on Gramophone Records. 7.15, Talk on Rembrandt. 7.30, Sports Notes and Tourist Report. 7.45, Sponsored Programme (to be announced). Talk in the interval. 9.0, Concert of Light Music: Nuttate a mare (di Capua); Songs with Chorus: (a) Carmela mia (Cannio), (b) Torna a Surriento (de Curtis), (c) Albergo e' l'alleria (Gambardella); Songs with Chorus: (a) Focchie c'arraginate (Falvo), (b) Mamma mia che vo'sape (Nutille), (c) Carciolla (di Capua). Duets: (a) Luna nova (Costa), (b) I m'arriorde 'e te (de Curtis), (d) Amor consente (Mario); Song with Chorus, Napule belle (de Chiara); Catari (Costa); Core ingrato (Cardillo); E tre torna (Ricciardi); Maria Marl (Di Capua); Torna maggio (Di Capua); Song with Chorus, Ndringhete ndra (de Gregorio). 9.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—7.30 p.m., Revolving Stage, from New York. 8.0, Talk from New York. 8.15, Antoinette Halstead (Contralto). 12 Midnight, Boy Scout Programme. 12.15 a.m. (Tuesday), Stock Reports. 12.30, Gold Medal Band. 12.45 to 2.30, New York Relay. 12.45, The Goldbergs; Comedy Sketch. 1.0, Soconyland Sketches. 1.30, Voice of Firestone. 2.0, A. and P. Gospels. 2.30, Buick Programme: Whiteman's Orchestra, followed by Programme Resume.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE, 244.1 metres;** and **BERNE, 245.9 metres.**—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Basle), Variety Music on Gramophone Records. 12 Noon (from Basle), Talk: The Care of Swiss Children in Foreign Countries during the Holidays. 12.15 p.m. (from Basle), Gramophone Concert (cont.). 12.35, Weather and Exchange. 12.45 to 2.30, Interval. 2.30 (from Zürich), Concert of Light Music by the Radio Orchestra. 3.0 (from Basle), Concert by the Radio Quartet. 4.0 (from Basle), Schubert and Schumann Song Recital on Gramophone Records. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from Zürich), Talk by Dr. Hermann Schneider on Romania. 6.0, Time and Weather. 6.15 (from Zürich), Elementary English Lesson. 7.0 (from Zürich), Sixty

Minutes—Radio Play (Friedrich Porges). 8.0, Concert by the Radio Orchestra. 8.30, Weather and News. 8.40, Orchestral Concert, conducted by Hofmann. 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—12 Noon, Broadcast for Schools, relayed from Uppsala (453.2 metres). 3.45, Shorthorn Lesson. 4.0, Weather. 4.5, Accordion Music, relayed from Östersund. 4.40, Reading. 5.0, Variety Music on Gramophone Records. 5.55, Parliamentary Review. 6.15, Weather and News. 6.30, Variety Programme. 7.15, Talk from Malmö (231 metres). 7.45, Soloist Concert: Heinrich Albert (Guitar), Carl Achatz (Flute), Sven Blomquist (Violin), and Carl Christensen (Cello); Guitar Solos: (a) Minuet, Op. 11, No. 5 (Ferran Sor), (b) Impromptu (Kaspar Mertz), (c) Arabian Serenade (Tarrega); Quartet for Flute, Guitar, Violin, and Cello (Schubert). 8.15, Running Commentary on the Wrestling Match, relayed from Helsinki (368.1 metres). 9.0, Light Music. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Popular Music on Gramophone Records. 12.45 p.m., News Bulletin. 1.0, Time Signal. 1.1, Market Prices. 1.5, Gramophone Concert of Variety Music. 2.0 to 5.0, Interval. 5.0, Orchestral Concert, conducted by M. Roskam. 6.0, Literary Talk in French. 6.15, Talk in German. 6.30, Orchestral Concert, conducted by Maurice de Villers: Overture: Fidelio (Beethoven); Selection from The Magic Flute (Mozart); Moment musical (Schubert); Minuet (Schubert); First Suite from L'arlesienne (Bizet); Dance macabre (Saint-Saëns); Marche joyeuse (Chabrier). 7.30, Time Signal. 7.31, News Bulletin. 7.45, Gramophone Concert: Prelude in C Sharp; The Volga Boatmen; Indian Lament (Dvorák); Danche de Piques sur la mer (Dupont); Scherzo (Tchaikovsky); Legend Wieniawsky; Ballet Music from The Firebird (Stravinsky). 8.20, Lottery Results and Announcements. 8.30, Chamber Music by the Cercle artistique de l'Est, relayed from Nancy: Sonata in A for Violin and Pianoforte (César Franck); Baritone Solos: (a) Liebestreu (Brahms), (b) L'âne blanc (Hüe); Cello Solos: Suite, No. 2 (Caix d'Hervelois-Feuillard); Recitations: (a) Non! Merri! from Cyrano de Bergerac (Rostand), (b) Le soir d'une bataille (de Lisle); Pianoforte Solos: (a) Dance (Debussy), (b) La Leggierosa (Liszt); Violin Solos: (a) Berecene (Bachelet), (b) Gipsy Melodies (Sarasate); Cello Solo: Barcarolle nocturne (Bachelet).

STUTT GART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG, 570 metres.**—12.30 p.m., Concert from Langenberg. 1.0, Musical Programme, arranged by the Post Office. 1.15 (from Karlsruhe), Musical Programme arranged by the Post Office. 1.30, Spanish Lesson. 2.0 to 2.30, Elementary English Lesson. 4.0, See Munich. 5.15, Time, Weather and Agricultural Notes. 5.25, Talk: The Printing Trade in Germany. 5.50, See Frankfurt. 6.15, Time and News. 6.30, Variety Music on Gramophone Records. 6.45, See Berlin (Witzleben). 8.0, Concert of Old Dance Music by the Radio Orchestra, conducted by Gustav Görlich. 9.0, Time, News, Weather and Programme Announcements. 9.25, Chess Lesson. 9.50 (approx.), Programme from Frankfurt. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW. 6.0 p.m., News Bulletin. 6.15, Ballet Music from Faust (Gounod). 6.30, Solos. 6.45, Operetta Music. 7.0, Accordion Solos. 7.15, News and Racing Results. 7.25, Local News. 7.30, Opera Music. 7.45, Orchestral Music. 8.0, Balalaika Music and Russian Songs: Gipsy Songs of the Caucasus; Moonlight; Minuet. 8.15, Military Music. 8.30, Viennese Music. 9.0, Songs of Yesterday. 9.30, Orchestral Music: Wedding March (Mendelssohn); La Housarde (Ganne); Selection from Les cents vierges (Leocq); Wedding Waltz (Lincke); La Habanera (Laparra). 10.0, Airs from Opera: Arias from Siegfried (Wagner); Hérodiade (Massenet), and Sigurd (Reyer). 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Request Concert. 11.30 to 12 Midnight, Programme in English by the I.B.C. 11.30, I.B.C. Half Hour: Russian Potpourri (arr. Leonief); I heard a Thrush at Eve (Eberhardt); For you alone (Geel); Waltz, Tales from the Vienna Woods (Joh. Strauss); Hungarian Dances (Brahms); La Danza (Ros-

sini); Le Rêve from Manon (Massenet); Waltz, Wine, Woman and Song (Joh. Strauss). 11.57, I.B.C. Goodnight Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Tuesday), Popular Songs. 12.15, Dance Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.30 p.m., See Rome. After the Relay: Programme from Turin. 6.0, Variety Music on Gramophone Records. 6.20 to 8.35, See Turin. 6.35, Orchestral Music from the Cafe Danica. 7.0 (approx.) till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genua, 312.8 metres; and Florence, 500.8 metres.—4.30 p.m., See Rome. After the Concert: Giornale Radio, Agricultural and Dopolavoro Notes. 6.0, Light Music on Gramophone Records. 6.20, Giornale Radio. 6.30, Time, Announcements, Tourist Report and Gramophone Records (cont.). 7.0, Giornale Radio, Weather and Gramophone Records (cont.). 8.0, Soprano and Baritone Song Recital, with Orchestral Accompaniment. 9.0, A One-Act Comedy. After the Comedy, Popular Music on Gramophone Records. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religions Information in Italian. 7.0 to 7.15 p.m., Religions Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—3.45 p.m., Concert of Light Music by Karl Haupt and his Band. 4.50, Dramatic Criticism. 5.10, Talk: Books and Works of Reference in Connection with the Week's Talks. 5.20, Art Talk: Raphael and his Predecessors. 5.45, English Lesson. 6.10, Time, Weather and Programme Announcements. 6.20, Johann Strauss Concert by Josef Holzer and his Band. Soloist: Adele Kern (Soprano). Festmarsch; Waltz Song from Indigo; French Polka, L'Enfautillage; Favorit-Polka; Aria from Carnival in Rome; Prelude to the Third Act of Jakuba; Waltz, Wo die Zitronen blüh'n (arr. Genée-Riedinger); New Pizzicato Polka; Waltz, Frühlingsstimmen; Song from Jakuba; Czardas from Cagliostro; Song from The Queen's Kerebief; Quick Polka, Tritsch-Tratsch. 7.20, Jakob Wassermann reads from his own works. Introductory Talk by Dr. Wilhelm Bielik. 7.45, Part Relay of the Max Reger Anniversary Concert from the Musikvereinsaal. The Vienna Symphony Orchestra conducted by Oswald Kabasta. Soloist: Franz Schütz (Organ). Choral Fantasia in D Flat, Op. 51, No. 2; Alle Menschen müssen sterben; Variations and Fugue in E, Op. 100, on a Theme by Johann Adam Hiller. 8.45, News, Weather and Announcements. 9.0, Dance Music by Fred Cleucent and his Band, relayed from the Graben Café, with Song Refrains by Egon Gross.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Popular Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Answers to Correspondence. 2.35, Wireless Notes. 2.50, Popular Music on Gramophone Records. 3.25, Elementary French Lesson. 3.40, Talk on Economics. 4.0, Recital on Two Pianofortes relayed from Cracow, 312.8 m.; Suite; Scarlattianna (Casella); Concert Duet in the Style of Mozart (Busoni); Impromptu (Schumann-Reinecke); Scherzo from En blanc et Noir (Debussy); In the interval: Announcements. 4.35, Song Recital by Mme. Szretter: Plaisir d'amour (Martini); Air from the Cantata, Also hat Gott die Welt geliebt (Bach); Air from The Magic Flute (Mozart); Waltz from Romeo and Juliet (Gounod); Melody (Bettinelli); Ballg-flüster (Meyer-Helmund). 4.55, Programme Announcements. 5.0, Educational Talk. 5.20, Current Events. 5.25, Light Music. 6.0, Miscellaneous Items. 6.10, Agricultural Talk. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Don Carlos: Opera (Verdi), relayed from Lwów, 381 m. In the intervals: Sports Notes; Radio Journal and Answers to Correspondence. 10.15, Aviation Weather Report and Police Notes. 10.20, Dance Music.

WILNO

563 metres; 16 kW.—5.55 p.m., Miscellaneous Announcements. 6.0, Reading. 6.10 p.m., Miscellaneous Items. 6.15, Sports Notes. 6.30, See Warsaw. 7.0, Don Carlos—Opera (Verdi) relayed from Lwów 788 (381 metres). 10.15, See Warsaw. 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Popular Music on Gramophone Records. 6.0, Variety Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.10, British Market Prices. 7.20, News. 7.30, Time Signal. 7.32, Talk. 7.45, Talk by Maura Laverty; Cradles of Patricia Lore (I). 8.0, Concert by the Station Symphony Orchestra, conducted by Dr. Vincent O'Brien, relayed from the Mansion House, Dublin. Soloists: Renee Flynn (Soprano) and P. J. Duffy (Baritone). 10.30, Time Signal, News, Weather, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. In the interval: Announcements. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations and Talk on Art. 8.0, Light Music on Gramophone Records and News. 9.0, Chimes from the Cathedral; Weather Forecast; Messages to Seamen; Exchange Quotations and Market Prices. 9.5, Sponsored Programme. 9.30, Dance Music by the Mozart Dance Orchestra. 10.15, El Pájaro Azul (The Blue Bird); Musical Comedy in Two Acts (Rafael Millán). 11.0 (in an interval), News Bulletin. 12 Midnight (approx.). Close Down.

BARI

270 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Talk and Dopolaro Announcements. 7.20, Giornale Radio and Press Review. 7.30, Time and Announcements. 7.35, Choral Concert, conducted by Biagio Grimaldi; Teobrac factae sunt for Four Voices (da Vittoria); La romanesca for Four Voices (Ricordi); Coro dei gondolieri and Barcarolle for Four Voices from Marino Faliero (Donizetti); Cradle Song for Four Voices (Cremesini); Il grillo for Four Voices (Seghizzi); Il canto dei pescatori for Three Voices and Pianoforte (Boschi); Beatus vir—Motet for Solo Soprano, Four Voices, Pianoforte and String Orchestra (Rossi). 9.30, Quintet Concert. 10.30, Concert from the Grand Hotel, Moderno. Miscellaneous Notes in the intervals. 9.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.8 kW.—4.0 p.m., Talk. 5.55, Time and Programme Announcements. 6.0, Talk. 6.30, Popular Music on Gramophone Records. 7.0, Concert, relayed from Zagreb (307 metres). 9.0, News, followed by Ciginy Music, relayed from the Petrosacka Zadruza Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert from Berlin (Witzleben). 2.0, Programme for Young People: A Dialogue between a Student and an Apprentice. 2.30, Weather and Exchange. 2.45, Alfred Hein reads from his own Works. 3.0, Talks for Women. 3.30, See Leipzig. 4.10, Talk: How much does the Preservation of Natural Beauty Spots owe to Hunting? 4.30, Pianoforte Sonatas, Op. 49 and 79 (Beethoven). 5.0, Talk: Individual and Collective Industry. 5.25, The Understanding of Music—a Dialogue with a Radio Employee. 5.45, An Introduction to the Opera Electra. 5.55, Weather and Announcements. 6.0, Book Day Programme for all German Stations, Speeches by German Authors. 7.0, Electra—Opera in One Act (Richard Strauss). 9.0, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Concert from Hamburg. 11.0 (approx.). Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—3.30 p.m., Recital on the Wurliizer Organ, relayed from the Ufa-Palast in the Zoological Gardens: Selection from I Pagliacci (Leoncavallo); Moment musical (Schubert); Minuet (Mozart); Variations on Kuckuck, ruff's aus dem Wald (Reutter); Serenade (Toselli); Potpourri from Ein Lied für dich (Jurmahn and Kaper). 4.0, Song Recital by Karl Oskar Dittmer (Baritone); Kriegers Ahnung (Schubert); An eine Quelle (Schubert); Irrkant (Gebel); Der Rosenstock (Gebel); Faisseise (Wolf); Wo find ich Trost (Wolf). 4.25, A Criticism of Albrecht Dürer's Picture Melancholie. 4.40, Dialogue for the Younger Generation. 5.0, Pianoforte Concerto in C Minor, Op. 115 (Kam), by Celeste Chop-Groeneveldt and the Radio Orchestra. 5.30, Technical Book Review. 5.55, The Berlin Station informs its Listeners. 5.55, Announcement. 6.0, Book Day Programme for all German Stations; Speeches by German Authors. 7.0, From North and South—Bunter Abend. In the interval at 7.45, A Play in North German Dialect. 9.0, Weather, News, and Sports Notes. 9.30, See Hamburg. 11.0 (approx.). Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

TUESDAY

MARCH THE TWENTY-FIRST

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Dr. John Baker: "Biology in Everyday Life." Song recital.
- LONDON** "Seven Days' Sunshine," a musical cruise, by Henrik Ege. Military Band.
- REGIONAL** Music of Rudolf Friml, orchestral concert.
- MIDLAND**
- REGIONAL** Concert from Houldsworth Hall, Manchester.
- NORTH**
- REGIONAL** Concert by some of the winners at the Inter-Collegiate Eisteddfod of the University of Wales. Instrumental concert. Lessons in Scottish dancing.
- WEST**
- REGIONAL** Operatic programme.
- SCOTTISH**
- REGIONAL**
- BELFAST**

ABROAD

- ATHLONE** 8 p.m. Symphony concert from Dublin.
- BERLIN** 7 p.m. Opera: "Electra," by Richard Strauss.
- EIFFEL** 7.30 p.m. "Spring in Music," by the Radio Orchestra.
- TOWER** 7.20 p.m. Selections of opera music.
- HAMBURG** 9.10 p.m. "Justice," a play by J. Galsworthy.
- HILVERSUM** 7.10 p.m. Pianoforte recital by I. Stepanova-Kurzova.
- PRAGUE** 8.45 p.m. Chamber music.
- RADIO PARIS** 6.30 p.m. Bach concert, conducted by M. de Villers.
- STRASBOURG** 8 p.m. Opera: "Khovantchina" (Mussorgsky), from the Scala, Milan (relayed by Trieste and Milan).
- TURIN** 7.25 p.m. The Station Orchestra, conducted by J. Oziminski.
- WARSAW**

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News and Exchange. 7.40, Talk for Women. 7.55, Lottery Results. 8.0, Talk: Treatment for Asphyxiation and Drowning. 8.15, News and Weather. 8.30, Fauré Concert by the St. Gervais Choirs.

BRATISLAVA

279 metres; 14 kW.—5.25 p.m., Gramophone Records of Popular Music. 5.45, Slovak Spelling Lesson. 6.0, See Prague. 6.10, See Brno. 6.50, See Prague. 7.35, A Play in Three Acts. 8.35, See Prague. 9.15, Ciginy Band Concert, relayed from the Astoria Café. 10.0 (approx.). Close Down.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 60 kW., and GLEIWITZ, 253 metres.—12.5 p.m., Weather for Farmers. 12.10, Gramophone Concert of Springtime Music. Choir: Song from The Seasons (Haydn). An den Frühling, Op. 23, No. 6 (Grieg); The Rustle of Spring (Sinding); Soprano Solo, Frühlingsstraum (Schubert); Pianoforte Solo, Spring Song (Mendelssohn); Waltz, Die Fenster auf, der Lenz ist da (May-Joh. Strauss); Waltz, Frühlingsstimmen (Joh. Strauss). 12.45, Time, Weather, News and Exchange. 1.5, Gramophone Concert of Wedding Music: Overture, Figaro (Mozart); Wedding March from A Midsummer Night's Dream (Mendelssohn); Selection from Der Freischütz (Weber); Wedding Dance from The Wood Pigeon (Dvorak); A Wedding Day on Troldhaugen (Grieg); Wedding Music (Jensen); Bridal Song from Lohengrin (Wagner). 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Market Prices. 2.40, Folk Song Play for Children. 3.10, Song and Pianoforte Recital by Hella Böer (Soprano) and Hella Leinpert-Weiss (Pianoforte): Sonata in F Sharp Minor, Op. 2 (Brahms); Three Songs (Teichmüller): (a) Vor der himmlischen Tür, (b) Elfenarbeit, (c) Erden Kindleins Wiegelielid; Two Intermezzi (Brahms); Two Songs (Teichmüller): (a) Im Dämmer der Nacht, (b) Frau Nachtigall. 4.0, Review of Books. 4.20, Market Prices. 4.25, Georg Langer reads from his own Works. 4.55, Talk: Some Facts about the Upper Silesian Plebiscite. 6.20, Orchestral Concert, conducted by Franz Marszalek. Soloist: Hellmuth Hallendorf (Tenor); March, Treuschwur (Rust); Waltz, Reisebilder aus dem Süden (Kraus); Oriental Scene, In the Harbour of Port Said (Armandola); Vibraphone Solo: An der Wiege (Richter); Ein Jahrmarkt im Dorfe (Hruby). 6.0, See Berlin (Königs Wusterhausen). 7.0, Weather and Market Prices. 7.5, Concert from the Municipal Theatre, Beuthen: Overture, The Merry Wives of Windsor (Nicolaï); Duet from The Merry Wives of Windsor

(Nicolaï); Romance, Night (Rubinstein); Melodies from Der Freischütz (Weber); Roses from the South (Joh. Strauss). 8.0, News Bulletin. 8.15, Die schöne Galathée—Operetta in One Act (Suppé), relayed from the Municipal Theatre, Beuthen. 9.10, Time and News. 9.30, Talk: The Life of a Travelling Lecturer—Bittersweet Experiences. 9.45, Theatre Talk. 10.0, Concert from Hamburg. 11.0 (approx.). Close Down.

BRNO

342 metres; 35 kW.—4.50 p.m., Talk on Gardening. 5.0, Music Review. 5.15, Talk for Workers. 5.25, German Transmissions: News, Educational Talk, and Agricultural Report. 6.0, See Prague. 6.10, Variety Programme, with Music by the Station Orchestra and Soloists. 6.40, Talk on Photography. 7.10, See Prague. 9.15, See Bratislava. 10.0 (approx.). Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12.0 Noon, Bizet Concert on Gramophone Records; Prelude, Carmen; Overture, Patrie; Allegro Vivace from the Roma Suite; Suite from L'Arlesienne. 12.40 p.m., Pianoforte Recital: Papillons (Schumann); Seguidillas (Albeniz); Cordoba (Albeniz). 1.0, Le Journal Parlé. 1.10, Concert of Serenades and Aubades by the Small Station Orchestra, conducted by Leemans: Serenade (Mozart); Serenade (Schubert); Aubade (Debussy); Serenade (Widor); Aubade à Kiki (De Boeck); Serenade (Glazunov); Aubade Italienne (Tantrelle); Serenade (Godard); Aubade (d'Ambrosio). 5.0, Concert of Flemish Music by the Radio Orchestra, conducted by Charles Walpot: Rubensmarsch (Benoit); Serenade and Ballet Music from Milenka (Block); An Pays du Lin (Vandermeulen); Flemish Sketches (Brusschmans). 5.30, Programme for Children. 6.5, Literary Review. 6.15, Quartet in F, Op. 3 (Haydn), on Gramophone Records. 6.30, Sacred Music for Lent and Holy Week—Gramophone Concert. 7.15, Film Review. 7.30, Review for Women. 8.0, Orchestral and Choral Concert relayed from Malmwed. 8.45, Talk. 9.0, Concert Relay (contd.). 10.0, Le Journal Parlé. 10.10, Request Gramophone Concert: Selection from El Capitan (Souza); Song of Prince Galitsky from Prince Igor (Borodin); Waltz from Mireille (Gounod); Nocturne from La Navarraise (Massenet); Funeral March of a Marionette (Gounod); Scarf Dance (Chaminade); Minuet and March from Le Bourgeois Gentilhomme (R. Strauss); Lights in the Gardens of Spain (Palle). 10.55, Christus Vincit (Liszt).

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Small Station Orchestra, conducted by P. Lee-

mans: Overture, Oberon (Weber); Spanish Serenade (Laury); Ballet Music from Henry VIII (Saint-Saëns); Gramophone Record, Selection from Die Fledermaus (Joh. Strauss); Foxtrot Fantasia on The Gipsy Baron (Kochmann); Waltz, Kalmán; Selection from Tip-Toes (Gershwin). 1.0 p.m., Journal Parlé. 1.10, Gramophone Concert: Waltz, Frühlingsstimmen (Joh. Strauss); Aubade printanière (Lacombe); Gavotte, Ronde printanière (Wagner); Waltz, Im Zeichen des Frühlings (Léhar); Spring Song (Gounod); Waltz, Idylle printanière (Latorre); Lentelust (Lebrun). 2.0, Frühlire wie bist du so schön (Lincke). An den Frühling (Grieg); Walter's Prize song from The Mastersingers (Wagner); Siree printanière (Waldteufel); Children of Spring (Waldteufel); Matinée printanière (Nef). 5.0, Gramophone Concert: Frühlingserwachen (Bach); Selection from A Midsummer Night's Dream (Mendelssohn); Frühlingsnacht (Schumann-Liszt); Air from Rodolinda (Handel); Spring Song (Mendelssohn); Suite, Gli nocelli (Respighi). 5.45, Programme for Children. 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans; Soloist, M. Wigy (Violin); Spring March (Pizzicati); Frühlingsstraum (Strauss); An den Frühling (Grieg); Rustle of Spring (Sinding); Violin Solo, Le printemps (Milhaud); Spring Song (Mendelssohn); Suite, Scènes printanières (De Herve); Spring from Hamlet (Thomas). 7.15, Talk. 7.30, Journal Parlé. 8.0, Beethoven and Liszt Concert by the Symphony Orchestra, conducted by Jean Kumpas; Soloist, M. Ardenois (Pianoforte); Part I (Beethoven), Leonora Overture No. 3; Pianoforte Solo, Moonlight Sonata in D Sharp Minor; First Symphony; Part II (Liszt). Les préludes; Hungarian Fantasia for Pianoforte and Orchestra; Mephisto-Waltz. In the interval, Le printemps—Radio Play (Suis). 10.0, Journal Parlé. 10.10, Dance Music on Gramophone Records.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Light Music and Romanian Music by the Motoi Orchestra. 5.0, News and Time Signal. 5.10, Talk. 5.25, Light Music (contd.). 6.0, Talk: The Beginnings of Romanian Literature. 6.40, Popular Music on Gramophone Records. 7.0, Eight Songs (Telki) sung by Mme. Ghion. 7.20, Concert by the Station Orchestra: Overture, St. Paul (Mendelssohn); Symphonic Variations for Cello and Orchestra (Boellmann); Symphonic Pieces (Plein-tani). 8.0, Talk. 8.15, Concert (contd.): Poetic Suite (Dvorak). 8.45, News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 840 metres from 6.30 p.m. till Close Down. 4.0 p.m., Concert of Ballet Music, conducted by T. Polgar; Ballet Music from The Queen of Sheba (Goldmark); Suite from Sylvia (Debussy); Ballet Music from La Gioconda (Ponchielli); Ballet Music from Die Puppenfee (Bayer). 5.0, French Lesson. 5.30, Violin and Pianoforte Recital: Violin Sonata (Tartini); Hebrew Melody (Schon-Auer); Song (Rimsky-Korsakov); Prelude and Allegro (Pugnani-Krieger); Serenade (Pioteniy); Caprices in B Minor and E Minor (Paganini). 6.0, Talk. 6.30, Concert of Ciginy Music. 7.15, Review of Foreign Affairs. 7.30, Caruso—A Radio Play. 8.20, News Bulletin. 9.35 (approx.), Pianoforte Recital, followed by Dance Music from the Hotel Bellevue.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—11.0 a.m., Time Signal and Chimes from the Town Hall. 11.2, Concert by the Harald Andersen String Ensemble, relayed from the Bellevue Strandhotel. 1.0 to 2.0, Interval. 2.0, Orchestral Concert, conducted by Emil Reesen: Overture, Don Pasquale (Donizetti); Selection from La boutique fantasque (Rossini-Respighi); Waltz, Immortellen (Gungl); Serenade in E Minor for Strings (Egner); Torador et Andalouse from Le bal costumé (Rubinstein); Overture, Der Göttergatte (Léhar); Waltz in A (Dvorak); Dances from Lakmé (Debussy); Fantasia on Russian Folk Songs, Kamarinskaya (Glinka); Norwegian Rhapsody No. 2 (Svendsen). In the interval at 2.45, Reading. 4.0, Programme for Children. 4.40, Exchange and Fish Market Prices. 4.50, Talk: The Care of the Sun. 5.20, German Lesson. 5.50, Weather. 6.0, News. 6.15, Time Signal. 6.30, Talk. 7.0, Town Hall Chimes. 7.1, Concert of Old Danish Dance Music by the Radio Orchestra, conducted by Launy Grøndahl. 7.50, The Animals' Revolt—One-Act Play (Staden Smith) arranged for Radio. 9.20, Schumann Pianoforte Recital by Folmer Jensen; Waldszene, Op. 82. 8.40, Talk: A Visit to a Ship's Wharf. 9.10, News. 9.25, String Quartet in D (Franck) by the Breuning-Bahe Quartet. 10.0, Dance Music by the Tommy Boston Band, relayed from the Lodberg Restaurant. In the interval at 11.0, Time Signal and Chimes from the Town Hall. 11.30 (approx.). Close Down.

CORK.—See Athlone.

DANZIG.—See Hellsberg.

DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—6.0 to 7.0, Programme in English by the I.B.C.; C. Danvers Walker, B. McNabb, and F. Lamping announcing. 6.0, Concert for Worthing Listeners: Stephanie Gavotte (Czibulka); Captain Mac (Sanderson); The Driver of the 8.15 (Longstaffe); Selection from The Beggar's Opera (Gay); The Sea Road (Haydn); I travel the Road (Parsons); Serenade (Heykens). 6.30, Concert for Bognor Listeners: Xylophone Solos: Jovial Jasper (Green); Acropliana Polka (Gaston); Tarantella (Byng); Dance of the Raindrops (Reeves); Xylophonia (Green); Dance of the Marionettes (Gaston); Carnival of Venice (arr. Gaston); Crazy Pionette (Prisk). 7.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music: I'm sailing on a Sunbeam; I'm in Love with you; She's my Secret Passion; You brought a new Kind of Love to me; Miss Wonderful; O.K. Baby; The Song of the Flame; Blonde Women; Hush-a-bye, Baby; Puttin' on the Ritz; Should I? Too wonderful for Words; Bunkie-doodle-ido; Broadway Melody; Lady Divine. 11.0, Spanish Music: Orchestra: Old Spanish Song (Anbert). Accordion Band: Selection from Carmen (Bizet); Orchestra: Serenata (Moszkowsky); Handbell Solo: In Sunny Seville (Whitlock); Accordion Solo: Waltz, Muella (Chabrier); Toreador Song from Carmen (Bizet); Xylophone Solo: Spanish Song (Moszkowsky). 11.30, Songs: Annie Laurie (Traditional); The Drum Major (Newton); Loch Lomond (Traditional); The Gay Highway (Drummond); Mairi my Girl (Aitken); Stonecracker John (Coates); Vale (Kennedy Russell); The Wheelbarrow Song (Chester). 12 Midnight, Variety Concert: You used to be my Sweetheart; Laughs, or Love à la Mode; The Black Forest Chiming Clock; They all make love but me; Laughing Gigolo; Paradise Alley; Hooch; but she was a Bonny Wee Lass. 12.30 a.m. (Wednesday), Light Music: Selection from Lilac Time (Schubert); March, St. Patrick's Day (Brace); Way down in Georgia (Traditional); Pianoforte Solo: Just Humming along; Old King Cole; Mother Machree; Orchestra: Me and the Man in the Moon (Monaco). 1.0, Concertina Solos: Bonnie Lass o' bon Accord; Hornpipe Medley (arr. Dale); The Road to the Isles (Fraser); Orange and Blue (Dale); Irish Medley (arr. Dale); Lopezianna (Alter); Scottish Reels (arr. Dale); Marilyn (Alter). 1.30, Popular Songs: Airman, Airman (Hargreaves); Girl Friend of a Boy Friend of Mine (Donaldson); Singin' in the Bath Tub (Magidson); My Baby just cares for me (Donaldson); I still believe in you (Aksit); I took Jane for a walk in the Rain (Hargreaves); I've never seen a Smile like yours (Johnson); We must all pull together (Weston). 2.0, Light Music: Let that be a Lesson to you; Leave the Rest to old Man Moon; Let me be your Carmen for To-night; Pagan Moon; Speedway Sam; Strangers; Dance of the Cuckoos; Paradise; The old Kitchen Kettle; Same old Moon; At Eventide; Through that open Window; The Gag Song; Sing a new Song. 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259.3 metres; 17 kW.; CASSEL, 245.9 metres; and TRIER, 259.3 metres.—12.30 p.m., Concert from Langenberg. 1.0, News. 1.10, Sponsored Concert. 2.0, Weather Report. 2.10, Time and Exchange. 2.20 to 2.50, Talks for the Housewife. 3.50, Market Prices. 4.0, See Langenberg. 5.15, Exchange. 5.25, Talk: The Silesian Plebsite. 5.50, Time, Programme Announcements, Weather and Exchange. 6.0, See Berlin (Königs Wusterhausen). 7.0, See Stuttgart. 8.30, Reading: Anakreon (Paul Ernst). 8.45, Hans Heyck discusses his Works. 9.0, Time, News, Weather and Sports Notes. 9.45, See Stuttgart. 11.0 (approx.), Close Down.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 272.4 metres; Hannover, 566 metres; and Kiel, 232.2 metres.—6.0 p.m. (from Hannover), Agricultural Talk. 6.25, Weather Report. 6.30, Choral and Orchestral Concert arranged by the Hamburg Fire Brigade, relayed from the Conventgarten. Soloists: Aida Montes and Stefan Schuler (Songs). Torch Dance in B Flat (Meyerbeer); Choir: (a) Durch janges Grün (Chrus), (b) Am sonnigen Rhein (Uhlmann); Waltz from Der Rosenkavalier (R. Strauss); Songs: (a) Heimliche Auf-forderung (R. Strauss), (b) Ständchen (R. Strauss); Der Lenz (Hildach); Songs: (a) Der Hidaigo (Schumann), (b) Tell me to-

MARCH 21st

TUESDAY

continued

night (Spoliansky); Blumenkorso auf der Alster (Sylvan). 7.20, Concert of Opera Music by Haydn, Marschner, Cherubini and Rossini. The Station Orchestra, conducted by Adolf Seeker. Soloists: Hans Tessenner, Erna Kroll-Lange, Gertrud Schnitzer, Herbert Ernst Groh and Bernhard Jakschkat. 8.15, See Berlin (Witzleben). 9.0, Time and News. 9.20, Topical Talk. 9.30, The Hamburg Composers' Competition, relayed from the Café Wallhoff. In the interval at 10.20, See Report.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 40 kW.; and DANZIG, 453.2 metres.—12.5 p.m., Gramophone Concert: Wenn Gott will rechte Kunst erweisen (Mendelssohn); Ein wandernder Geselle (Kienzl); March, Hamburg bleibt Hamburg (Vollstedt); Elegy (Sinding); Melody (Coublier); Scuta's Ballad, A Ship the restless Ocean sweeps, from The Flying Dutchman (Wagner); Selection from The Girl of the Golden West (Puccini); In the Tea Gardens of Ceylon (Yoshitomo); Selection from L'Africaine (Meyerbeer); Arabian Dance (Grieg); Sei mir gegrüsst, du mein schönes Sorrent (Waldmann); Siciliano (Jessel); Neapolitan Folk Song (di Capua); Innsbruck, ich muss dich lassen (Isaack); Folk Song, Von meinen Bergen muss ich scheiden; Die Deutschemeister san do (Sioly); Weaner Madeln (Zielner); Wien, du Stadt der Lieder (Stolz); Nach der Heimat möcht ich wieder (Kroner); Hie guet Braudenburg allewege (Henriem). In the interval at 12.20, News. 1.30, Programme arranged by the Post Office, with Gramophone Records. 2.0, Agricultural Prices and Exchange. 2.30, Programme for Children. 3.0 (from Danzig), Police Band Concert, conducted by Ernst Stieberitz: March, Märkische Kolonnen (Knoch); Overture, Le roi d'Yvetot (Adam); Selection from Tieffand (d'Albert); Spanish Rhapsody (Richardy); Wir spielen Soldat (Ellenberg); Erotica (Grieg); Ich liebe dich (Grieg); Potpourri, Durch Webers Zauberwald (Urbach); Two Marches with Fanfares: (a) Cuirassiers' March (Simon), (b) Army March No. 10, Prince August (Simon); Potpourri, Wiener Spaziergänge (Komzak). 4.45, Medical Talk: Theories Concerning Sleep. 5.15, Agricultural Prices. 5.20, See Report. 5.30, Talk: Training to be a Continuation School Teacher. 6.0, Book Day Programme for all German Stations; Speeches by German Authors. 7.0 to 9.20, See Langenberg. 9.20, Weather, News and Sports Notes.

HILVERSUM

(Announced HUIZEN); 296.1 metres; 20 kW.; (7 kW up to 4.40 p.m.)—11.55 a.m., till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55 a.m., Concert by the K.R.O. Boys, conducted by P. Lustenhouwer. Soloist: J. Mossel (Songs). 1.25 p.m., Interval. 1.40, Talk. 2.15, Programme for Women. 2.40, Dressmaking Lesson. 3.40, Programme of the H.I.R.O. 4.50, Concert by the K.R.O. Sextet. The Torch Dance of the Brides of Kashmir (Rubinstein); Chanson triste (Tschaikovsky); Eine kleine Nachtmusik (Mozart); Minuet (Bolzoni); Waltz (Dvorak). 5.30, Recitations. 5.50, Sextet Concert (contd.): Ein Immortellenkranz auf des Grab Lortzings (Rosenkranz); Serenade (Rachmaninov). 6.10, Esperanto Lesson. 6.30, Sextet Concert (contd.): Im Wandel der Zeiten (Morcia); A Wedding Day on Troidhlangen (Grieg). 6.50, Popular Music on Gramophone Records. 7.10, Police Report. 7.25, Talk. 7.40, Sacred Music and Meditation on the Passion. 9.10, News. 9.15, Concert by the K.R.O. Orchestra and Choir: Overture, Fidelio (Beethoven); Choir (a) Ave Verum (Mozart), (b) Zigeunerleben, Op. 29 (Schumann); Piet Hein (van Anrooy); Choir: Two Songs; Gramophone Records; Prelude to The Loreley (Brahm); Ballet Music from Feramors (Rubinstein); Serenade (Pierne). 10.40, News. 10.45 (approx.), Concert (contd.): Choir: The Blue Danube (Joh. Strauss); Overture, Die Fledermaus (Joh. Strauss).

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM; 1,875 metres; 8.5 kW.—11.40 a.m. till Close Down, Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40 a.m., Time Signal. 11.41, Concert of Light Music, with Gramophone Interludes. 1.55, Recital on Two Pianofortes by Jacques Hamel and Egbert Veen; Garden Melody (Schumann); Military March No. 2 (Schubert); Rondo No. 2 (Weber); Sonata in D Minor (Mozart). 2.40, Dressmaking Lesson. 3.40, Violin Recital by Boris Lensky; Concert Piece in D (Schubert); Ave Maria (Schubert-Wilhelmy); Largo (Handel); Die Launenhafte (Hauser). 4.10, Concert by a Children's Choir, conducted by Jacob Hamel. 4.40, Talks for Children. 5.10, Two Talks. 5.55, Gramophone Records and Hawaiian Music. 7.40, English Lesson. 7.40, Time

Signal. 7.41, News Bulletin. 7.45, Concert by the Wireless Orchestra, conducted by Nico Treep: Frühlingseinzug (v. Blon); Overture, Rind um die Liebe (O. Strass); The Village Bride (Laudry); Die Lotoslilie (Lincke); Frühlingsschneeflocke (Fueck); Nachtigall im Fliederbusch (Krone); Songs by the Harmony Kings; Waldteufelreigen (Weninger); In the Harbour of Port Said (Armadola); Czardas, Villany (Lindsay-Thamer); Dance of the Merry Mascots (Ketebej); March, Im Zigeunerlager (Osecht). 9.10, Justice—Play (John Galsworthy), arranged for Radio. 9.40, Concert by the Wireless Orchestra, conducted by Nico Treep: Overture, Venus am Erden (Lincke); Waltz (Johann Strauss); Gipsy March (Lacôme); Potpourri, Servus Wien (Dostal); On the Quarter Deck (Alford); Two Songs (Jacobs Bond); March Songs (Weninger). 10.40, News Bulletin. 10.50, Concert of Light Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., Talk: The Poems of Adam Asnyk in the Light of New Criticism. 6.15, Announcements and Popular Music on Gramophone Records. 6.25, Sports Notes. 6.30 to 10.0, See Warsaw. 10.0, Dance Music, relayed from the Café Monopol.

KIEL.—See Hamburg.

KLAGENFURT.—See Prague.

KOSICE.—See Prague.

LAHTI

1,796 metres; 40 kW.; and HELSINKI, 368.1 metres.—6.30 p.m., Orchestral Concert, conducted by Toivo Haapanen. Soloist: Arno Gräntö (Violin). Finnish Rhapsody (Linna); Cradle Song (Klami); Spanish Symphony (Lalo); Suite from A Midsummer Night's Dream (Mendelssohn). 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert, conducted by Wolf: March, Mit Feuer (Gutzeit); Overture, Si j'étais Roi (Adam); Little Suite No. 3 (Michell); Waltz, La Hussarde (Ganne); Selection from William Tell (Rossini); Intermezzo, Entry of the Spring Flowers (Koekert); Intermezzo, Zigeuner (Königsberger); Selection from Frau Luna (Lincke). In the interval at 1.0 (approx.), News. 1.30, Sponsored Programme, with Gramophone Records. 2.30, Economic Notes and Time. 2.50, Songs for Children. 3.20, Notes on the Broadcasts for Schools. 3.30, Talk: The Teaching of Geography. 4.0, Orchestral Concert, conducted by Kühn. Soloists: Therese Pott and Egbert Grape (Pianoforte). Concerto in C Minor for Two Pianofortes and Orchestra (Bach); Concerto grosso (Scarlatti); Variations on an Original Theme for Two Pianofortes (Unger); Symphonic Poem, Sintram (Templeton-Strong). 5.15, Italian Lesson. 5.45, Weather, Time, Economic Notes and Sports Results. 6.0, Book Day Programme for all German Stations—The Nation and Books. 7.0, News. 7.5, Frühling lässt sein blaues Band—Spring Programme of Poems by Goethe, Eichendorff, Mörike, and v. Hatzfeld, and Songs by Schumann, Schubert, and Wolf. 7.30, Mozart Concert by the Station Orchestra, conducted by Kühn, Serenade in D, No. 6; Cassation in G. 8.20, Bastien and Bastienne—Musical Play in One Act (Mozart). 9.0, News Bulletin.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319 metres.—11.5 a.m., Wind Instrument Concert on Gramophone Records. 12 Noon, News, Weather, Snow Report, and Time. 12.15 p.m., Concert of Italian Music on Gramophone Records; Exchange Quotations after the Concert. 1.0, Talk for the Unemployed. 2.0, Review of Books for Young People. 2.35, Exchange and Market Prices. 3.0, Talk: The German Population in Rumania. 3.30, Bach Concert, relayed from Bach's House, Eisenach. Edith von Voigtländer (Violin) and Maendler-Schraun (Harpisichord); Introductory Talk by the Curator; Fuga canonica for Violin and Harpsichord, from the Musikalisches Opfer; Italian Concerto for Harpsichord; Sonata in E for Violin and Harpsichord. 4.30, Weather and Time. 4.50, Exchange Quotations. 5.0, Talk for Women. 5.25, French Lesson. 5.50, Talk on the Gewandhaus Concert of the 23rd March. 6.0, See Berlin (Königs Wusterhausen). 7.0, Concert by the Station Orchestra, conducted by Willy Steffen: Contredanse (Beethoven); Pastorale, Op. 29 (Bose); Suite, New Music in Old Style (Heinrich Malz); (a) Air, (b) Gavotte, (c) Minuet; Waltz, Am Wärtcher See (Koschat); Pikante Blätter (Komzak); Hoch Heideckung (Herzer)—Piedmontese Dance in G (Simgaglia); Walzerfuit (Ferras); Gang durch den Märchenwald (Meyer-Helmund); Germania March (Keil). 8.0

News Bulletin. 8.5, Economic Questions of the Day. 8.10, Gemütsvolle Reise zur Welt-trompete—Play (Jean Paul), arranged for the Radio by Günther Birkenfeld. 9.15, News Bulletin. 9.30 (approx.), Concert of Light Music and Dance Music on Gramophone Records: Der Schwalbe Gruss (Schrammel); Trinken und Lieben (Bakowiano); Waltz, Im Zeichen des Frühlings (Lehar); Mazurka (Scheidegger); Guckel-Polka (Scheidegger); Waltz, Die Fenster auf, der Lenz ist da (May); Songs: (a) Sei mir gut, schön Marietta, (b) Sonne wird scheinen; Polka, Fenerfest (Jos. Strauss); Potpourri, Einfach fabelhaft (Dostal); Selection from Wild Violets (Liedt); Idyllen-Walzer (Joh. Strauss); Holde Jugendzeit (Honigmann); Heil, Nacht sich ich nur für dich (Brauss); Aranitez (José d'Alba); Dunkelrote Rosen (Fall). 10.30 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 7 kW.—5.30 p.m., German Lesson. 6.0, Talk. 6.30, Talk: The Heroes of Our Times. 7.0, Chamber Music. 8.0, Programme relayed from the Café Zvezda. 9.0, Time, News, and Light Music.

LWOW

381 metres; 16 kW.—6.15 p.m., Miscellaneous Items. 6.30, See Warsaw. 9.15, Relay of Foreign Station. 9.55, See Warsaw. 10.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30, Fauré Concert, relayed from Paris. News after the Concert.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—10.30 p.m., Concert of Popular Music. 10.45, Radio Chronicle. 11.0, Concert (contd.). 11.35, Talk. 11.40, Light Music. 12.0 Midnight (approx.), Close Down.

MADRID

UNION RADIO; Call EAJ7; 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, and Request Gramophone Records. 7.30 (in the interval), Talk. 8.15, News and Political Review. 8.30 to 9.0, Interval. 9.0, Linguaphone English Lesson. 9.30, Chimes, Time, and Political Review. 9.45 (approx.), The Valkyries—Opera (Wagner)—Concert Version, on Gramophone Records. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—3.10 p.m., Orchestral Concert, conducted by J. Plichta. 4.10, See Prague. 4.50, See Brno. 5.0, Talk on Viktor Kamil Jerabek. 5.15, See Prague. 5.25, See Brno. 6.0, See Prague. 6.10, See Brno. 6.40 (approx.), See Prague. 9.15, See Bratislava. 10.0 (approx.), Close Down.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—4.30 p.m., Literary Programme. 8.0, Talk in French: The Work of a Railway Employee.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserlautern, 560 metres; and Nürnberg, 239 metres.—3.45 p.m., Orchestral Concert conducted by Ernst Hagel: Comedy Overture (Aletzer); Selection from La Favorita (Donizetti); Oriental Scene, The Entry of Haroun al Raschid (Thon); Swabian Peasant Waltz (Krone); Feux (Demaret); Potpourri, Eisblumen (Leuschner); Spanish March, Cadiz (Valverde). 4.45, Book Day Programme—A visit to a Children's Reading Room. 5.5, Talk: The 1933 Matriculation Student and the Higher Professions. 5.25 (from Nürnberg), Reading: A Year—Paul Memorial (Dr. August Caselmann). 5.45, Time, Weather and Agricultural News. 6.0, See Berlin (Witzleben). 7.0, Variety Programme arranged by the Tramways. 8.15, Frau Braumann reads from his own Poems. 8.25, Pianoforte Sonata in C, Op. 1 (Brahms), by Walter Lampe. 9.0, An Interview with the Belgian Financial Expert, Emile Franquet. 9.20, Time, Weather, News and Sports Notes. 9.45, Der Winter ist vergangen, ich seh' des Maies Schein. Programme of Spring Songs and Legends, collected by Alois Johannes Lippl.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—4.0 p.m., Relay of European Stations. 5.0, Two Talks for Housewives. 5.45, Accordion Music. 6.0, Announcements, Weather and News. 6.30, English Lesson. 7.0, Talk: Some Facts from the History of the Norwegian People. 7.30,

MARCH 21st

TUESDAY

continued

Concert by the Station Orchestra: Concerto grosso in D Minor for Two Violins, Cello, Piano and Strings (Vivaldi); Le tombeau de Couperin (Ravel); Zambra Grandina (Albeniz); Adagio (Kodaly); Guitar (Lalo); Serenade (Graener); Celtic Suite (Foulds); Rhapsody from Prince Igor (Borodin). 8.40, Weather and News. 9.0, Topical Talk. 9.35, Relay of European Stations. 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—7.0 p.m., Dopplavoro Notes, Tourist Talk, Agricultural Talk and Giornale Radio. 7.20, Popular Music on Gramophone Records. In an interval at 7.30, Time Signal and Announcements. 7.45, Concert of Opera Music. Conductor: Fortunato Russo. In the intervals: Talk and Art Notes. After the Concert, Light Music on Gramophone Records. 9.55, News Bulletin.

PARIS

EIFFEL TOWER; Call FLE; 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals). 5.45 p.m., Le Journal Parle. 7.20, Weather Report. 7.30, Spring in Music—Concert by the Radio Orchestra, conducted by Edouard Flament: Marche du Printemps (Laudry); Spring Suite (Westy); Waltz, Frühlingsstimmen (Joh. Strauss); Spring Song (Mendelssohn); Violin Solo, Le réveil des fleurs (Flament); Rêve of Spring (Sindling); Beneath the Spring Rain (Akimenko); Waltz (Oscar Strauss). 8.30, Programme to be Announced.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parle. 7.0, Sponsored Concert with Gramophone Records. 8.0, Film Talk. 8.5, Legal Talk. 8.15, Interval. 8.30, Concert of Spring Music by the Station Symphony Orchestra: Matinée de printemps (Marty); Nuit de printemps (Chapuis); Printemps (Lacôme); Frühlingsstimmen (Joh. Strauss); Au printemps (Gounod); Printemps nouveau (Vidal); Spring Song (Mendelssohn); Aubade printanière (Lacôme); Au den Frühling (Grig); Song, Voici que de printemps (Debussy); Waltz, Amour et printemps (Waldteufel); Printemps sur la mer (Flament); Rondes de printemps (Debussy). 10.30, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records: Tzigane (Ravel); Fantasia for Flute (Hug). 8.0, Press Review and Weather. 12 Noon, Concert by the Kretzly Orchestra: Overture, Si j'étais roi (Adam); Selection from Maçon (Massenet); Prelude to L'Enfant Roi (Bruneau); Overture, Vêronique (Messager); Two Songs from Miarka (Georges); Selection from La Bohème (Puccini); Selection from Le Roi malgré lui (Chabrier); Selection from La Légende du Point d'Argent (Pourtin); Selection from Pelléas et Mélisande (Fauré); Chanson à Berceur (Schmitt); Traversée heureuse (Schmitt); Marche écossaise (Debussy); Cortège des éléphants sacrés (Delmas). In the intervals at 1.0 p.m., Exchange, News and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 4.30, Elementary English Lesson. 6.10, Agricultural Talk. 6.30, Advanced English Lesson. 6.50, Theatre Review. 7.5, Talk on Art. 7.20, Concert by the Kretzly Orchestra: Chant sans Paroles (Tchaikovsky); Minuet (Bocherini); Canzonetta (Friml-Letorye); Roses of Picardy (Haydn-Wood); Menet pompeux (Ganne); Suite on Popular Hungarian Airs (Leoni). 7.45, Commercial Prices, News and Review of the British Press. 8.0, Gramophone Concert: Les Coehons Roses and Les deux bécaasses, by Signoret; Finale from Act II of Marietta (O. Straus); by Yvonne Printemps and Sacha Guitry; Two Dialogues (Koval), by Koval and Gaby Benda; (a) Monsieur, (b) Monsieur et Madame essayent l'auto neuve; Tapage nocturne and Chez le dentiste (Willekens and Léonne), by Mlle. Léonne and M. Francis. 8.30, News and Weather. 8.40, Review by Zamacois. 8.45, Chamber Music Concert. Soloists: M. Caluzac (Clarinet), Alys Lautemann (Harp), and Serge Tenenbaum (Violin). Quintet with Clarinet (Mozart); Harp Solos: (a) Largo (Bach) Gaudjany, (b) Rhapsody (Viérne), (c) Marine (Briez); Violin Solos: (a) Lotus Land (Scott), (b) The Fountains of Arethusa (Szymanowski); (c) La Ronde des Lutins (Bazzini); Two Pieces for Clarinet and Harp from French Divertissements (Migot); Harp and Clarinet Duets (Migot); (a) Prelude, (b) Estampe; Quartet, with Piano (Ducasse). In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW.—Relayed by W3XK on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.31, Market Reports. 9.45, Johnny Muskrat. 9.50, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Programme to be announced. 10.15, Adventures of Dr. Dolittle, from New York. 10.30, The Sing-

ing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Booth Tarkington's Maudie and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaherry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45 to 3.0 a.m. (Wednesday), New York Rally. 11.45, To-day's News by Lowell Thomas. 12.0 Midnight, Popsodent Amos 'n' Andy. 12.15 a.m., National Advisory Council on Radio in Education—Tax Reform. 12.45, The Townsend Murder Mystery. 1.0, Eno Crime Club. 1.30, Time Signal and Adventures in Health. 1.45, Phillips Lord in The Country Doctor. 2.0, Housfield Musical Memories. 2.30, Willard Robinson's Deep River Orchestra. 3.0, The Time Detective. 3.15 to 4.0, New York Relay. 3.15, Vic and Sade. 3.30, Homay Bailey and Orchestra. 3.45, Prof. Jack McAllen, Sara and Sassafras. 4.0, Time Signal. 4.1, Teaherry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Smith Ballou and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, Cotton Club Orchestra. 5.30, Time Signal and Good night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Moravská-Ostrava. 4.10, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Light Music on Gramophone Records. 5.5, Agricultural Talk. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission—Talk for Young People. 6.0, Chimes and News. 6.10, See Brno. 6.40 (approx.), Talk: Propaganda Day. 7.10, Piano-forte Recital by Iona Stepanova-Kurzova: Two Pieces from the Cycle, Spring, Op. 22 (Josef Suk); (a) Spring, (b) Zephyr; Spring Idyll, from Moods, Op. 10 (Josef Suk); Spring Song and Elegue from Eclogues, Op. 11 (Novak); My Maytime, Op. 20 (Novak). 7.35, A Programme on the Theme, Propaganda Day. In the interval at 8.0, Time Signal. 8.35, String Quartet in D, No. 2 (Smetana), by the Ondrick Quartet. 9.0, Time, News and Sports Notes. 9.15, See Bratislava. 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.—LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.0 p.m. (from Lausanne), Talk on the Children's Sanatorium at Leysin. 5.30 (from Geneva), English Lesson. 6.0 (from Lausanne), Weather Forecast; News Bulletin and Announcements. 6.20 (from Geneva), Answers to Correspondence. 6.30 (from Geneva), Concert of New Gramophone Records. 7.0 (from Geneva), Chamber Music by the Station Quartet. 8.0 (from Geneva), Variety Programme by the Broadcasting Serenaders. 9.0, News Bulletin and Weather Forecast. 9.15 (from Geneva), Talk: The Work of the League of Nations. 9.30 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Cello Recital by Thorhallur Arnason. 10.15, Recitations. 10.35, Sonata in F Sharp, Op. 79 (Beethoven), on Gramophone Records.

RJUKAN.—See Oslo.

ROME

Call IRO, 441 metres; 50 kW.—Relayed by Naples, 319 metres; and 2RO, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12 to 2.15 p.m., Concert from Turin. In the interval at 12.30, Giornale Radio and Exchange. 3.40, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30 to 5.15, See Turin. 6.0 (Naples), Shipping and Sports Notes. 6.10, Atmospheric Signals. 6.20, Giornale Radio, Agricultural and Dopplavoro Notes. 7.0, Time and Announcements. 7.2, Talk: Uranus, Neptune and Pluto. 7.15, Light Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 7.45, Extracts from Le Roi de Lahore (Massenet). 8.30, The Wind of the Desert—Comedy in One Act (Pietro Orestano). 9.0, Extracts from Suor Angelica (Puccini). 9.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW.—Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—12 Midnight, General Electric Programme. 12.15 a.m. (Wednesday), Stock Reports. 12.30, Gold Medal Band. 12.45 to 3.0, New York Relay. 12.45, The Goldberg—Comedy Sketch. 1.0, Blackstone Plantation. 1.30, Wayne King's Orchestra. 2.0, Bon Bernin's Blue Ribbon Orchestra. 2.30, Ed. Wynn and the Fire Chief Band. 3.0, Lucky Strike Hour, followed by Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.; BASLE, 244.1 metres; and BERNE, 245.9 metres.—11.28 a.m., Time Signal from the Neuenburg Observatory. 11.30, Weather and News. 11.40 (from Zürich), Concert of Light Music by the Radio Orchestra. 12.35 p.m., Weather and Exchange. 12.45 to 2.30 Interval. 2.30 (from Zürich), Concert by the Small Radio Orchestra. 3.0 (from Berne), Variety Music on Gramophone Records. 4.0 (from Berne), Recital by Kreisler on Gramophone Records. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from Berne), Talk: Supplying a Town with Corn and Bread in the Later Middle Ages. 6.0, Time and Weather. 6.2 (from Berne), Notes on the Broadcast for Schools. 6.15 (from Berne), String Quartet of Swiss Music. 6.35 (from Berne), A Discussion with a Blind Peddler on his Experiences. 7.0 (from Berne), Auf zum Mond—Comic Opera (Werner Hehrli). 7.30, Concert by the Radio Orchestra. 7.50 (from Berne), String Quartet, Op. 33, No. 6 (Bocherini), by the Schiffmann String Quartet. 8.15 (from Berne), A Visit with the Microphone. 8.30, Weather and News. 8.40, Concert by the Radio Orchestra. 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW.—Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.5 p.m., Programme for Children. 4.30, Songs to the Lute, by Gunnar Bohman. 4.45, Popular Music on Gramophone Records. 5.45, Elementary French Lesson from Malmö. 231 metres. 6.30, Talk. 7.0, Sacred Concert, conducted by Hilding Rosenberg: Te Deum for Choir and Orchestra (Bruckner); Suite No. 3 in D for Choir and Orchestra (Bach); Psalmus hungaricus, Op. 13 (Kodaly). 8.15, Literary Review. 8.45, Weather and News. 9.0, Light Music. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Popular Music on Gramophone Records. 12.45 p.m., News Bulletin. 1.0, Time Signal. 1.1, Market Prices. 1.5, Gramophone Concert of Variety Music. 2.0 to 4.45, Interval. 4.45, Talk in French on Colonial Produce: Rice and Rubber in Cochín China. 5.0, Jazz Music, conducted by Roskam. 6.0, Archeological Talk in French. 6.15, Talk in French: Present Day Problems. 6.30, Bach Concert on the Anniversary of his Birth (March 21st, 1685). Conductor: Maurice de Villers. The Brandenburg Concerto; Concerto in C for Two Pianos and Orchestra; Concerto in D Minor for Two Violins and Orchestra. 7.30, Time Signal. 7.31, News Bulletin. 7.45, Dance Music on Gramophone Records. 8.20, Lottery Results and Announcements. 8.30, Gabriel Fauré Festival Programme. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—12.30 p.m., Concerto, No. 2 in A for Piano-forte and Orchestra (Liszt), on Gramophone Records. 1.0, Musical Programme arranged by the Post Office. 1.30 to 2.0, Advanced English Lesson. 3.0, Talk on Flowers. 3.30, Talk: Women Photographers. 4.0, See Langenberg. 5.15, Time, Weather and Market Prices. 5.25, Talk: Our Galaxy. 5.50, Time and News. 6.0, See Berlin (Königs Wusterhausen). 7.0, Programme of Contemporary Music and Literature. German Suite (Max Trapp); Prose by Auguste Supper; Verse by Auguste Supper; Marienlieder (Armin Knab); Prose and Verse by Anna Schieber; Songs by Walter Frimmel (Steffan George); Prose and Verse (Johanna Wolff). 8.30, Eating and Drinking—Programme collected and arranged by Martin Lang. 9.0, Time, News, Weather and Programme Announcements. 9.45, Dance Music by the Dance Ensemble of the Stuttgart Philharmonic Orchestra. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Opera Airs: Arias from Carmen (Bizet), Thais (Massenet), Romeo and Juliet (Gounod), and I Padella (Leoncavallo). 6.30, Dances from Prince Igor (Borodin). 6.45, Accordion Solos. 7.0, Argentine Music. 7.15, News, Racing Results, and Market Prices. 7.25, Local News. 7.30, Viennese Music. 8.0, Airs from Opera: Cavatina from Norma (Bellini), Barcarolle from The Tales of Hoffmann (Offenbach); Aria from Così fan tutte (Mozart). 8.15, Violin Solos. 8.30, Popular Songs. 8.45, Military Music. 9.0, Extracts from Beau Brummel—Operetta (Hahn). 9.30, Orchestral Concert, Chinese Serenade

(Riede); Marche Joyeuse (Chabrier); Selection from Der Bettelstudent (Müller); Elegue (Raband); Italian Serenade (Ligo). 10.0, Sound Film Music. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Operetta Music: Songs from La petite dame du train bleu (Pare and Van Parys) and Les Cloches de Corneville (Planquette). 11.15, Hawaiian Guitar Music. 11.30 to 12 Midnight, Programme in English by the I.B.C.: The I.B.C. Half Hour; She's the Sweetheart of Six other Guys; One American Girl; He ain't never been to College; Fair Coed; I'll never be the same; Singin' the Blues; As long as Love lives on; It's the darndest Thing. 11.57, I.B.C. Good night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Wednesday), Dance Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.30 to 6.0 p.m., See Turin. 6.0, Light Music on Gramophone Records. 6.20 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW.—Relayed by Milan 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—4.30 to 5.15 p.m., Dance Music from the Savoia. 5.35, Giornale Radio, Agricultural and Dopplavoro Notes. 6.0, Light Music on Gramophone Records. 6.20, Giornale Radio. 6.30, Time, Announcements, Report of the Royal Geographical Society and Variety Music on Gramophone Records. 7.0, Giornale Radio, Weather, and Gramophone Records (contd.). 8.0, Khovanchina—Opera (Mussorgsky), relayed from the Scala, Milan. In the intervals, Talk Announcements, and Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in English. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW.—Relayed by Graz 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—4.0 p.m., Concert of Light Music, by Rudolf Lederer and his Band. 5.15, Agricultural Talk. 5.40, Talk: Life as a Forester's Wife in Java and Sumatra. 6.5, French Lesson. 6.30, Time, Weather, and Programme Announcements. 6.40, Concert by the Opus Quartet: Hallstadt Wedding March (Hummel); Minuet (Hummel); Old Viennese Dance, 's is Red (Stelzmüller); Thernberg Wedding Pieces (Stelzmüller); Polka Mazurka, Loh der Frauen (Joh. Strauss); Upper Austrian Folk Melodies; Biedermeier-Walzer (Füllrich); Biedermeier Gavotte (Bass); Old Viennese Dances (Bass). 7.15, A Comedy in Four Acts (Sacha Guitry), German by Bruno Frank. 8.30, Part-Relay, Mistinguette in her Revue, Volia Paris (Part-Relay), from the Roncher. 9.30, News, Weather, and Announcements. 9.45, Concert by Gustav Macho (Violin), Hans Quinquerez (Cello), and Eugen Billig and Gustl Heintze (Piano-forte), relayed from the Hotel Krantz-Ambassador.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Popular Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.15, Announcements. 2.25, Aviation Report and Anti-Gas Drill. 2.30, Announcements. 2.35, Book Review. 2.50, Light Music on Gramophone Records. 3.20, Programme Announcements. 3.40, Talk on Witchcraft relayed from Wilno (563 metres). 4.0, Concert by the Warsaw Symphony Orchestra, conducted by G. Fitelberg: Overture, The Flying Dutchman (Wagner); Scheherazade (Rusky-Korsakov). In the interval, Announcements. 4.55, Programme Announcements. 5.0, Literary Talk: The Historical Novel of the Nineteenth Century. 5.20, Talk on Current Events. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Bulletin. 6.30, Reading. 6.45, Radio Journal. 7.0, Estonian Song Recital by G. Vinnamagi (Baritone). In the interval, Sports Notes and Radio Journal. 7.25, Concert by the Station Orchestra, conducted by J. Ozimski. Soloist: S. Schleichorn (Viola). Suites Nos. 1 and 2 from L'Arlesienne (Bizet); Viola Solos: (a) Sarabande and Allegretto (Corelli), (b) Canzonetta (d'Ambrosio), (c) Caprice No. 13 (Paganini-Schleichorn), (d) Celtic Song (Forsyth); Overture, Il Seraglio (Mozart); Minuet, Bourrée and Passepied from the Overture in C, No. 1 (Bach) Concerto for Viola and Orchestra (Handel). 9.0, Literary Discussion. 9.15, Dance Music. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music. 11.0 (approx.), Close Down.

WILNO

563 metres; 16 kW.—5.55 p.m., Miscellaneous Announcements. 6.0, Reading. 6.15, Wireless Technical Talk. 6.30, Recitations. 6.45, See Warsaw. 9.15, Reading. 9.45, Dance Music relayed from Warsaw. 9.55, See Warsaw. 11.0 (approx.), Close Down.

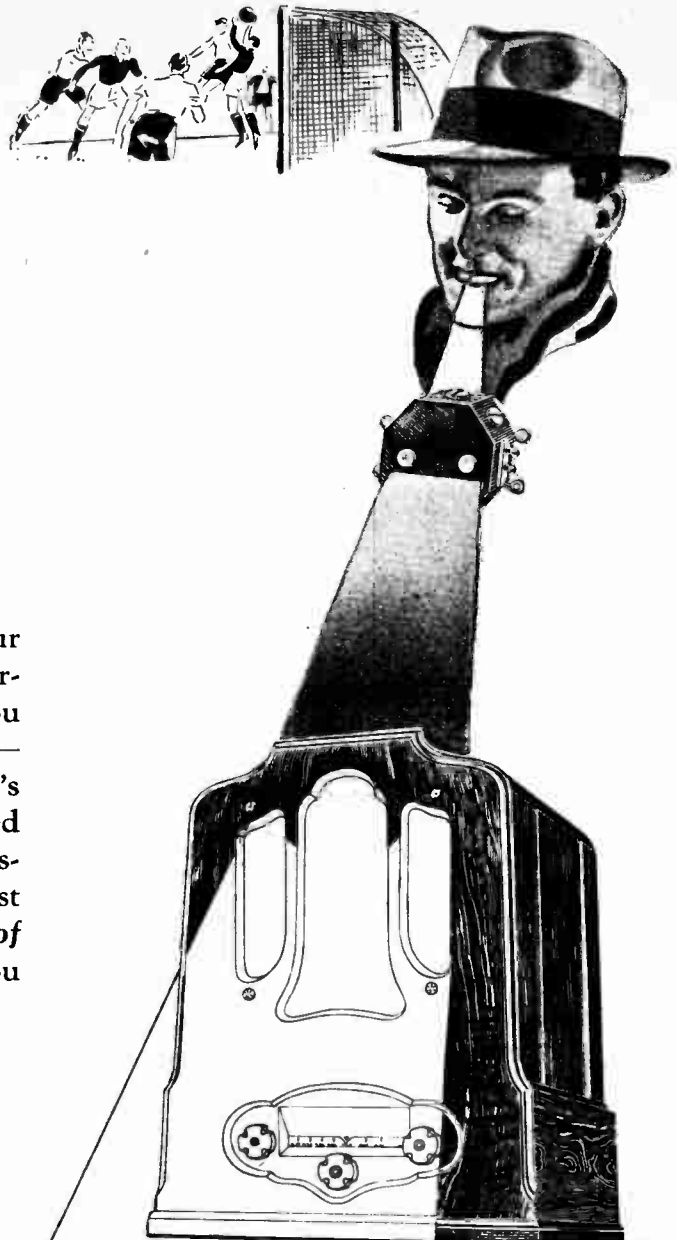
ZURICH.—See Schweizerischer Landesender.

Get Original Tone

Immediately you hear the performance of this four valve mains model, you'll realise the amazing difference "tone" can make in radio entertainment. You will be listening to Columbia's latest development—ORIGINAL Tone—the perfect result of 30 year's continuous research in sound reproduction. Presented in fine walnut this set brings you the finest possible standards of efficiency in every detail. Test its superiority in *the actual reception conditions of your own home.* The coupon will bring you complete particulars.

USE THE COLUMBIA DEALER SERVICE
Expert advice on local radio conditions and service after sales.

All - Electric Four
16 gns. cash (A.C. or D.C.)
or delivered on first payment of £1 . 13s



Columbia

ALL-ELECTRIC FOUR

CUT OUT AND POST TO-DAY!

Please send me fullest particulars of Columbia Model 355 and other Columbia instruments from £4 . 7 . 6 to 90 gns. (write in block capitals)

NAME

ADDRESS

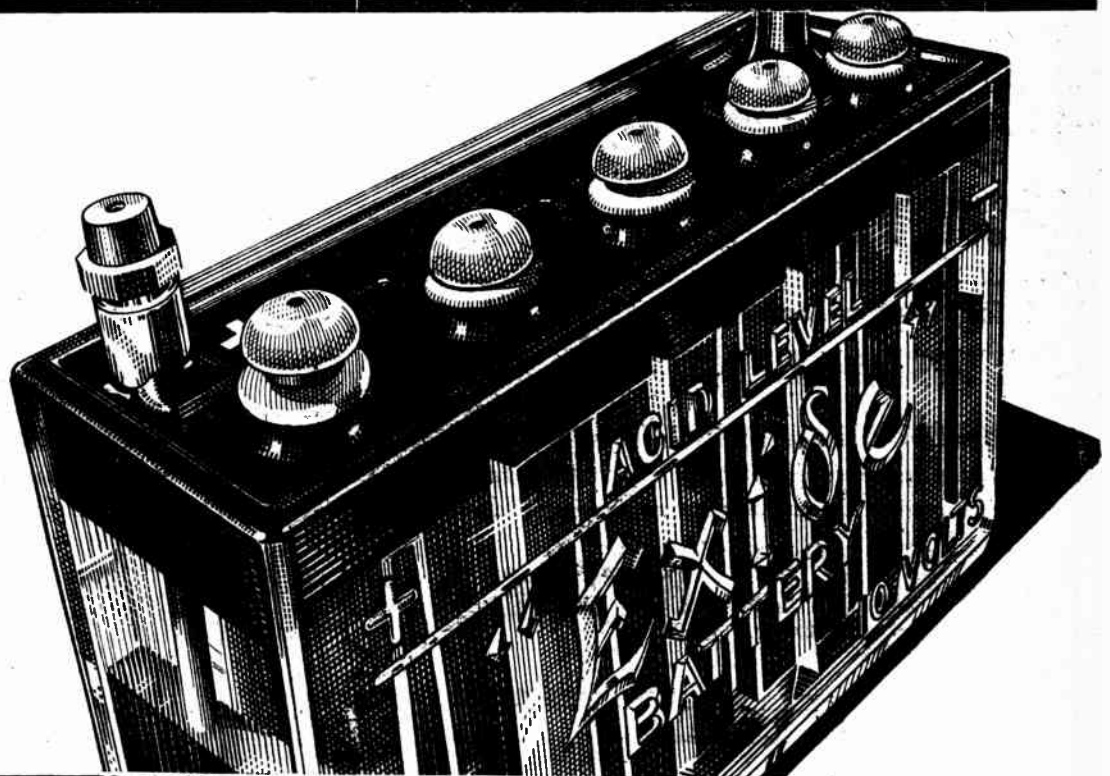
W.W. 17/3/33

Columbia, 98, Clerkenwell Rd., London, E.C.1.



Don't put up with wireless that buzzes
 and crackles **This is the way to**
crisp and clear reception

P.3



Exide

WIRELESS **H.T.**
ACCUMULATORS

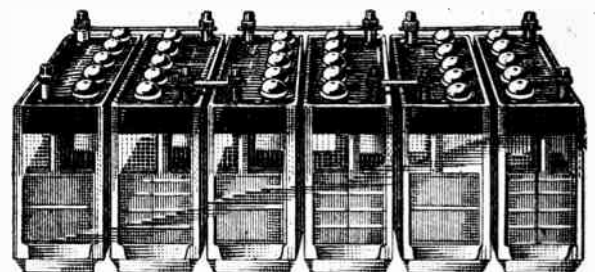
● Prices per 10-volt unit: Type WJ 2,500 milliampere hours 5/-. Type WH 5,000 milliampere hours 6/3. Type WT 10,000 milliampere hours 12/-. Also complete batteries in crates.

These prices do not apply in the Irish Free State.

EXIDE BATTERIES, EXIDE WORKS, CLIFTON JUNCTION, NR. MANCHESTER
 Branches: London, Manchester, Birmingham, Bristol, Glasgow, Dublin, Belfast

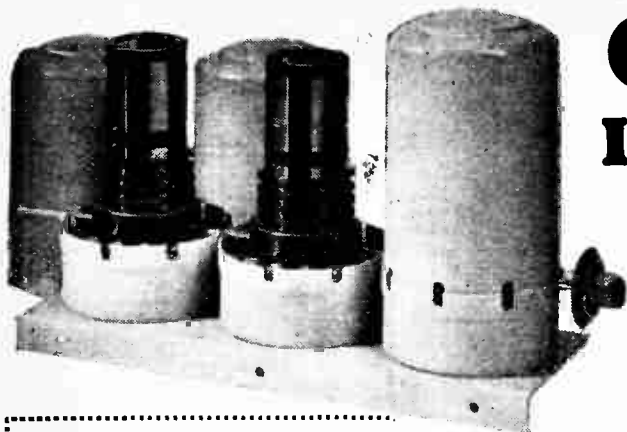
Almost all the unwanted noises in a wireless set come from the H.T. supply. If the H.T. supply is perfectly smooth and steady, then nothing will be heard but the programme. Every wireless engineer knows that the accumulator is the only source of H.T. that is perfect in this respect. That is why the B.B.C. use them. That is why Exide H.T. Accumulators have been chosen for almost every important speech relay. They are economical too, for although they cost more at first they can be recharged when run down. If you want the clearest reception it is possible to get, invest in an Exide H.T. Accumulator.

*From Exide Service Stations
 or any reputable dealer. Exide
 Service Stations give service
 on every make of battery.*



SECURE MAXIMUM EFFICIENCY IN THE A.C. "MONODIAL" BY USING

COLVERDYNE INTERMEDIATES

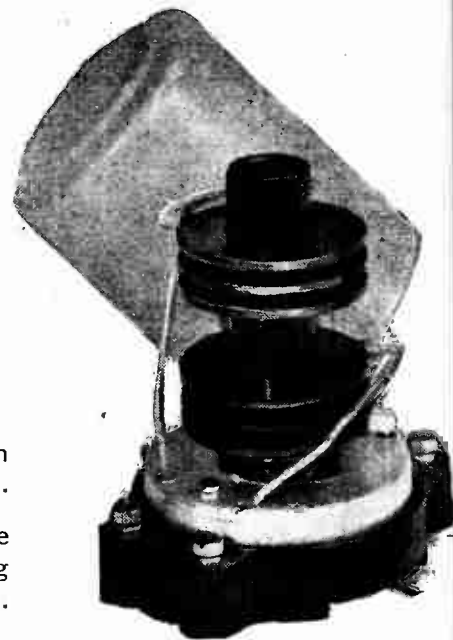


Designed to work in conjunction with

COLVERN 'K' TYPE COILS

In receivers of outstanding design Colvern Coils are incorporated . . .

Colvern Screened Coils are accurate and reliable, their inductance being guaranteed to be within 1%



For the A.C. "MONODIAL" with Automatic Volume Control.

1 Set Coils, Type WWMD at 30/- per set.

3 Colverdynes. Type 110 at 12/6 each.

Send for Radio List No. 10.

COLVERN LIMITED, MAWNEYS RD., ROMFORD, ESSEX

London Wholesale Depot: 150, KING'S CROSS ROAD, W.C.1

USED IN THE A.C. MONODIAL SUPER BY THE AUTHOR!—

STANDARD MODEL 37/6

A.V.C. MODEL 39/6

Over 4,000 CHALLIS TRANSFORMERS ALREADY SUPPLIED FOR THIS SET

2.5 Watts A.V.C. Power Chassis.

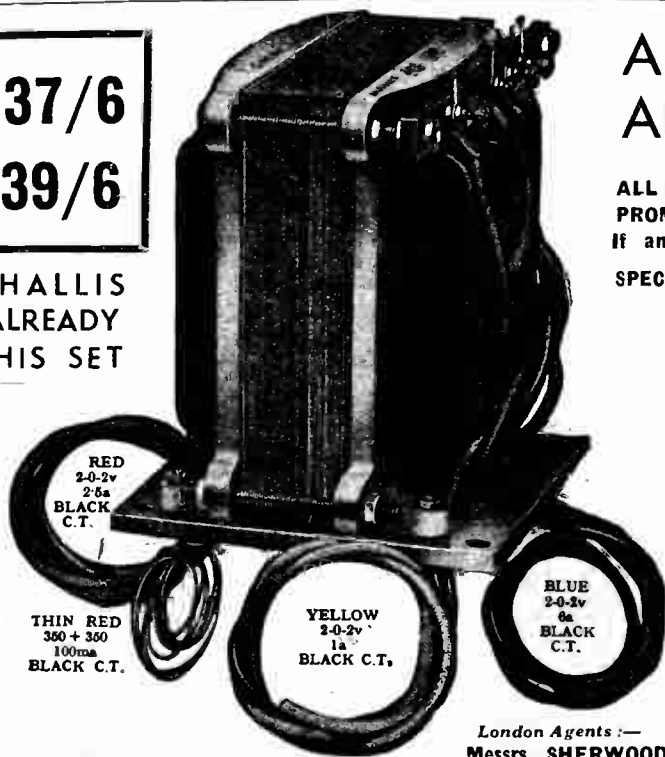
1 Mains transformer, 210-240 v. 40/100 cycles 350-350 v. 100 mA. 4 v. 6 amps., centre-tapped. 4 v. 2 1/2 amps., centre-tapped. 4 v. 1 amp., centre-tapped. 4 v. 1 amp., centre-tapped with screened primary. 39/6

5 Watts A.U.C. Power Chassis.

1 Mains Transformer, primary with earthed screen, secondary windings, 400-0-400. 4 v. 6 amps., c.t.: 4 v. 3.5 amps., c.t.: 4 v. 2 amps.: 4 v. 1 amp. c.t. 47/6

The "Wireless World" Ferracart III. A.C. Receiver.

1 Mains transformer, screened primary. 350-0-350 v. 60 mA. 4 v. 2.5 amps., c.t., 4 v. 3.5 amps., c.t. 28/6
DELIVERY FROM STOCK.



AS ILLUSTRATED AND SPECIFIED.

ALL CHALLIS TRANSFORMERS CAN BE SUPPLIED PROMPTLY THROUGH YOUR USUAL RETAILER. If any difficulty in delivery write us direct.

SPECIAL TRANSFORMERS AT SHORT NOTICE.

Set Manufacturers Enquiries Solicited.



41, King Edward Road, RUGBY.

London Agents:—
Messrs. SHERWOOD, 12, Charles Street, Hatton Garden, E.C.1

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.



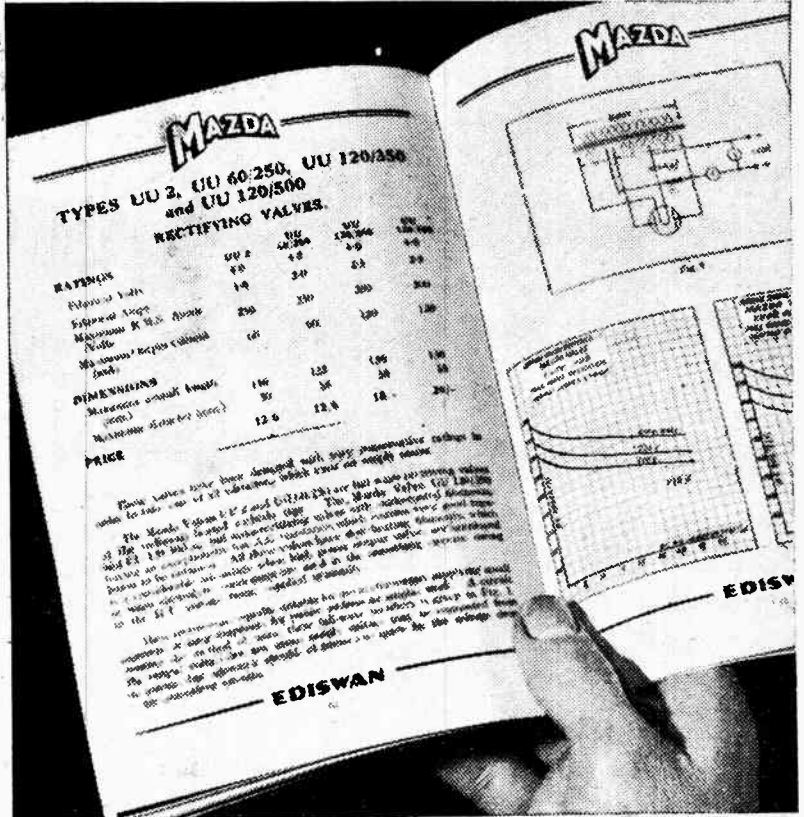
EDISWAN



The name that means 'EXCELLENCE'

DO YOU KNOW

THE ADVANTAGES OF USING RECTIFIERS WITH INDIRECTLY HEATED CATHODES?



Mazda indirectly heated rectifiers have slow-heating cathodes. Most valve users know that; but few realise how valuable that property is—how it safeguards the electrolytic condensers and chokes in the smoothing circuits. That is the advantage of this book. It tells you, not only the characteristics of Mazda Valves but also how to use them at the peak of efficiency. By using it you save time and unnecessary trouble and expense; and get the results you want—first time and all the time.

THIS BOOK TELLS YOU!



"The Book of the Mazda Valve" No. R.782 is a mine of useful information about valves in general and Mazda Valves in particular.

It contains facts and figures, circuit diagrams, component values, characteristic curves—in fact, all the valve user wants to know about valves. Send for your FREE copy to-day—or ask your dealer for one.

MAZDA THE BRITISH VALVES

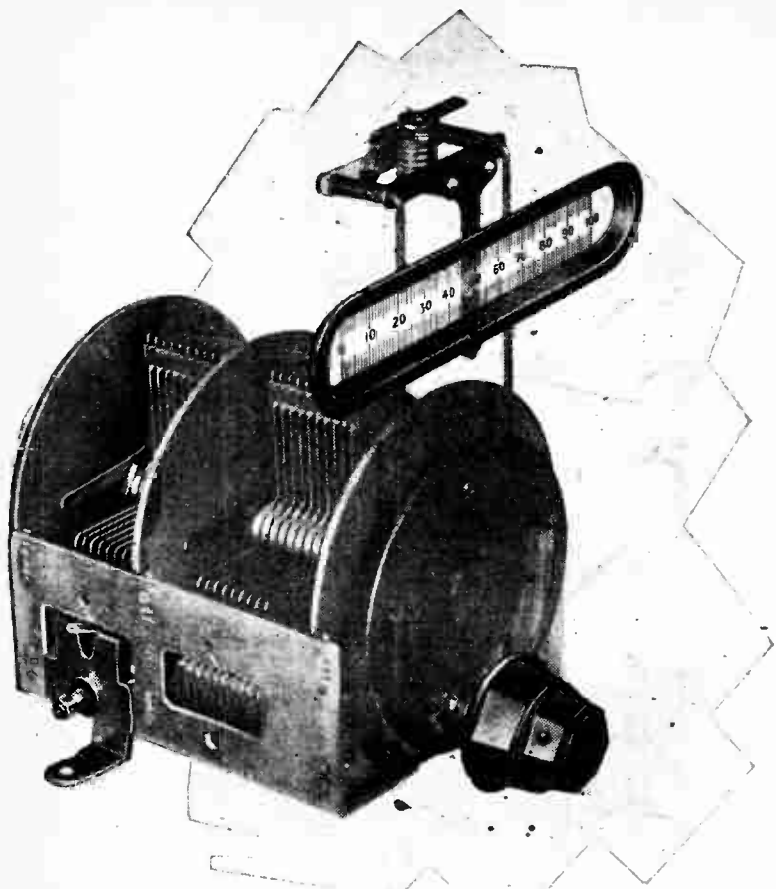


THE EDISON SWAN ELECTRIC CO. LTD., 155 CHARING CROSS ROAD, W.C.2

Mazda Radio Valves are manufactured in Great Britain for The British Thomson-Houston Co. Ltd., London and Rugby.

RECOMMENDED BY ALL GOOD RADIO DEALERS

V.195



A NEW CONDENSER WITH THE NEW TUNING

This new Utility two gang condenser is probably the finest condenser made. It is matched as near as possible to zero error—the guaranteed matching is $\frac{1}{2}\%$ —and it will remain permanently matched during the life of the condenser. Try it for yourself in a bandpass circuit and notice the difference. And to make it as perfect as possible it is sold complete with the Utility Straight Line Dial. Obviously, the common sense method of tuning is to have a moving pointer transversing a stationary scale and it is the unique feature of this new dial.

W 312/2 2 gang condenser complete with
Straight Line Dial as illustrated **24/6**

From your dealer or post free from the makers.

WILKINS & WRIGHT LTD.,
UTILITY WORKS, HOLYHEAD ROAD, BIRMINGHAM.
London Agent: E. R. MORTON, LTD., 22, Bartlett's Buildings,
Holborn Circus, E.C.4

Utility

Chosen
Exclusively
by the
"Wireless
World"
for the—



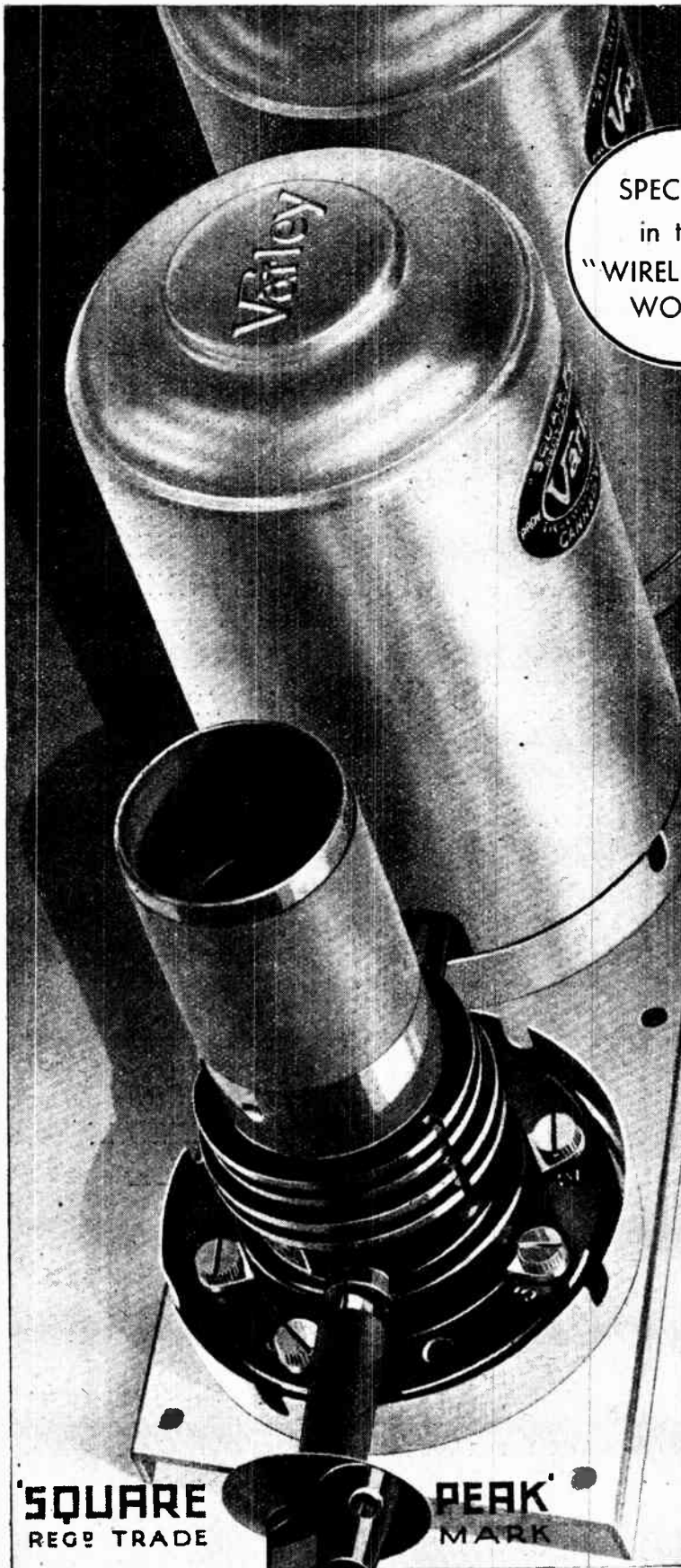
A.C. Monodial
Super with
AUTOMATIC VOLUME CONTROL

DUBILIER CONDENSERS



The absolute dependability of Dubilier Condensers makes them the obvious choice of every discriminating set designer and constructor.

DUBILIER CONDENSER CO. (1925) LTD.
Ducon Works, Victoria Rd., N. Acton, W.3



SPECIFIED
in the
"WIRELESS
WORLD"

A.C. MONODIAL SUPER with A.V.C.

"SQUARE PEAK" SUPER- HET COILS - Type BP19

With these coils single-knob control is obtained without using any "padding" condensers on the medium waves, and with only one additional fixed condenser on the long waves. The intermediate frequency is 110 k.c.

Supplied as a complete unit comprising single control aerial, intervalve and oscillator coils. List No. BP19.

3-gang unit on aluminium base-plate **30/-**

Also Specified:—

VARLEY THERMAL DELAY SWITCH

Automatically permits the valve filament to be heated for the desired one minute before switching on the anode circuit.

List No. EP17 Price **8/6**

VARLEY POWER RESISTANCE

2,500 ohms.

List No. CP38 . . Price, including Holder, **4/6**

(Resistance only, **3/-**)

SQUARE
REGD TRADE

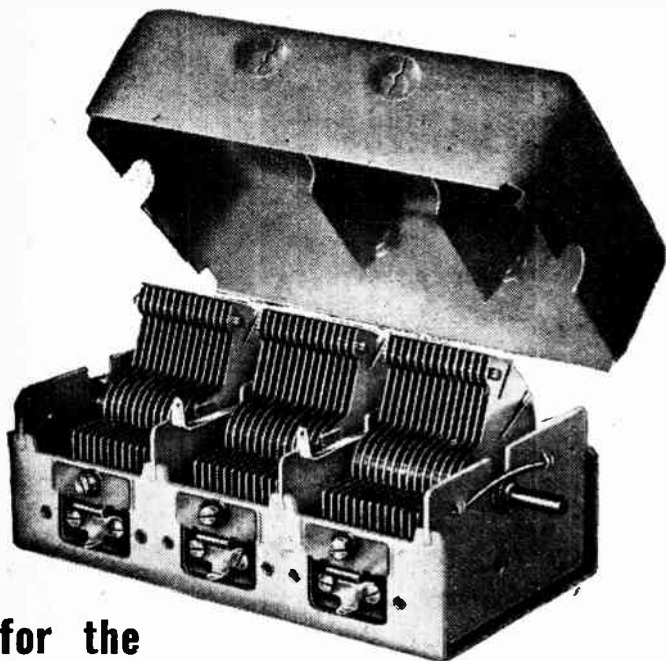
PEAK
MARK

FREE BROCHURE ON Q.P.P.
"The Battery Set Comes Into Its Own,"
tells you all about installing Q.P.P. Write
for your copy to-day.



*Advt. of Oliver Pell Control, Ltd., 103, Kingsway, W.C.2.
Tel.: Holborn 5303.*

The only GANGED CONDENSER



for the
"W.W." A.C. MONODIAL SUPER
with Automatic Volume Control

"The Wireless World" in designing this new A.C. Monodial receiver have repeated their selection of the British Radiophone 3 Ganged Super Heterodyne Condenser which was such an important factor in the success of other Monodial Super receivers.

The unequalled precision of this condenser, which is supplied with the trimmers on the right-hand side, complete with cover and disc drive, is achieved by virtue of sound mechanical construction which maintains the electrical characteristics at fixed value under the most exacting conditions.

Built up from sheet steel and treated with a special anti-corrosive medium, the cases resist all tendency to distort or rust—so that matching can be carried out with the utmost degree of accuracy, and lasting efficiency is ensured.

The rotor bearings are designed so that any end-wise movement of the spindle is effectively prevented and smooth silent action is ensured during rotation.

SPECIFIED FOR THE "W.W." A.C. MONODIAL SUPER

Type 424a Super Het. 3-gang Condenser.	Price 27/-
3-gang cover	3/-
Escutcheon and Disc Drive Assembly	5/-

BRITISH RADIOPHONE LTD., Aldwych House, London, W.C.2
Telephone—HOLBORN 6744.

**RADIOPHONE
GANGED CONDENSERS**

LYONS' COMPONENTS Specified Again — this time for the "A.V.C. A.C. MONODIAL SUPER"

FOR THE A.V.C. RECEIVER CHASSIS:

1 VOLUME CONTROL, P5-250A, 250,000 ω	6/6
1 WIREWOUND POTENTIOMETER, 5,000 ω	5/6
15 "B.A.T." (Best-After-Test) FIXED RESISTANCES, 1-WATT, viz.: 2 \times 250 ω , 3 \times 1,000 ω , 1 \times 2,500 ω , 1 \times 10,000 ω , 1 \times 30,000 ω , 1 \times 50,000 ω , 1 \times 75,000 ω , 2 \times 100,000 ω , 1 \times 250,000 ω and 2 \times 1 Megohm : @ 10 $\frac{1}{2}$ d. each	13/1 $\frac{1}{2}$
1 "B.A.T." RESISTANCE, 2-WATTS, 4,000 ω	1/9
1 "B.A.T." RESISTANCE, 3-WATTS, 6,000 ω	2/9
1 "B.A.T." "Q.M.B." MAINS SWITCH, No. 729	1/9
1 "B.A.T." "Q.M.B." MAINS SWITCH, No. 728	1/6

FOR THE 2.5-WATTS A.V.C. POWER CHASSIS:

1 "B.A.T." 1-WATT RESISTANCE, 10,000 ω	10 $\frac{1}{2}$ d.
1 "B.A.T." 1-WATT RESISTANCE, 50,000 ω	10 $\frac{1}{2}$ d.
1 "B.A.T." 2-WATT RESISTANCE, 700 ω	1/9
1 "B.A.T." 2-WATT RESISTANCE, 1,000 ω	1/9

FOR THE 5-WATTS A.V.C. POWER CHASSIS:

1 HD.30, 30 ω "HUM-DINGER"	2/6
1 POWER RESISTANCE, 2,500 ω , 10 WATTS	7/6
4 "B.A.T." 1-WATT RESISTANCES AT EA. (1 ea. 100 ω , 5,000 ω , 10,000 ω and 50,000 ω)	10 $\frac{1}{2}$ d.
1 "B.A.T." 3-WATTS RESISTANCE, 500 ω	2/9

CONVERSION KIT:

(CONVERTS AN EXISTING MONODIAL FOR A.V.C.)

1 VOLUME CONTROL, P5-250A, 250,000 ω	6/6
10 "B.A.T." 1-WATT RESISTANCES, viz.: 2 \times 250 ω , 1 \times 2,500 ω , 1 \times 10,000 ω , 1 \times 50,000 ω , 1 \times 75,000 ω , 2 \times 100,000 ω and 2 \times 1-Megohm	8/9
1 "B.A.T." 2-WATT RESISTANCE, 4,000 ω	1/9
1 "B.A.T." 3-WATT RESISTANCE, 6,000 ω	2/9

IMPORTANT NOTICE.

- "B.A.T." (Best-After-Test) PRODUCTS ARE GUARANTEED 100% BRITISH-MADE.
- "B.A.T." RESISTORS WILL EASILY DISSIPATE TWICE THEIR VERY NOMINAL POWER RATINGS.
- TO PAY MORE FOR RESISTANCES IS ABSURD AND UNNECESSARY—TO PAY LESS IS INVITING DISAPPOINTMENT.
- IF YOU WISH TO OBTAIN OUR LABORATORY TREATISE, "OHMS LAW WITHOUT TEARS" (SECOND EDITION), SEND TO-DAY FOR YOUR FREE AND POST FREE COPY.

This 16-page 2-colour Art Brochure describes in non-technical language how to employ fixed resistances for all radio and allied applications. Numerous Figs., worked examples, colour-code, 4-Scale "A.B.A.C.," etc. This Brochure also contains a 2-page detailed, independent Laboratory Report, proving the great superiority of our World-Famous "B.A.T." 1, 2, 3 and 5-Watt Resistances.

If difficulty is experienced in obtaining our Products, write:—

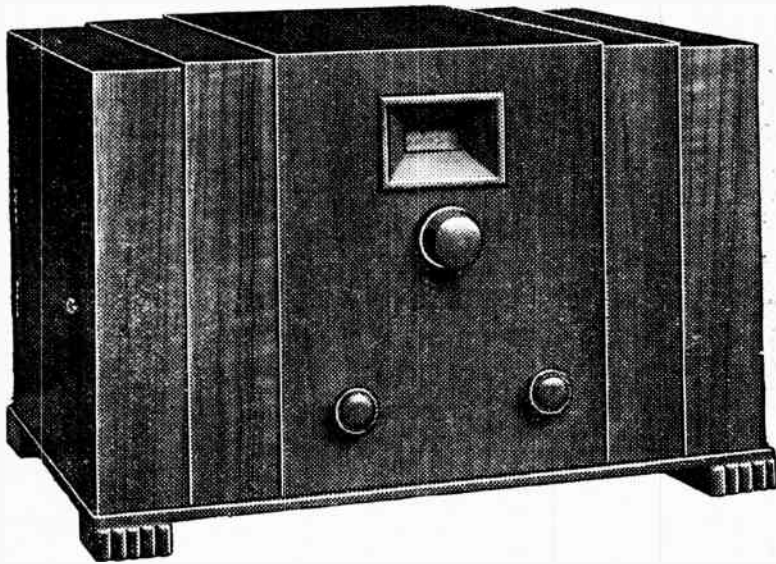
**CLAUDE LYONS LIMITED,
76, OLDHALL ST., LIVERPOOL.
LONDON: 40, BUCKINGHAM GATE, S.W.1.**

G.E.C. Radio

TWO SHORT-WAVE SUPER-HETS.

Specially designed for Empire Broadcast reception in any part of the world and for use in all climates. Excellent reports have been received concerning reception of transmissions from the Empire short-wave transmitters at Daventry.

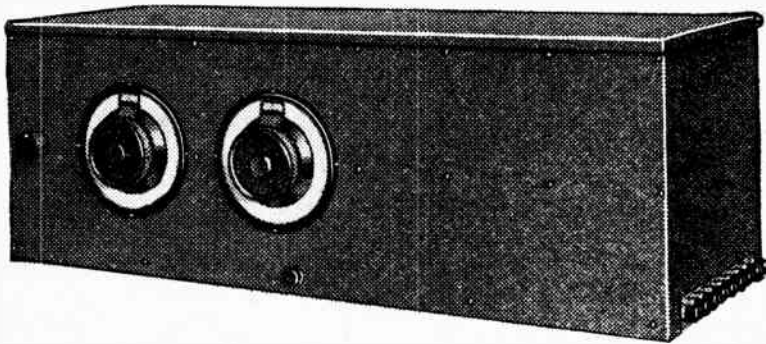
A.C. MAINS MODEL



PRICE including OSRAM VALVES and Royalty
24 Guineas.

HIRE PURCHASE: Deposit £2 2s. od. and 12 monthly payments of £2 2s. od.

BATTERY MODEL



PRICE including OSRAM VALVES and Royalty
22 Guineas.

HIRE PURCHASE: Deposit £2. and 12 monthly payments of £1 18s. 6d.

Brilliant performance giving reception over thousands of miles on short and medium wave bands characterises these two outstanding models.

A.C. MAINS MODEL
Cat. No. B.C.3360

- 1 A Short and Medium Wave All-Electric Super-heterodyne receiver giving enormous range and selectivity.
- 2 Single dial tuning (12/80 and 200/550 metres).
- 3 Provision for C.W. reception and Gramophone Pick-up.
- 4 Band Pass Tuning.
- 5 Powerful output, with perfect quality (2-watt A.C. output).
- 6 Six High Efficiency A.C. OSRAM VALVES, including Rectifier.
- 7 Universal Mains Transformer for 100/150v. and 200/260 v. A.C. Mains 40/80 cycles.
- 8 Polished Teak Cabinet of pleasing appearance.

BATTERY MODEL
Cat. No. B.C.3161.

- 1 A Six-valve Short and Medium Wave Battery Super-heterodyne of outstanding performance.
- 2 Covers all wavelengths 13 to 720 metres.
- 3 Band Pass Filters—7 tuned circuits.
- 4 Gramophone Pick-up Jack.
- 5 Minimum H.T. Consumption. OSRAM VALVES throughout.
- 6 Attractively finished in weather-proof metal cabinet—tropical specification.

MADE IN ENGLAND

Sold by all Radio Dealers.

Use the GECOPHONE Magnetic Loud Speaker B.C.1845 with both models. Price 45/-. For B.C.3161 use two MAGNET Triple Capacity Batteries L.4903. Price 12/- each. Grid Bias Battery L.6096 (9 volt). Price 1/-; and 2 volt Accumulator, prices from 9/-.

BRITISH RADIO INDUSTRY STABILISING BY CO-OPERATION

EKCO and their Dealers make Genuine Sacrifices

PUBLIC BENEFIT BY BIG PRICE REDUCTIONS

To meet existing economic conditions, radio prices must be lowered to rock-bottom. How can this be done? Only by all trade sections co-operating to reduce their margin of profit to the lowest possible figure compatible with efficiency. EKCO, their Wholesalers and Retailers, have given a lead to the Industry by doing this. Each has agreed to operate on a lower margin of profit with the conviction that the ultimate benefit will be bigger sales and therefore increased employment.

MODEL M.23 ALL-ELECTRIC CONSOLETTA

(3-Valves + Metal Rectifier)
For A.C. or D.C. Mains.

REDUCED FROM
15 GUINEAS

NOW ONLY

10 GNS.

or by 12 monthly
payments of 19/3

THE THREEFOLD SAVING EFFECTED IS PASSED ON TO
THE PUBLIC IN THE FORM OF BIG PRICE REDUCTIONS.

The most important result of these price reductions is that you can now have confidence *you will never buy quality radio at lower prices.* And, mark this carefully, you will buy radio that will remain up-to-date for many years to come.

Lowest manufacturing costs are only possible with large, modern plant. In the new £100,000 British EKCO Factory, designed especially for the manufacture of radio, electrical and large moulded products, and covering five acres, you will find every modern device and process, supported by a sound trading policy. In less than seven years production costs have been reduced by 60%—savings which have been passed on to you.

Moreover, every EKCO Set is backed by a mobile force of highly-skilled Service Engineers covering the country—a home service that will save you the trouble of sending your set back to the factory, in the rare event of it ever going wrong.

MODEL S.H.25 ALL-ELECTRIC SUPER - HET

(5-Valves + Metal Rectifier)
For A.C. or D.C. Mains.

REDUCED FROM
24 GUINEAS

NOW ONLY

19 GNS.

or by 12 monthly
payments of £1.16.9

MODEL R.G.23 ALL-ELECTRIC RADIO-GRAM
(3-Valves + Metal Rectifier). For A.C. or D.C. Mains.
Electrically-operated gramophone in polished walnut cabinet. Chassis as per Model M.23 above.

A.C. MODEL Reduced From 28 gns. to 23 gns.
(Or by 12 monthly payments of £2. 4. 6.)

D.C. MODEL Reduced From 30 gns. to 25 gns.
(Or by 12 monthly payments of £2. 8. 3.)

MODEL R.G.25 ALL-ELECTRIC RADIO-GRAM
(5-Valve-Super-het receiver + Metal Rectifier.) For A.C. or D.C. Mains. Electrically-operated gramophone in polished walnut cabinet. Chassis as per Model S.H.25 above.

A.C. MODEL Reduced From 42 gns. to 36 gns.
(Or by 12 monthly payments of £3. 9. 6.)

D.C. MODEL Reduced From 45 gns. to 39 gns.
(Or by 12 monthly payments of £3. 15. 3.)

MODEL C.25 ALL-ELECTRIC SUPER-HET CONSOLE. (5-valves + Metal Rectifier.) Polished walnut cabinet. For A.C. or D.C. Mains.

Reduced From 28 gns. to 21 gns.
(Or by 12 monthly payments of £2. 0. 6.)

Buy your set from an EKCO Dealer. He is qualified to install and demonstrate in your own home and to give you every advice, FREE OF CHARGE.



To E. K. COLE, LTD., Dept. W.3.
EKCO Works, Southend-on-Sea.
Please send me FREE illustrated literature of EKCO All-Electric Radio.

Name.....
Address.....

The Wireless World

THE
PRACTICAL RADIO
JOURNAL
22nd Year of Publication

No. 707.

FRIDAY, MARCH 17TH, 1933.

VOL. XXXII. No. 11.

Proprietors: ILIFFE & SONS LTD.

Editor:

HUGH S. POCOCK.

Editorial Offices:

116-117, FLEET STREET, LONDON, E.C.4.

Editorial Telephone: City 9472 (5 lines).

Advertising and Publishing Offices:

DORSET HOUSE, TUDOR STREET,
LONDON, E.C.4.

Telephone: City 2846 (17 lines).
Telegrams: "Ethaworld, Fleet, London."

COVENTRY: Hertford Street.

Telegrams: "Cyclist, Coventry." Telephone: 5210 Coventry.

BIRMINGHAM:

Guildhall Buildings, Navigation Street, 2.

Telegrams: "Autopress, Birmingham." Telephone: 2970 Midland (3 lines).

MANCHESTER: 260, Deansgate, 3.

Telegrams: "Iliffe, Manchester." Telephone: Blackfriars 4412 (4 lines).

GLASGOW: 26B, Renfield Street, C.2.

Telegrams: "Iliffe, Glasgow." Telephone: Central 4857.

PUBLISHED WEEKLY. ENTERED AS SECOND
CLASS MATTER AT NEW YORK, N.Y.

Subscription Rates:

Home, £1 1s. 8d.; Canada, £1 1s. 8d.; other
countries abroad, £1 3s. 10d. per annum.

As many of the circuits and apparatus described in these
pages are covered by patents, readers are advised, before
making use of them, to satisfy themselves that they would
not be infringing patents.

CONTENTS

	Page
PROGRAMMES FROM ABROAD, pp I-XXIV	
Editorial Comment	199
New Battery Output Stage	200
How Ferrocart is Made	203
Unbiased	201
News of the Week	205
Broadcast Brevities	206
Practical Hints and Tips	207
Adding A.V.C. to the Monodial	208
Laboratory Tests	211
Geophone S.W. Superheterodyne	212
Letters to the Editor	214
Readers' Problems	216

EDITORIAL COMMENT

The Lucerne Plan

Points for Discussion

NO official disclosures have, as yet, been made as to what will be the precise agenda put before the broadcasting authorities of Europe at their Conference which is to be held at Lucerne, probably in May next, but from what information we have been able to obtain it would seem that the purpose of the Lucerne Plan will be to try to clean up the ether and modify the present wavelength plan in so far as it has been found necessary to do so as a result of the increase in power of a number of European stations, and to arrange, also, for the accommodation of some further high power stations which are awaiting wavelength allocation. It is believed that the new Plan will retain the existing frequency separation of 9 kC.

Amongst the proposals to be discussed, one, we understand, is that there should be an extended use of common wavelengths for stations of low power, especially where these are widely separated geographically. It is apparent to anyone looking through the present list of broadcasting stations of Europe that a good deal could be done in this way and that the effect would undoubtedly be to clean up the ether for the benefit of those stations which are intended to cover a wide service area and, therefore, are of high power. There are at present rather too many little stations on the fringe of big ones, tending to mar reception of the latter.

It has been suggested that proposals may be made for the allocation of certain wavelengths by hours. Such a scheme might be very effective in theory, as a means of overcoming some of the interference difficulties, but if it is intended that certain stations would change their wavelengths at specified

times, we anticipate that the scheme would not find favour with listeners, who are now accustomed to tuning in and identifying stations by wavelength, and would find it extremely inconvenient if this process were further complicated by regular changes in wavelength.

A.V.C.

An Addition to the Monodial

IN this issue we describe how to make modifications and additions to *The Wireless World* Monodial A.C. Superhet, in order to provide the set with automatic volume control. Every reader who has built the Monodial will be anxious to make this addition, which we have ourselves had in operation for some time and so can answer for the entirely satisfactory way in which it functions.

There will be many readers attracted to the Monodial for the first time as a result of the incorporation of A.V.C., and in our description we have arranged to meet their requirements by indicating all that is necessary when making a fresh start to build the Monodial with A.V.C. incorporated.

Class "B" Amplification

First Details This Week

EARLY information on Class "B" Amplification is included in this issue. Special valves have been designed for use with this system and are, in fact, double valves in one envelope. Class "B" Amplification has the advantages that matching of valves is unnecessary, the performance falls very little short of that of much more elaborate output stages, and yet it is substantially more economical both in battery current consumption and in initial cost.

New Battery Output Stage

Class "B" Amplification: The Latest Development

HOT on the heels of Quiescent Push-Pull comes Class "B" amplification, another means of procuring mains volume from the ordinary H.T. battery. A glance at the power output figures given in this article will reveal the extraordinary efficiency attainable with the new dual valve, no less than two watts speech being delivered to the loud speaker for a surprisingly small H.T. consumption. It is safe to predict that Class "B" output will find wide application in future battery receivers.

By F. M. WALKER, B.Sc.

(Chief Valve Engineer, Cossor Research Laboratories)



The new Cossor 240B valve with 7-pin base.

UP to the present date two main forms of L.F. amplification have been available for the battery set user in this country. The first of these is the ordinary form where the output valve is biased to the mid-point of its characteristic curve. In this case, the anode current drawn from the H.T. battery is steady and does not vary with the strength of the signal applied. In addition, the maximum signal which the valve will accommodate is limited by the fact that no grid current must flow at any instant.

The second system is that of the well-known form called Q.P.P. Here two valves are used in the output stage, and both of them are supplied with bias sufficient very nearly to cut off the whole of their plate current when no signal is being received. The anode current from the H.T. battery is now not constant, but varies in a manner roughly proportional to the strength of signal received. Here again, however, the maximum signal which the valve can handle, and, therefore, the available power which it can deliver to the loud speaker, is limited by the fact that grid current must never flow.

Mains Output

In the form of push-pull amplification to be described, which is known in America as Class "B" amplification, the limitation which is common to the two schemes mentioned above, due to grid current considerations, does not exist. In consequence, the signal handling capacity of the valve is unlimited on this score. In addition, the plate current drain on the H.T. battery is proportional to the strength of signal received, and is not constant irrespective of the signal strength. The net consequence of these two facts is that a system is now available for bat-

tery set users which provides an undistorted output of 2 watts or more with an anode current consumption well within the capacity of quite small H.T. batteries. Such an output is, of course, equal to that of a large mains set.

The fact that in previous forms of L.F. amplification the flow of grid current in the amplifying valve means serious distortion, is well known. The exact reason for this distortion is, it is probable, not commonly realised. Grid current in modern valves generally commences to

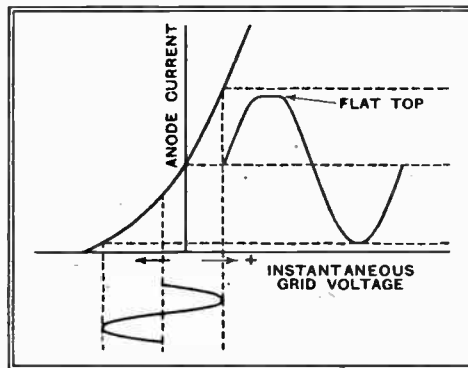


Fig. 1.—Distortion due to grid current flow in an ordinary L.F. amplifier. Note the flattening of peaks of the output wave.

flow when the grid becomes very slightly positive and increases rapidly with increase in positive grid voltage. When such grid current occurs in a set in operation it will, therefore, do so towards the peaks of the positive half-cycles. A high resistance of some form is generally present in the grid circuit of an amplifying valve (L.F. transformer secondary or resistance in R.C. coupling), and this current in flowing through such a resistance will entail a drop in voltage. In consequence, when grid current flows, the form of distortion present in ordinary forms of L.F. amplifiers will be a flattening of the peaks of the waves (see Fig. 1). Another way of regarding this distortion is to consider that the passage of grid current through the grid circuit entails an energy or wattage loss. This conception leads us at once to Class "B" amplification, since in this system a small power valve is

used which precedes the Class "B" valve proper, and which is coupled to the latter by means of a special transformer. The function of this transformer and valve is to supply the energy loss mentioned which occurs due to grid current flow, and thus to maintain the wave form in an undistorted condition. This valve is known as the "driver" valve, and its associated transformer as the "driver" transformer.

The Class "B" valve, which has been designed in the Cossor Valve Laboratories for use in battery sets, has two complete sets of valve elements enclosed in one bulb, separate leads being provided for each anode and grid, the filament connections being common. This has been rendered possible by the fact that matching of the two halves of the output is not at all critical, and thus any slight differences between the two halves due to small inherent manufacturing variations do not introduce audible distortion. The valve has a 7-pin base, with the pins arranged so that it is impossible to make wrong connections with the valve-holder. The relative connections to the latter are given in Fig. 8.

The working details of this valve are described later. It is designed in such a fashion that its anode current at an anode voltage of 120 is about 2 mA at zero bias. In consequence, no grid bias

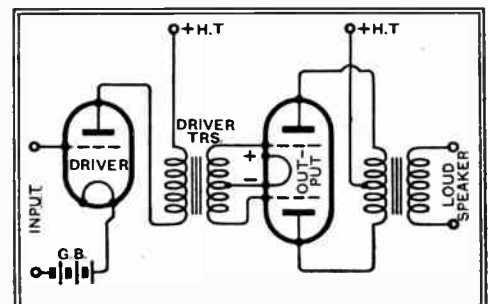


Fig. 2.—Skeleton circuit diagram of the driver stage linked to Class "B" output valve. No grid bias is required for the last valve.

is required to bring the valve to the bottom bend of its characteristic, the point at which it is desired to operate.

New Battery Output Stage—

Referring to the circuit diagram Fig. 2, it will be seen that if at any instant the grid of one-half of the output valve is positive with respect to the filament, the other grid is negative. Thus grid current is always flowing in either one-half of the secondary of the transformer or the other, and, in general, will cause a voltage drop across that half of

this transformer, and since the peak value of this current may momentarily reach fairly large values, the D.C. resistance of the primary winding should be small, so as to minimise voltage dropping; 200 to 250 ohms is a suitable value. For the same reason the core used should be generous in proportions, the primary inductance being of the order of 20 henrys overall.

Owing to the extreme changes in impedance with frequency of moving iron speakers, these are not recommended for Class "B" amplification. Permanent magnet moving-coil loud speakers are to be preferred, and, if such can be obtained with high enough voice coil impedances, tapped choke output is recommended. Moving-iron speakers may, however, be used if a

tone corrector be applied.

the lowest impedance is offered by the grid circuit of either half of the Class "B" valve. This impedance is about 2,500 ohms, and owing to the fact that only one-half of the secondary of the driver transformer is in operation at any moment, the effective minimum load into which the valve works is 10,000 ohms if the overall ratio of the driver transformer is 1:1.

Two Watts Output

The energy which has to be supplied by the driver valve to make up for the energy loss due to grid current flow is at this point about 70 milliwatts. This output can well be given by a Cossor 215P valve biased at -9 volts and with a plate voltage of 120 volts. Its steady plate current under these conditions will be 2½ mA.

Fig. 6 shows the A.C. output obtained from the valve at plate voltages of 120 and 90 plotted against anode circuit load, together with the percentage corresponding total harmonic distortion, the grid swing being limited to 40 volts peak. The distortion is almost entirely due to third and odd higher harmonics, as is usual in such forms of push-pull. It will be observed that the optimum load for the valve is about 8,000 ohms plate-to-plate, and that the A.C. output obtainable is 2 watts at a plate voltage of 120.

It would appear at first sight from examination of the valve's dynamic curves that the optimum load is 2,000 ohms. The discrepancy lies, of course, in the fact that only one half of the output transformer is in use at any instant, and hence a multiplying factor of four has to be introduced giving a plate-to-plate load of 8,000 ohms. The effect may be well understood by regarding the primary of the output transformer as a kind of auto-transformer.

The comparatively low load of 8,000 ohms is of great value in output transformer design both regarding cost and effi-

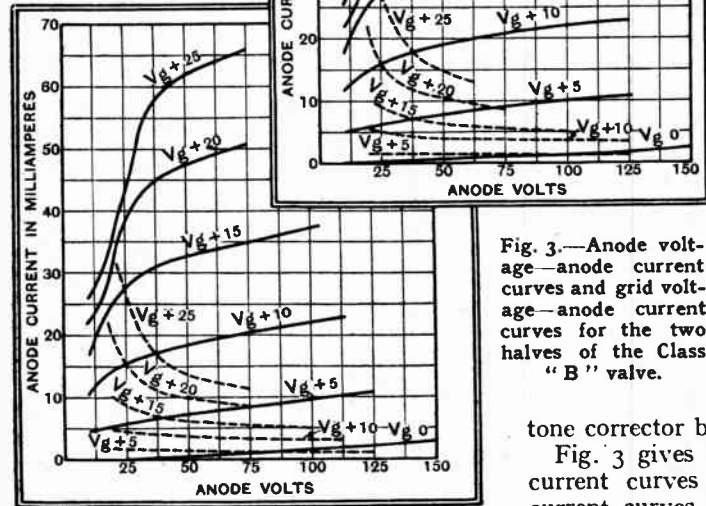


Fig. 3.—Anode voltage—
anode current
curves and grid voltage—
anode current
curves for the two
halves of the Class
"B" valve.

the secondary in which it flows, and therefore tends to produce distortion of the peaks of the signal voltage waves. The driver transformer must therefore have a secondary winding of very low D.C. resistance (good regulation), being wound of wire such as is used in power transformers. The D.C. resistance of the whole secondary should not exceed in any case 300 ohms, in order that distortion from this cause may be negligible.

This point is of great importance, and, if it is adhered to, no measurable distortion whatever is introduced at this stage. Except for the design of this transformer, the circuit presents no difficulties. The driver valve is connected as a low-frequency amplifier of the usual conventional type and supplies an undistorted and requisite signal to the Class "B" valve. The output transformer following the Class "B" valve has, of course, a centre-tapped primary and is of the correct ratio to give the load into which the Class "B" valve is designed to work, in relation to the loud speaker impedance.

Since the anode current of the valves passes through the primary of

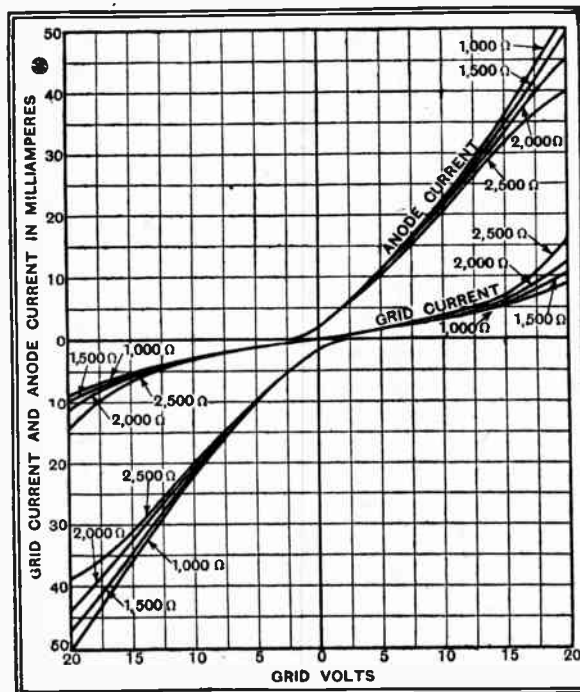


Fig. 4.—Dynamic curves for the whole valve for various loads taken at an anode voltage of 120.

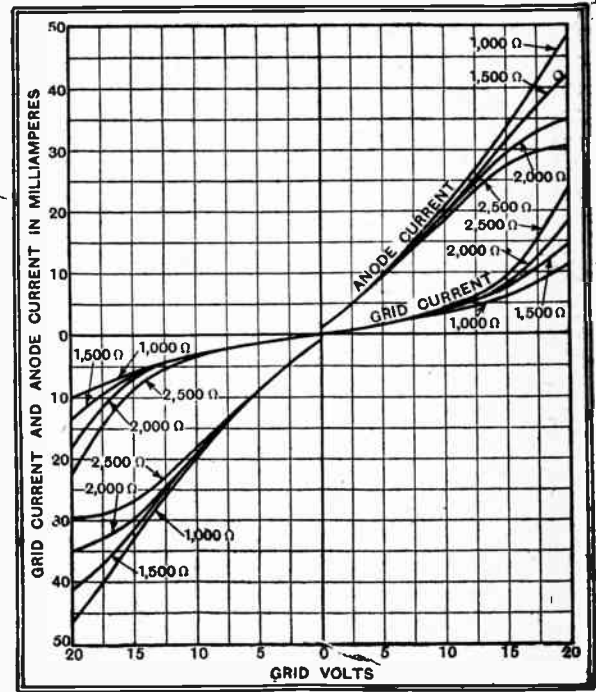


Fig. 5.—Dynamic curves taken at an anode voltage of 90.

New Battery Output Stage—

ciency. In itself it would be regarded by many as perhaps the most vital advantage of the system secondary to low anode current consumption for high A.C. output. There is also, of course, the tremendous advantage of having no bias for the output stage.

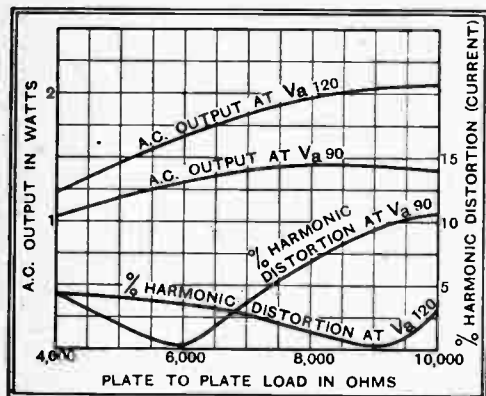


Fig. 6.—(above) The A.C. output and percentage harmonic distortion of the Class "B" valve plotted against plate-to-plate load. Fig. 7. (right) The A.C. output and percentage harmonic distortion plotted against applied signal in peak volts assuming an anode-to-anode load of 8,000 ohms.

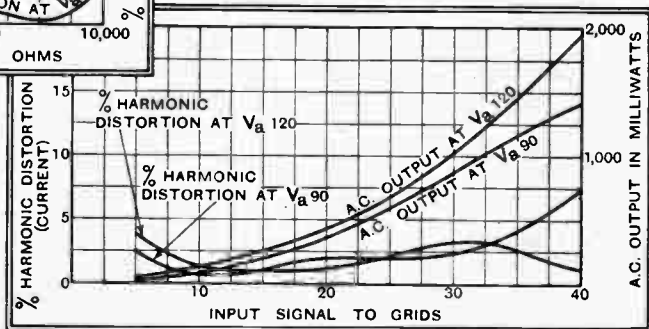


Diagram 7 shows the A.C. output obtainable, and percentage total harmonic distortion plotted against applied signal voltage for plate voltages of 120 and 90 volts respectively and a load of 8,000 ohms plate-to-plate. From these curves it will be observed that distortion at low amplitudes is not large enough to cause trouble, and that the lower plate voltage of 90 volts also gives satisfactorily pure reproduction.

This latter point is of great importance to set designers. The voltage given by the average H.T. battery after a short period of use, although nominally 120 volts, is actually below this. In all other systems of push-pull output such a drop in battery voltage would entail the readjustment of grid bias (or screen voltage in the case of pentodes) to ensure good quality. If the battery voltage should drop from 120 volts to 90 volts distortion becomes by no means intolerable, even though the Class "B" valve receive its full signal swing; obviously, however, its signal drops owing to the lower voltage on the driver valve, and distortion then becomes quite negligible. Since, at the best, adjustment of grid bias or screen voltage in other systems is a delicate matter, the advantage will at once become evident.

Low H.T. Consumption

The total current drawn by the Class "B" valve and driver with no signal is, at a plate voltage of 120, of the order of 6.5 mA. This does not represent the total drain on the battery, however. Owing to the fact that the valves are effectively working at their bottom bends, the current flowing in the H.T. battery due to the Class "B" valve will vary in accordance

with the signal applied. These variations will be momentary, and will reach the full maximum only when 100 per cent. modulation is reached. The average modulation of broadcast stations in general is probably about 25 per cent., and this, combined with the fact that there are many short periods of rest during a programme, will give a very much lower consumption.

Measurements have been carried out, using a silver voltameter, of the average current consumed by the Class "B" valve over a broadcast period of about forty-eight hours of the London National station. The loudest passages were adjusted to swing the grid voltage of the Class "B" valve to the allowable maximum of 40 volts peak. Under these conditions, and with a plate voltage of 120, the anode battery drain is 8.5 mA. Thus

to obtain an A.C. output of 2.0 watts the total H.T. consumption will be 11.0 mA., counting the driver valve current. For lower A.C. outputs the consumption will, of course, be correspondingly lower.

Some users may find that an A.C. output of 1 watt is all that is required to meet their taste. In this case the signal applied to the Class "B" valve may be limited to a maximum value of 30 volts peak (grid to grid), and its average anode consumption is 5 to 6 mA. The anode voltage of the driver valve may also be decreased to 100 volts, giving a current consumption of 1½ mA. Thus for an A.C. output stage of 1 watt the total anode current drain is 6.5 to 7.5 mA., whilst for 2 watts it is about 11 mA. These figures should be contrasted with the case of a high-efficiency pentode such as the Cossor 220 PT, which for an A.C. output stage of 1 watt capacity entails a steady anode current drain of 20 mA.

Let us now summarise the great advantages of Class "B" output. This form of amplification is capable of providing an output from a battery set comparable with that of a mains set, and with an anode current consumption which can be provided by ordinary H.T. batteries without incurring the disability of short life. Matching of the halves is not critical, and distortion is negligible. No grid bias is required for the output valve, and the output transformer is quite easy to design as the plate-to-plate load is only 8,000 ohms.

DISTANT RECEPTION NOTES.

THE reception of transatlantic stations continues to be very good and readers who care to try for them may be surprised to find that the optimum wavelength is apparently showing a tendency to increase at the moment. Until recently very little has been heard above about 350 metres, but I can record quite good reception on several nights of WJZ on 394.5 metres and WEAJ on 454.3 metres. I have not, though, been able to make much of WLW, the 50-kilowatt station on 428.3 metres. That is rather surprising, for previously when the stations on the longer waves have been receivable I have generally heard WLW well.

In addition to the United States stations quite a number of those in the Argentine can be received on nights when conditions are favourable. So long as the approximate wavelength is known the Argentine stations are easy to pick up and identify owing to the fact that announcements are made in Spanish. Here are the chief Argentine stations, all with an output rating of 10 kilowatts and all hailing from Buenos Aires.

- LS9 216 metres LS8 244 m. LS2 252 m.
- LR8 261 m. LS5 280 m. LR9 291 m.
- LR4 303 m. LR6 330 m. LR2 345 m.

Another Spanish-speaking South American station is XED of Reynosa, Mexico, a 10-kilowatt station using the wavelength of 311 metres.

The more or less informal conference of the U.I.R. at Brussels is now coming to an end and the preparatory work for the Lucerne Conference has been done. Nearly every European country sent representatives to Brussels and the chief task of the conference was to prepare a revised wavelength plan which will be finally discussed at Lucerne.

Long-distance reception has been somewhat affected, particularly during the hours before darkness sets in, by the changeable weather that we have had of late. On certain nights it has been difficult to receive any but the most powerful stations at all well, but luckily such nights have not been numerous. On the whole both the volume and the quality obtainable from long and medium wave European stations show few signs of "that spring feeling" which used to become noticeable at about this time in former years when the average output rating of stations was so much less than it is now.

The long-wave band shows few changes save that Motala has not been too easy to receive well. Warsaw is still rather below normal form.

The big six at the top of the medium-wave band are coming through wonderfully well at present.

These are Prague, Florence, Brussels No. 1, Vienna, Munich and Budapest. Bero-munster is still jammed, but Rome, Stockholm, Katowice, Langenberg, Leipzig and Toulouse are quite reliable. Other stations that I can recommend are Brussels No. 2, the Poste Parisien, Göteborg, Marseilles, Heilsberg, Frankfurt and Gleiwitz.

D. EXER.

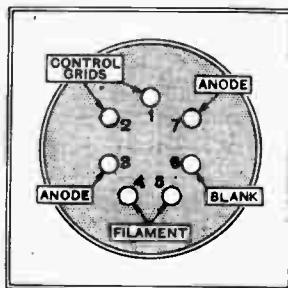


Fig. 8.—This illustration represents a Class "B" valve holder as seen from above, the connections being indicated.

How Ferrocart is Made

The Reasons for High Efficiency

By ALFRED SCHNEIDER

IT is one thing to know what combination and arrangement of materials will produce the scientific ideal; it is another to find a means of making the scientific ideal commercially attainable. Thus, theoretically speaking, it has been recognised that very thin iron wire, insulated and wound in the direction of the magnetic flux, should give the highest permeability at lowest losses, but until recently there have been formidable practical objections — a fact of which the inventor of Ferrocart was made keenly aware when he first began experiments with insulated iron filaments. His calculations proved that the diameter of his wire, to give worthwhile results, would have to be less than 5μ , i.e., 0.005 mm! Now filaments of this gauge must be of special alloy, and, moreover, the difficulties of drawing them out were found to defeat all schemes for producing a marketable article.

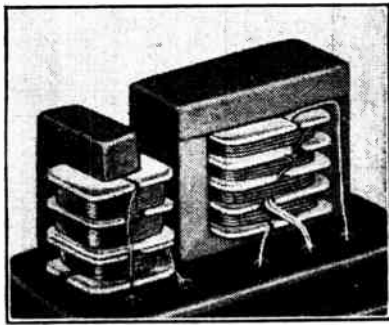
An Ingenious Process

So Hans Vogt, the inventor, sought around for other means, finally resorting to the use of powdered iron particles, which form the basis of Ferrocart.

A glance at the drawings will make the process of construction quite clear. Insulated damp iron particles—ellipsoid in shape—are poured on an insulating paper strip and then passed through the teeth of a comb, which divides them into rows.

filament wound in the direction of the magnetic flux. The insulated filament effect is, as it were, "imitated," the more so as the magnetic alignment also causes the particles to separate transversely, due to their mutual repelling force caused by similar polarity. Moreover, the magnetic alignment confers the additional advantage that the end surfaces of the particles, which are difficult to insulate, are directed longitudinally, so that metallic contacts do not encourage eddy currents, and improve magnetic conductivity.

SO much interest has been aroused over the "Wireless World" Ferrocart III receiver that readers will welcome an explanation of the intricate processes involved in manufacturing the iron core of the new tuning coils. It will be evident from the accompanying description that the invention of Ferrocart has entailed much research along original lines.



Complete tuning coils built up of sectionalised windings on iron cores. Separate inductances are used for long and medium wavebands.

When the paper travels through a D.C. solenoid coil the magnetic flux aligns the particles in the direction of the strip, after which they are dried in position. The coil cores are built up of many layers of these paper strips, which are held together by a binding substance.

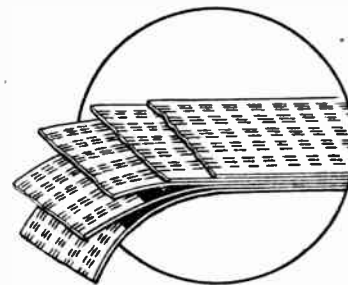
It will be realised that the finished product comes very near to the ideal of an insulated filament wound in the direction of the magnetic flux.

Why, it may be asked, is it necessary to introduce extra insulation by grooves and paper? It should be noted that the insulating "skin" of each particle is necessarily very thin because of the amount of iron required to obtain enough permeability. Therefore, although this contact resistance is fairly high, the particles still require some sort of sub-division.

Capacitive Coupling

But besides preventing eddy current losses the paper layers and grooves fulfil another function. Many research workers have expressed the opinion that coil losses cannot all be ascribed to hysteresis and eddy currents, but that an

unknown additional source of losses exists. Mechanical movements of the particles in the insulating matrix have been proved not to be responsible, and Hans Vogt, the inventor of Ferrocart, eventually traced the losses to "capacitive eddy currents" flowing in each particle. Each pair of magnetic particles forms a miniature condenser,



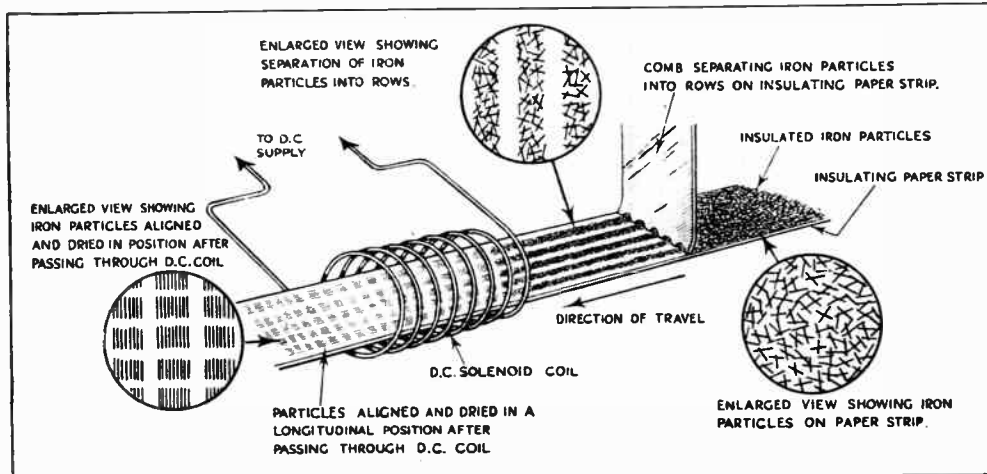
A sketch showing how the core is made up of paper laminations

the insulating skin representing the dielectric and the two particles the condenser plates. Thus a capacitive coupling is formed and the eddy current, unable to flow normally owing to the insulating skin, passes as a dielectric displacement current from particle to particle.

This is the fundamental discovery on which the Vogt iron is based. The rows of particles and the paper together combat these capacitive losses in a way which no other coil composition has been able to accomplish.

The practical application of Ferrocart to the design of a receiver is shown in the FERROCART III

the first receiver to incorporate Ferrocart coils. This set was described, with full instructions for building, in our issue of March 3rd. The efficiency is remarkable and, in particular, the selectivity is so high that it comes near to rivalling the super-heterodyne.



How the aligning process of the small iron particles in Ferrocart is carried out. The paper strip carrying the particles travels under a comb, which separates them into rows, and the magnetic field in the solenoid causes longitudinal alignment.

UNBIASED



Unforeseen circumstances.

Back Again Soon

I REGRET to say that I am at present unable to obtain the necessary Editorial permission to disclose the nature of my recent mission abroad. As a matter of fact, I don't know that I altogether want to do so myself. I had anticipated being away several weeks, but certain unforeseen circumstances arose to bring about my discomfiture, and a hasty return home has been necessary. At the moment I do not feel in a suitable frame of mind to dwell on the topic.

An Impending Apology?

FOLLOWING the lead given by the B.B.C., it seems to have become quite the rage to skate on the thin ice of European politics, the latest offender in this respect being the Editor of this journal, although, as usual, I get the blame for it. I am moved to make this profound observation by a letter I have received from an indignant native of a small European country demanding to know why none of his national stations are included on the calibrated dial of the "W.W. Station Finder."

I have made diligent enquiry, and find that the country in question possesses no broadcasting stations. The whole affair is rather mysterious, and looks to me like a deliberate attempt to embroil this country in a diplomatic "situation." I have replied tactfully, however, agreeing to have the stations marked on the dial if my correspondent will come over and tune them in for me.

Record Changing

I WAS talking the other week about the way in which the average woman allows the radio set—especially the mains-driven type—to drool on all day to form a sort of background to her general activities. Certain highbrows attacked me fiercely for my remarks, declaring that no such state of affairs existed, and that even if it did I should not have encouraged it by talking about it. I was, however, warmly commended by manufacturers and vendors of sets, who stated that the "daily drool" type of person was by far their best customer. In any case, they argued, why should this very considerable portion of listeners be harried by the rest.

Now, judging by some remarks which certain highbrows of the gramophone world have been making lately concerning record changers, I think that they would do well to take the words of experienced radio manufacturers to heart. They have been attacking the cry that has gone up from all sides for the marketing of record changers which play both sides of a record. Although admitting the existence of such things and attacking them on the grounds of cost, bulk, and reliability, their chief argument against marketing them is that they take an unduly long time to change the record, and, in any case, sets of records embodying complete symphony concerts and other musical works can be bought suitably arranged for "single-sided" record changers.

Now, I contend that the "daily drooler," who is really the best customer of the gramophone as well as of the radio people, doesn't care a hoot about a few seconds extra in changing the tune or about complete musical works so long as he or she can load the old machine up so that it will play sixteen or more tunes without attention instead of the customary eight. When this can be done, the gramophone will be more on a par with radio in the matter of drooling all day without attention.

As for the arguments about cost, bulk, and reliability, they strike me as being particularly petulant and childish, for what on earth do the various companies maintain costly research departments for? Nothing was more bulky, unreliable, or damaging to records than the original form of "single-sided" record changer, and yet these difficulties were overcome. At any rate, if those whom it concerns don't



Loading up the old machine.

do something soon, the people who are advocating the use of spiral tracks on "endless" films will be leaving them behind.

Tell Me Your Troubles

I HAVE been rather troubled of late by finding an unusually large number of anonymous letters in my daily post bag. Now, this sort of thing I definitely dislike, notwithstanding the fact that urgent considerations make it necessary that I practise it myself.

By

FREE GRID

If, of course, any reader is wanted by the police, or is *in extremis* in any other way that renders it imperative for him to keep his whereabouts a secret, I do not expect him to take me into his confidence, but it would be at least polite if he mentioned in his letter that valid reasons existed for his not signing his correspondence. Having myself, in a small way,



Helping a "wanted" reader.

experienced the terrors of the hunted, I will willingly show my sympathy by meeting any "wanted" reader underneath the blasted oak at midnight or at any other rendezvous appointed by him in order to bring him money or a change of clothing as he may desire.

Trolley Buses for Olympia

THE query, "Is the menace real?" which I raised on January 13th, has been answered in no uncertain fashion, for shoals of letters containing vitriolic affirmatives have descended upon me. In particular, a large number of indignant householders have written to me to repudiate the suggestion that the P.O. engineers have cured the trouble in certain districts.

It is, I think, a significant fact that at the great anti-interference demonstration given by the G.P.O. at the Olympia Radio Show last year, trolley buses were conspicuous by their absence, although the young men in attendance showed us how to rid ourselves of interference from almost every other type of electrical contrivance, including even a traffic signal. There was no real excuse for the absence of trolley buses, for a large part of the National Hall at the back of the G.P.O. stand was unused. In any case, they could, with advantage, have run right round the exhibition on sightseeing tours for the benefit of those people who wished to avoid the crush.

NEWS of the WEEK

Current Events in Brief Review

Hot Jazz Banned

HERR RICHARD KOLB, acting Director of Programmes at the Berlin stations, has banned all jazz music of the "hot" variety.

Modernising Blackpool

IT is proposed to form a wireless club in the Blackpool district. All interested in the project are requested to write to Mr. Gordon F. Howard, 43, Cumberland Avenue, Blackpool.

Bullet-proof Broadcasting

PRESIDENT ROOSEVELT, whose broadcast speech was so excellently received in this country, has been presented with a special bullet-proof desk with four microphone points by the Columbia Broadcasting System.

Germans Only

ALL foreigners are now barred from German broadcast microphones in view of the general crisis and, to prevent misunderstandings, all persons using pseudonyms are asked to permit the announcement of their real names.

King of the Castle

A SMALL squad of men suddenly appeared at the Berlin broadcasting house last week and hoisted the Hitler banner. Our Berlin correspondent states that the "Hakenkreuzflagge" is also flying from the Berlin Funk Tower.

New Zurich Studios

DURING the removal of the Zurich broadcasting headquarters to the new studios, the Beromunster station is taking all its programmes from the studios at Berne and Basle. The new Zurich studios will open with a special programme on April 10th.

£2,833

IN the House of Commons last week Sir Kingsley Wood, the Postmaster-General, stated that the number of wireless receiving licences issued during the year 1932 was approximately 5,263,000. The number of prosecutions undertaken during the same year for the use of unlicensed wireless sets was 2,825, and the total amount of the fines and costs imposed was £2,833.

Prize for an Invention

INVENTIVE wireless men may find scope for their talents in a competition which is being organised by the Royal Society of Arts under the Thomas Gray Memorial Trust. The Council offers £100 to any person who may bring to their notice a valuable improvement in the science or practice of navigation proposed or invented by himself in the years 1932 and 1933. The competition closes on December 31st, 1933.

Easy Payments

BECAUSE of the economic crisis, the Yugoslavian postal authorities have introduced a monthly instalment system for the purchase of wireless licences.

Programmes in Braille

THE Braille *Radio Times* in this country is to have a counterpart in Holland, where the Amsterdam Braille Society has produced a wireless programme journal for the blind.

60 kW. from Kalundborg

THE Kalundborg 7.5 kW. transmitter is about to be replaced by a new 60 kW. plant, while Copenhagen, which at present operates on a power of only 0.75 kW., will be increased to 10 kW.

The Virtuous Class

OUR belief that crystal-set owners are fundamentally honest is confirmed by the investigations of the postal authorities at Bruo, Czechoslovakia, who, in the course of an "anti-pirate" campaign, have discovered a far higher percentage of offenders among valve users than those who depend on the lowly crystal. Of course, it is more expensive to be virtuous when running a valve set.

Transatlantic Radio Chain

THE first wireless chain across the Atlantic may materialise in May next if present plans are

New Swiss Regional

SWITZERLAND'S third great Regional station, that at Tessin, in the Italian-speaking part of the country, is to begin regular service on April 1st next. The wavelength will be 678.8 metres.

Jap Propaganda by Radio

A JAPANESE high-power station for the dissemination of propaganda throughout Europe is a new project, according to a correspondent, who states that arrangements are being made to relay the transmissions from certain German stations.

The "Wave-waker"

THE "wave-waker" is the name given to a new oscillatory valve instrument on which the Belgian Princess Jacques de Broglie and the composer Oboulhoff are putting the finishing touches. It seems that the instrument is played by means of a hand-capacity effect, as in the case of the Theremin.

The Lucerne Plan

THE possibility that the new Lucerne Plan may introduce the time factor in the allocation of broadcast wavelengths is sug-

Tactful

"SIR,—Will the parents who bought a wireless set to put in baby's stocking at Christmas kindly refrain from allowing baby to twirl the knobs between the hours of 12 noon and 12 midnight."—Extract from correspondence column, *Sunderland Echo*.

Gramophone Test Case

A WRIT has been issued by the Gramophone Company, Ltd., against Messrs. Stephen Carwardine and Co., Ltd., the well-known caterers of London and Bristol, for performing in public, without authorisation, at their restaurant in Bristol, a "His Master's Voice" record, of which the copyright is vested in the Gramophone Company, Ltd.

This action will act as a test case and will be heard at the High Court of Justice in London in due course.

Troubled Waves

IT is sad to learn that the broadcasting stations of Southern Europe are engaged in a kind of guerrilla warfare to prevent the spread of various political opinions beyond the borders of their respective countries. Apparently the broadcasting of any particular point of view immediately sets mysterious forces in operation; indeed, it is suggested that interference which many listeners in this country may ascribe to natural causes, such as atmospheric, and semi-natural, such as sideband splash, are in truth produced by the political oscillators of the warm South.

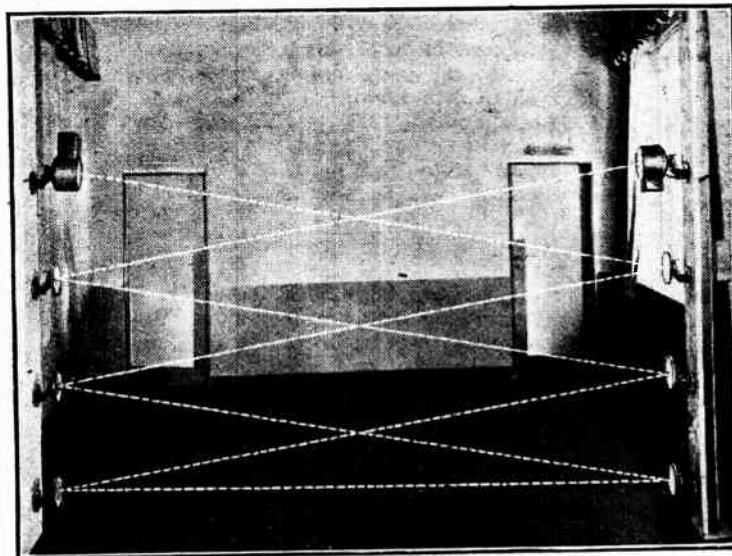
We refrain from mentioning the names of the countries involved, having no desire to foment international strife, but we feel that the International Broadcasting Union would be serving the best interests of all European listeners by investigating the whole question of deliberate interference between one station and another.

The Leipzig Fair

THE first German commercial receiver using Ferrocart coils was on view at this year's Leipzig Fair (writes a correspondent). The set, which is produced by the well-known firm of Owin, is decidedly in the miniature class, though it covers three wave bands: short, medium and long. This seems a general feature in the latest German sets. Visitors also saw a peculiar radiogramophone, the Schaub, incorporating the turntable at an angle of about 60° in order to make for compactness. This tilting of the gramophone record does not impair the quality of reproduction.

Home recording apparatus is less popular and was represented by only one exhibit.

The Siemens firm displayed a master clock which is automatically controlled by the Nauen time signal, by means of a single wavelength receiver. They also offered the public a portable reverberation meter and a noise-measuring instrument.



INVISIBLE FENCE. To counter the tricks of athletic burglars who may suspect the presence of the familiar single infra-red detection device the Siemens and Halske Company of Germany has produced a new equipment in which the ray is reflected to and fro in the directions shown by the dotted line in the picture. The mirrors are, of course, concealed when the apparatus is in use.

carried out for the flight from Rome to America of between twenty and thirty Italian airplanes. It is proposed that the route should be covered by Fleetwood trawlers stationed at intervals between the Irish Channel and the North of Ireland, Iceland, Newfoundland, and the North Atlantic coast of the United States. The trawlers would be fitted with long-distance wireless transmitters and receivers,

gested in the Belgian newspaper, *Le Soir*. According to a correspondent who interviewed M. Raymond Braillard, the Technical Secretary of the U.I.R. hinted that in some cases wavelengths might be authorised for certain stations only at certain times of the day. An increase in the number of "common" waves is also probable, though the allocation of these will call for very careful consideration of distance and power.

Broadcast Brevities

By Our Special Correspondent

A Broadcasting Film

A GENTLEMAN with a notebook has been making sudden appearances in different parts of Broadcasting House during the past few weeks, asking polite questions and jotting down the equally polite answers. He is a representative of the Empire Marketing Board, and he has been charged with the mission of finding suitable material for a real live talkie.

Desperate Proposal

The job is not quite so simple as might appear, for I hear that, with a few notable exceptions, everybody in Portland Place wants to play a star part in the film. All sorts of outrageous proposals have been made; one man who works at an unromantic office desk far from the glamour of the studios is so anxious to appear on the screens of the Empire's picture palaces that he has offered to stage a fake telephone conversation with anybody the E.M.B. cares to name.

Hopeless Quest

A broadcasting film is certainly needed, if only to enable the listening public to see the interior of Broadcasting House, for the visiting list has had to be closed. Any plain, honest licence holder who wants to see inside "B.H." would find it easier to arrange a tea party with the Llama of Tibet.

Strange Pair

HARRY TATE and Hindemith will be associated in an effort to entertain the public on Friday next, March 24th, when Hindemith's musical work, "The Lesson," is broadcast from London Regional.

"The Lesson" nearly caused a riot at Baden-Baden when it was first performed there in 1929; apparently the emotional qualities of the work overcame the audience during a touching scene in which the hero—an airman dying after a crash—engages in dialogue with a troop of clowns.

In the broadcast version Harry Tate will be the chief clown.

"Stars in their Courses"

THE Blattnerphone and the gramophone are both being resorted to for the very attractive series of broadcasts entitled "Stars in their Courses," which Mr. James Agate, the well-known dramatic critic, will *compère* on twelve Saturday evenings, beginning on April 8th.

Dame Madge Kendal, Sir John Martin-Harvey, Miss Hilda Trevelyan, Mr. Seymour Hicks, Miss Irene Vanbrugh, Miss Fay Compton, Sir Frank Benson, and others whose names are familiar as household words, are to visit Broadcasting House and record on the Blattnerphone extracts from their greatest stage successes.

How the Gramophone will Help

Sir Johnston Forbes-Robertson will be represented by an excellent gramophone record; similar records will project the voices of those great artistes of the past, Lewis Waller, Arthur Bourchier, and Sir Herbert Tree.

Miss Sybil Thorndike, who is at present in Australia, has given special permission for the use of a gramophone recording of her voice.

Two Big Concerts

LEST we should hear too much of the B.B.C. Orchestra the Corporation is wisely varying the diet. On April 7th Sir Thomas Beecham will conduct the London Philharmonic Orchestra at the Queen's Hall in the Handel Concerto Grosso in G and the Seventh Symphony, by Schubert. At this concert, which will be broadcast over the National transmitters, Ildebrando Pizzetti will conduct the first performance in England of his celebrated "Rondo Veneziano."

A Famous Choir

On April 8th Regional listeners will hear the Glasgow Orpheus Choir at the Queen's Hall, London, under the direction of Sir Hugh S. Robertson. The Philharmonic Orchestra will also be broadcast on the same evening.

Organ as Orchestra

THE Midland Region is fortunate in having several organists of first-class quality within its area. Relays of their recitals are always popular. One of their number, Bernard Johnson, of Nottingham, is including two of his own compositions, a canzonet and a caprice, in his recital on April 2nd. Constance Collier and he will play the Beethoven Pianoforte Concerto in G minor, the organ acting as substitute for an orchestra.

Blattnerphoned Programmes

MIDLAND Regional has always aimed at keeping faith with its public," writes Mr. Percy Edgar, the Midland Regional Director, in a letter on the question of Blattnerphoned programmes, to which I referred in the issue of March 3rd. He adds: "In the three industries where industrial noises have had to be Blattnerphoned, the Press have been duly informed and have recorded the fact."

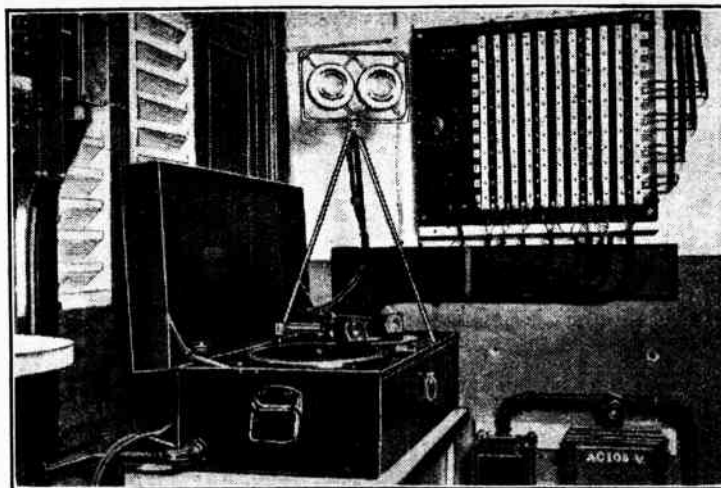
I am glad that the Press has obliged in this fashion, but I still feel that the microphone is the proper channel for explanations of this kind.

A Tribute to the Factories

Mr. Edgar states that, of the twenty-two industrial broadcasts from Midland Regional, only three have been Blattnerphoned. He mentions that the B.B.C. have received the greatest courtesy from the principals of big works, several of whom arranged to have machines running and operatives at work in order that the evening broadcasts should be realistic and convincing.

St. George's Day

ST. GEORGE'S DAY and Zeebrugge Day will be the occasion of a relay from St. Mary's Church, Dover, on Sunday, April 23rd. The transmission opens



AT THE BLACKPOOL TOWER, famous for its dance broadcasts, the British Thomson-Houston Company has installed what is probably the biggest band and gramophone relay system in the country, giving a total undistorted output of 280 watts. The photograph shows the switchboard, which links up forty-four electro-dynamic speakers and ten microphones distributed over the Tower, Winter Gardens and Palace.

with the bells of St. Mary's, followed by the service in the church at 11.0 o'clock. At the mid-day ceremony outside the church the Mayor of Dover will strike eight bells on the Zeebrugge bell, which is being hung in the porch of the church specially for the broadcast. The ceremony concludes with the Last Post and Reveille.

In the Concert Hall

DESPITE its description, the Concert Hall at Broadcasting House takes on the intimate atmosphere of a richly illuminated lounge when a Chamber Music Concert is being broadcast. Lamond, the pianist, and Carl Flesch, the violinist, were playing the evening I was there, and they played to us, the audience. The microphone was forgotten. Yet I am told that the concert—all-Beethoven, by the way—came over particularly well.

Probably instrumentalists are well advised to forget the existence of the microphone; singers and talkers, however, are in a different category.

The Artiste and the Microphone

Do we in this country really understand the first thing about microphone technique? Can we project personality over the ether as the Americans manage it?

I am not considering the quality of the personality when I say that the average American broadcaster gets his personality right across the microphone and into the home, whether we like it or not.

A Happy Discovery

Last week we heard those artistes, "The Four Musketeers," an American quartet who treat the microphone with respect, not as a harmless necessary piece of furniture. I saw the glee on their faces when they discovered that they were to do their turn before a Columbia "mike"—the sort they were used to at home. Even little things like that count with the true artiste.

Coaxing the Mike

They caressed that microphone. I watched them coax it, smile at it, withdraw from it for the high notes, come back to it confidentially for the soft tones. (They weren't trusting any control engineer!)

I wish we had some microphone artistes of our own. In the meantime it is worth noting that the B.B.C. are giving The Four Musketeers another "date" very soon.

Practical HINTS and TIPS

IT is quite a common fallacy to suppose that the adjustment of a trimming condenser will compensate fully for differences in the inductive values of the various coils included in a gang-controlled receiver. Actually, all that the trimmers can do is to bring the various circuits into resonance at any chosen wavelength; unless all the inductances are accurately matched there is bound to be a more or less serious lack

Long-wave Ganging

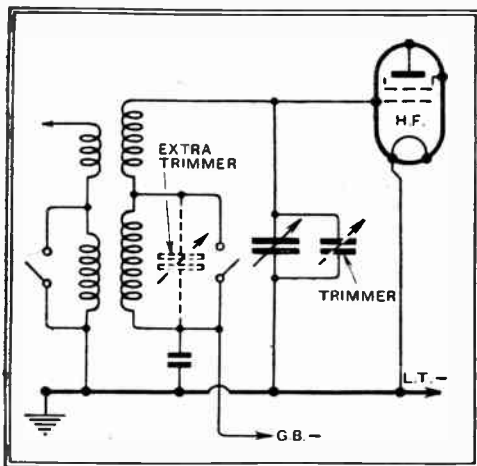


Fig. 1.—An extra trimming condenser for the partial correction of ganging errors on the long waveband.

of alignment at all wavelengths except that at which the trimming adjustment is made.

This applies, of course, to both the medium and long wavebands. But, with regard to the latter, requirements are not usually so exacting, and considerable discrepancies in inductance values may pass unnoticed, except in comparatively rare cases where extreme efficiency is required on this band.

The usual procedure is to adjust the trimmers at a low wavelength on the medium band, and then to assume that everything will be properly aligned for long-wave reception. Whether or not this is so can be easily proved by switching over to the long waves; if signal strength can be improved by adjusting any one of the trimmers we have conclusive proof that the associated circuit is running out of tune with the others.

If it happens that extra capacity (clockwise rotation of the trimmer screw) is necessary to increase volume it is worth while considering the expedient of connecting an extra trimming condenser across the long-wave section only of the associated coil, as shown in Fig. 1.

The presence of this extra trimmer will in no way upset ganging on the medium band, as it is entirely short-circuited by the action of the usual wave-change switch. Neither will it ensure perfect

AIDS TO BETTER RECEPTION

alignment of the circuits, for the reason stated in the opening paragraph. But it may well bring about a worth-while improvement in general long-wave performance by reducing the average extent to which the circuit across which it is connected is out of tune with the others.

A semi-variable condenser with a maximum capacity of not more than 0.0001 mfd. will generally be about right for the purpose suggested.

MANY sets are fitted with alternative aerial sockets or terminals; as a rule, one of these is internally connected directly to a tapping or primary winding on the input-coil assembly, while the other is joined to the same point through a small series condenser. Of course, it is intended that the second terminal shall be used when it is

Alternative Aerial Connections

desired to reduce aerial input in order to obtain immunity from interference.

When using *The Wireless World Station Finder* (January 13th and January 27th) with such sets, it is invariably best to make use of the directly-connected and least selective aerial connection on the receiver while identifying stations. The inclusion of a very small series condenser will increase the impedance of the aerial circuit, and may prevent the obtaining of sufficiently well-marked indications by absorption. As soon as an identifying reading has been taken there is obviously no objection to reconnecting the aerial to the more selective terminal if interfering transmissions should make this course necessary.

ONE cannot go very far in matters pertaining to wireless reception without encountering the need for some means of ascertaining definitely whether continuity—or a through metal circuit—exists between two points in a receiver,

Continuity Tests

or between the terminals of some component or accessory. For years past a pair of head telephones and a dry battery have been widely used as a crude but effective form of aural indicator to show conductivity—or the lack of it.

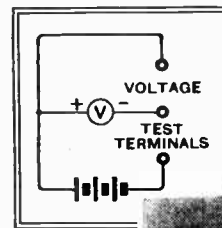
But now the headphone has almost disappeared, and as the loud speaker is but a poor substitute for testing purposes

we must look for something else from which a continuity indicator can be improvised.

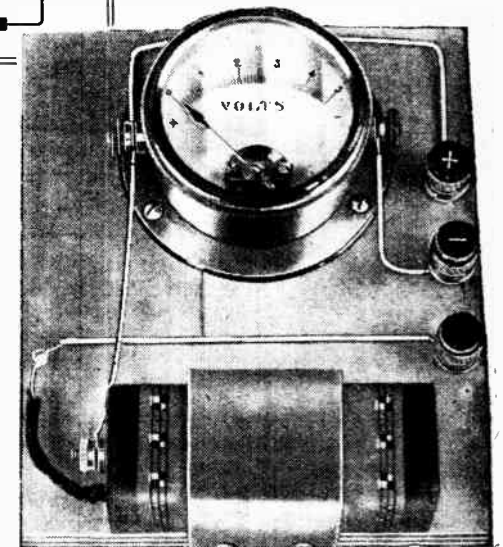
As a relic of the days when their sets were operated from batteries, many readers who have now changed over to "all mains" operation will have a spare low-tension voltmeter, probably reading from 0 to 6 volts, and of the moving-coil type. With the addition of a battery and a few terminals this meter may be converted into a useful testing device, ready for use at any time, and capable of showing continuity through resistances of many thousands of ohms. A 4.5-volt flash-lamp battery is generally suitable for testing, and is, of course, wired in series with the meter and the external circuit.

By arranging three terminals as shown in the accompanying illustration and diagram, the meter may be used either for its normal function of measuring voltage or as a continuity indicator, depending on the terminals to which the external leads are connected.

In a testing unit of this sort we have also a crude form of ohm-meter, but only one that will be reasonably accurate over a limited range of resistance values. The procedure for translating voltage readings on the scale to ohms is first to measure the voltage of the test battery directly, and then to read the voltage indicated with the unknown resistance interposed in circuit. Then subtract "voltage indicated" from "measured battery voltage," and multiply the remainder by the internal



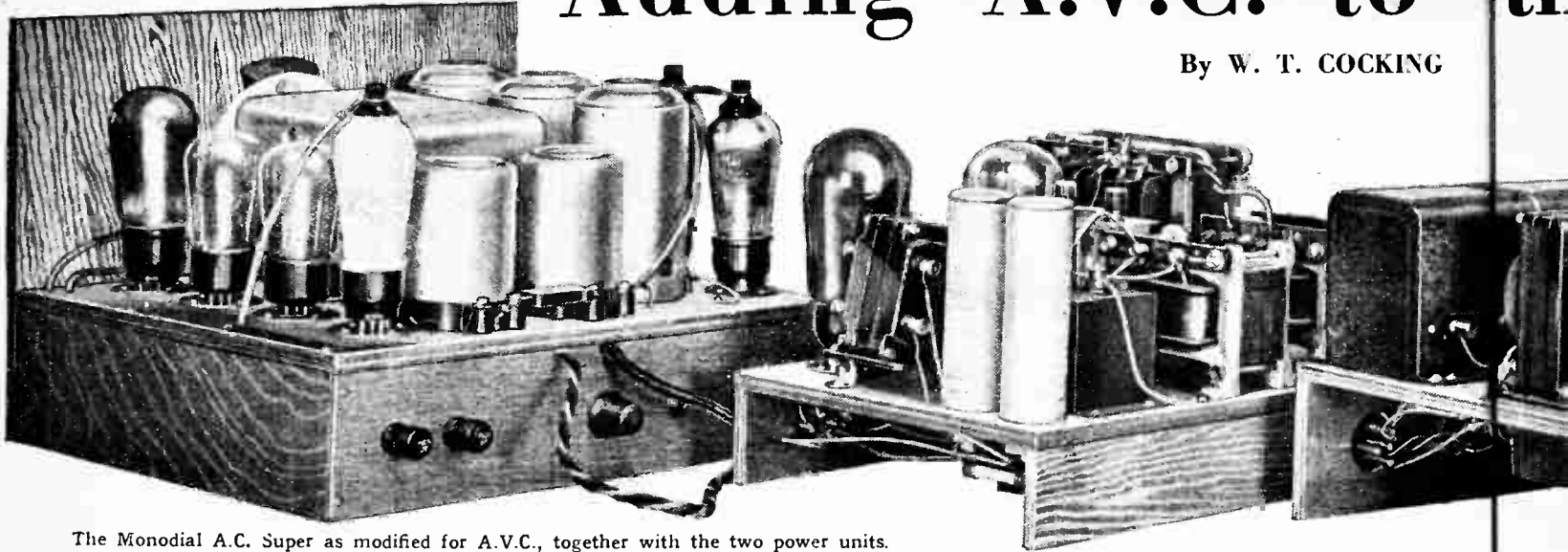
A low-reading voltmeter and a dry-cell mounted as a continuity testing unit. By making connections to the terminals indicated, the meter may be used normally for voltage measurements.



resistance of the meter. Finally, the product of the last calculation, divided by "volts indicated," which will give the value of the resistance in ohms.

Adding A.V.C. to the

By W. T. COCKING



The Monodial A.C. Super as modified for A.V.C., together with the two power units.

Part 1. Modifications Necessary for Converting the A.C. Superheterodyne

SINCE the description in this journal of practical automatic volume control systems, constructors of the Monodial A.C. Super have been clamouring for details of the modifications necessary for the inclusion of this refinement. The high performance of this receiver has led many to feel that fading, and not interference, is now the chief drawback to distant listening, and that the inclusion of an automatic volume control would largely overcome this effect, and so increase the number of stations from which reproduction of entertainment value can be obtained.

The matter has been given very careful attention, therefore, and many practical forms of automatic volume control have actually been tried out in the Monodial, in order to determine the particular type of control most suited to its characteristics. It may be said, briefly, that the square-law¹ control has been found to be the best for this set—partly because it can hold the volume at a more nearly constant level than any other, and partly because it fits in best with the characteristics of the Monodial.

No Fundamental Alterations

Some words of explanation may be necessary regarding the course adopted in describing the first practical automatic volume control system as an addition to an existing receiver, instead of including it in an entirely new design. In the first place, it is thought that, in view of its present unfamiliarity, constructors will be more likely to meet with success in applying it to an existing receiver, which is known to be functioning correctly, than if they have to tackle the problem of getting the system to work in a new and untried set. Secondly, although it is now nearly a year since it was first described, the performance of the Monodial is so far in advance of its time that it is doubtful whether any great improvement could be made to the receiver itself, and, as a result, a new set would vary only in unessentials. Thirdly, so many of these receivers have been built that it is felt that they should not be rendered in any way out of date by being without this latest development of automatic volume control.

The actual work of alteration is not great, and, once made, there is no external apparatus. The alterations involve a certain

FADING is one of the chief obstacles to successful distant reception, and any method by which it may be considerably reduced is bound to be appreciated. In the accompanying article appear details of the first constructional set to include automatic volume control which, it can be confidently stated, removes some 80% of the effects of fading.

number of additional components, and the rearrangement of some of the existing parts, but it has been found possible to include all the apparatus on the original chassis without increasing their dimensions, so that existing cabinet work remains unaffected.

The complete circuit diagram of the receiver unit is shown in Fig. 1, and it will be instructive to compare this with the original circuit.² It will be seen that there are no fundamental alterations, and the principle of operation is identical with that of the original receiver. Instead of being connected directly to earth, however, the input and H.F. intervalve tuned circuit return leads are each broken, and these circuits completed through 0.1 mfd. condensers C5 and C9. The A.V.C. bias is then applied to the lower ends of the tuned circuits through decoupling resistances.

Each valve is now independently biased, as regards its minimum value, by a resistance in its cathode lead. In the case of the first detector, the resistance R4 is given a value of 2,500 ohms, since a V.M.S.4 variable-mu valve is now employed, and controlled by the A.V.C. system. The I.F. stage has its minimum bias fixed by the 250 ohms resistance R7, shunted by the 0.1 mfd. condenser C14, while the same values are employed in the H.F. stage for R1 and C6 when the switch S1 is closed.

The Noise Suppressor

This switch, which was the Local-Distance switch of the original design, is connected in parallel with a 5,000 ohms variable resistance R2, and both are in series with the bias resist-

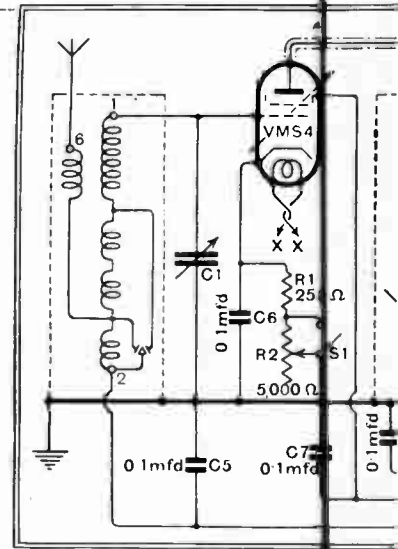


Fig. 1.—Complete circuit diagram of the receiver unit. The 354V valve provides square-law A.V.C.

¹ "Practical Automatic Volume Control." *The Wireless World*, January 6th and 13th, 1933.

² "The Monodial A.C. Super." *The Wireless World*, April 6th, 13th and 20th, 1932, or "The Monodial A.C. Super Booklet."

Adding A.V.C. to the Monodial—

and cheaper. The LSA condenser will not be available in a conversion of the Monodial used with the Modern Straight Five power unit, so that in this case also a type BB should be used.

The tone corrector stage remains unaltered, save that the grid circuit is now decoupled by the 50,000 ohms resistance R19, and its grid leak is replaced by the manual volume control, which is operative on both radio and gramophone, R18 of 250,000 ohms, and is of the tapered type. Actually, of course, such decoupling is not fully effective in a resist-

between negative H.T. and the receiver chassis, made up of the 75,000 ohms resistance R14 and the 10,000 ohms resistance R13. This voltage divider is actually in parallel with the speaker field, so that the voltage drop across this is utilised for the operation of the A.V.C. valve.

In the absence of a signal there is no A.V.C. anode current; there is no voltage drop across R15, therefore, and the grids of the controlled valves are at the same potential as the earth line. As a result, their bias is that fixed by their cathode biasing resistances. When a signal exceeding a certain strength is tuned in,

PARTS ORIGINALLY USED BUT NO LONGER REQUIRED

Receiver Chassis.

- 2 Metallised resistances, 1 watt 100 ohms
- 1 Metallised resistance, 1 watt 6,000 ohms
- 1 Metallised resistance, 1 watt 7,500 ohms
- 1 Metallised resistance, 1 watt 25,000 ohms
- 1 Metallised resistance, 1 watt 250,000 ohms
- 1 Fixed condenser, 0.001µF. Dubilier Type 62

2.5 Watts Power Chassis

- 1 Fixed condenser, 2 mfd., 500 v. D.C. test Dubilier LSA
- 1 Metallised resistance, 25,000 ohms 3 watts

maintaining 50 ma. of current passes through a 30H. 400 ohms. choke Ch4, after which there is another 8 mfd. electrolytic condenser C26. In connection with this choke, it is important to note that its actual inductance is 20H., although it is rated by its makers to be only 20H. It will not necessarily be satisfactory, therefore, to follow the maker's rating, and substitute a different type of 20H. choke

In order to supply the heater of the A.V.C. valve, an additional mains transformer, giving an output of 4 volts at 1 ampere, has been included.³ It will be clear from the drawings how room has been found for this component, and the method of interconnection of the two units will also be clear. The original valve-holder and 5-way cable do not give sufficient connecting points for the new arrangement, for three additional leads are required. Another valveholder is fitted to the back batten of the power chassis, therefore, and an extra 3-way cable makes the connections. Three-way cables are not at present available, but a four- or five-way type may be used with the unwanted leads cut short.

It should be noted that an omission occurs in the list of parts published in last week's issue; this consists of a Bulgin 30H. 50 ma. choke, type L.F.14. (To be concluded.)

³ It should be noted that if the complete set is being built from new components, two transformers are unnecessary, since the large transformer can be obtained with an additional winding.

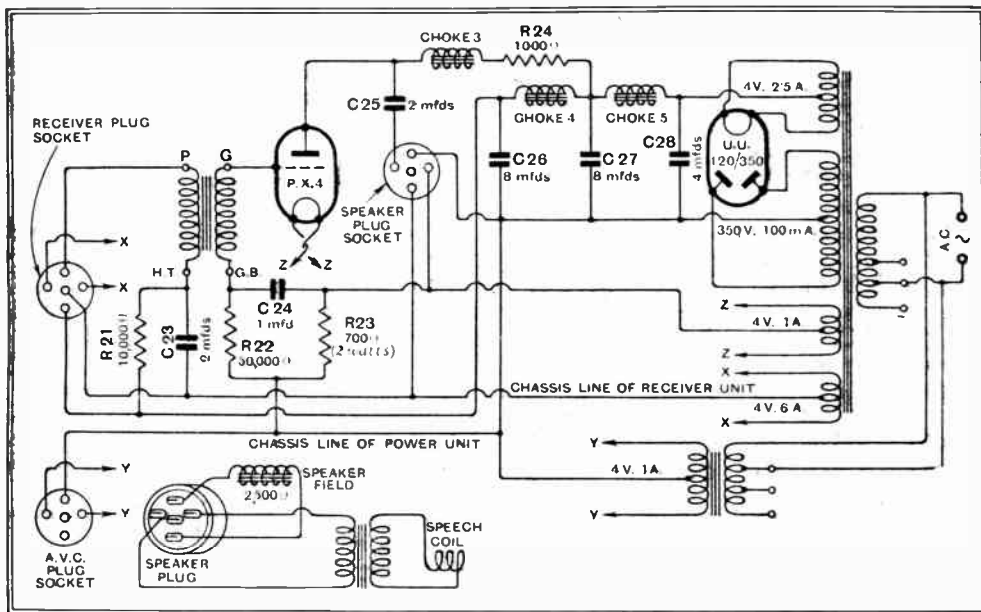


Fig. 2.—In the 2½-watt power unit the speaker field is included in the negative H.T. lead.

ance coupled stage, and the inclusion of the component is more for the purpose of avoiding any possibility of hum due to ripple on the bias resistance than for decoupling proper.

The valveholder originally used for the second detector is employed for the A.V.C. valve, and the second detector is now mounted in the place formerly occupied by the third I.F. transformer. This transformer is fitted beneath the base-board, being mounted skew-wise on the end supporting batten, in such a position that its trimmers can just be operated. The wiring, furthermore, is sufficiently clear to allow the coil can to be removed for the adjustment of the coupling.

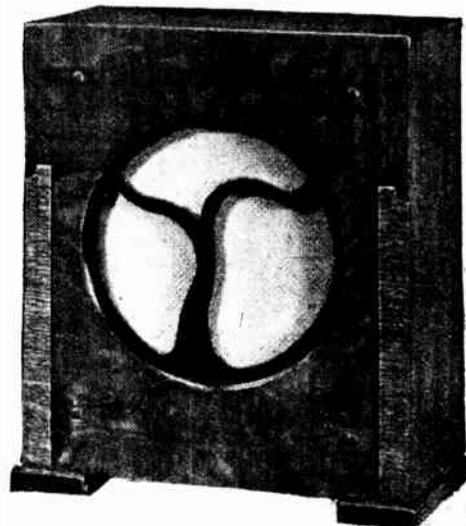
Delayed Action

The A.V.C. valve is the type 354V.; its anode is connected directly to earth through a 1 meg. resistance R15, shunted by a 0.1 mfd. condenser C22, and the bias voltages are tapped off from the anode and fed to the grids of the controlled valves through the 0.1 meg. decoupling resistances R11 and R3. The A.V.C. grid is fed directly from the tapping point on the second detector bypass system, and is returned to negative H.T., not the chassis, through a 1 meg. resistance R12. The correct bias to give delayed action to the control is obtained from a tapping on the voltage divider

rectification occurs in the control valve and anode current flows, its value depending upon the signal strength. A voltage drop is then present across R15, in such a direction as to make the A.V.C. valve anode, and hence the grids of the controlled valves, negative with respect to earth.

The 2.5 Watt-power Chassis

Perhaps the greatest alterations occur in the power unit, for in order to obtain the voltage needed for the A.V.C. valve the smoothing circuits have had to be entirely rearranged. The only voltage available is the drop across the speaker field, and so this is connected in the negative H.T. lead. In this position, however, it contributes little to the smoothing, and it has become necessary to introduce an additional choke. The resistance of this choke must be low to avoid a loss of voltage, and so its inductance is limited, so that considerable increases in the smoothing capacities have also been necessary. The arrangement finally adopted can be seen from Fig. 2. The choke Ch5 is that originally used, but its position on the chassis has been altered, and it has an inductance of some 10H. at 100 mA., with a resistance of 120 ohms. It is now followed by an 8 mfd. electrolytic condenser C27, and the current for the output valve is then tapped off. The re-



THE NEW MANSFIELD JUNIOR CABINET, specially designed to house the P.M.S. loud speaker incorporating the latest type of magnet system. Made by the Whiteley Electrical Radio Co., Ltd., Victoria Street, Mansfield, Notts, the price of the complete cabinet loud speaker with output transformer is 29/6.

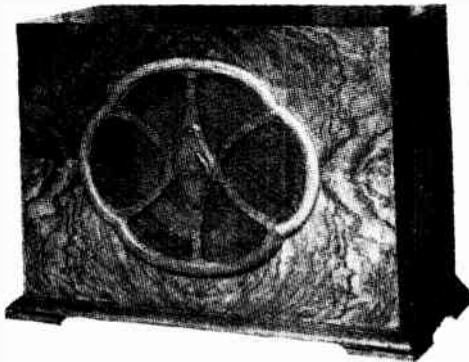
LABORATORY TESTS

H.M.V. "SUPER POWER" LOUD SPEAKER

DESIGNED originally for use with H.M.V. receivers and radio-gramophones, this permanent-magnet moving-coil unit is now issued for general use in an attractive walnut cabinet, together with a universal input transformer. The transformer may be adjusted for low-impedance triode or pentode output valves, for a push-pull output stage, or may be omitted altogether where an output transformer is already incorporated in the set.

The four-claw permanent magnet is fully twice the size of those used in the popular types of moving-coil units, and the sensitivity is correspondingly greater. A one-piece laminated linen diaphragm is employed, and the apex is pressed to form a shoulder for fixing the speech coil and to centre it in the air gap. The periphery of the diaphragm is mounted on a velvet surround giving more than the usual degree of freedom.

The bass resonance is at about 70 cycles, and above this frequency the output falls slowly to 1,200 cycles, rises to 2,500 cycles, and then falls gradually to 5,000 cycles, after which there is a relatively sharp cut-off. The general reproduction is full and mellow, and irritating background noises in radio and needle scratch in gramophone reproduction are absent.



H.M.V. "Super Power" permanent-magnet loud speaker model 174.

The price is £7 10s., and the makers are the Gramophone Co., Ltd., 363-367, Oxford Street, London, W.1.

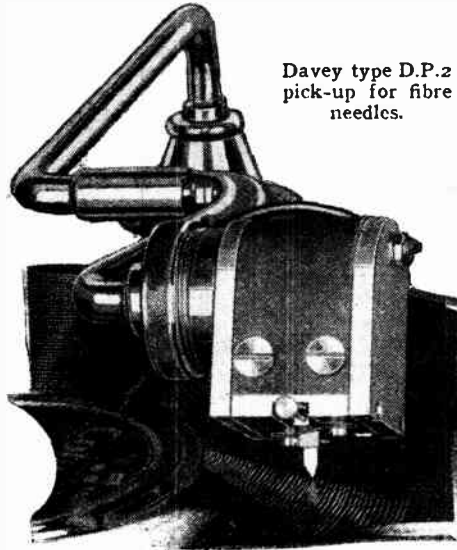
THE DAVEY FIBRE NEEDLE PICK-UPS

THE gramophone enthusiast and connoisseur of fine records, whose experience goes back to the days before the introduction of electrical recording and reproduction, is a staunch advocate of fibre needles. He prefers the delicacy and smoothness of tone associated with the fibre needle to the hard brilliance and occasional harshness of the steel needle, and finds that, provided the record is properly cleaned, wear is negligible even though there may be a tendency to stiffness in the sound-box. Where the record collection includes favourite interpretations which are no longer issued, the latter consideration acquires added weight.

The Davey D.P.2 pick-up admirably fulfils these special requirements. A hollow armature of triangular cross-section pivoted on knife edges and centred by independently adjustable springs accommodates the fibre needle. The poles are of nickel-iron alloy, and the pole pieces are laminated. Two sectionalised formers surrounding the pole

NEW RADIO PRODUCTS REVIEWED

pieces carry the pick-up coils, which terminate in insulated terminals in the side of the substantial permanent magnet. The armature movement is free, and a wide air gap ensures freedom from harmonic distortion.



Davey type D.P.2 pick-up for fibre needles.

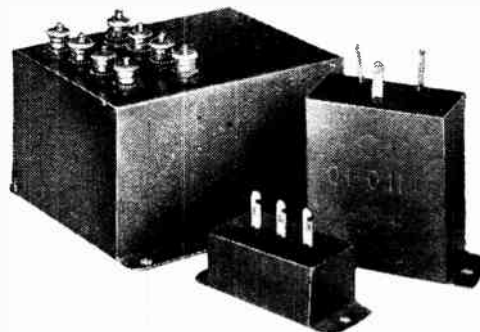
tion. Damping is provided by grease packing at the tip of the armature.

On test one of the first features to attract favourable comment was the exceptionally low mechanical noise from the pick-up head. The quality of reproduction is admirably suited to the reproduction of chamber music and solo voices, and there does not appear to be any lack of "top" when playing orchestral records. The output characteristic is smooth, and there is no trace of any armature resonance. Taking the output at 1,000 cycles as the datum, the curve is 11 db. up at 50 cycles, 5 db. up at 500 cycles, 5 db. down at 2,000 cycles, 10 db. at 3,500 cycles, and 20 db. down at 5,000 cycles, which is virtually the cut-off. The average output is of the order of 0.1 volt R.M.S.

Made by E.M.G. Hand-Made Gramophones, Ltd., 11, Grape Street, London, W.C.2, the price of the pick-up alone is £3 10s., or complete with carrier arm £4 10s.

T.C.C. BLOCK CONDENSERS

HITHERTO the sub-divided block condensers of the type used extensively by manufacturers have not been readily obtainable by the home constructor. The Telegraph Condenser Co., Ltd., Wales Farm



Selection of new T.C.C. sub-divided block condensers.

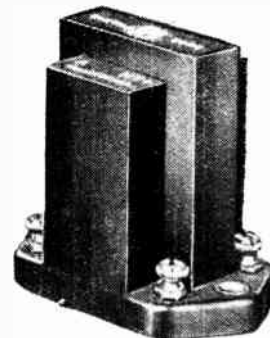
Road, North Acton, London, W.3, have now decided to augment their already extensive range of condensers by some sub-divided types. Of particular interest is the 0.01 + 0.01 model suitable for use as a suppressor of modulation hum. It is tested at 1,000 volts D.C., and the price is 2s. 6d.

There are two 0.1+0.1 mfd. models, of which the type 125A is built up from four 0.2 mfd. condensers, two in series being employed in each half of the unit. This ensures a high factor of safety, and this model is rated at a working voltage of 500 A.C., and its price is 4s. 6d.

There is also an 8-mfd. block sub-divided into 4+2+2 mfd. condensers with a common negative terminal. The 4-mfd. section is tested at 750 volts D.C., while the two 2-mfd. units are tested at 500 volts D.C., and the price is 14s. 6d. Finally, we have a 12-mfd. block arranged as 4+4+2+2 condensers with a common negative, and the working voltage is 250 D.C. in each case; the price is 17s. 6d., and it is listed as the type R.M.12.

R.I. DI-FEED TRANSFORMER

THIS is one of the latest additions to the range of intervalve transformers made by Radio Instruments, Ltd., Purley Way, Croydon, and it has been introduced to meet the demand for an inexpensive component of small size suitable for direct connection in the anode circuit of a valve passing up to 4 mA. of anode current. The measured inductance of the primary was found to be 25 henrys when no D.C. is flowing, 15.5 henrys with 1 mA., 10.7 henrys with 2 mA., 8 henrys with 3 mA., and 6.5 henrys with 4 mA. of D.C.



The step-up ratio is 1 to 3½.

By employing a core of high permeability, described as "K" metal, a satisfactory inductance has been obtained

R.I. Di-Feed intervalve transformer.

with a comparatively small quantity of wire, consequently the self-capacity of the windings is low, and the amplification of the higher frequencies is maintained at a good level. Measurements show that at 8,000 cycles the amplification is but 2.5 decibels lower than at 1,000 cycles, but there is a slight falling off in the bass when the transformer is connected in the anode circuit of a valve passing some 2 mA. of D.C. At 100 cycles the amplification is lowered by approximately 7 decibels, but this will not have a very marked effect on the reproduction, as there will still be an ample bass response to preserve a reasonably good balance.

Considering the price of this component, namely, 7s., its performance is most satisfactory.

o o o o

CHANGE OF ADDRESS

In the review of the Eeles transformer on March 3rd the maker's address should be C. W. Eeles, 14, Gertrude Street, Limerston Street, Chelsea, London, S.W.10.

Gecophone Superheterodyne

“Overseas” Model

Three Wave Ranges, 13/30,
30/80, 200/560 Metres.

C.W. or Telephony
Reception

THE establishment of the Empire Broadcasting Station and the inauguration of regular programmes to the Colonies was an event of first importance to British subjects in all parts of the world. Situated in many cases thousands of miles away from the nearest broadcasting station, and with atmospheric conditions making reception on the longer wavelengths impossible for months on end, the only means of broadcast reception in the tropics is through the medium of the ultra-short waveband.

Any commercially produced receiver specifically designed for short-wave reception is certain to find its way into countries the climate of which would very rapidly bring about the disintegration of the ordinary type of broadcast receiver as we know it in this country. Accordingly, the G.E.C., in producing their latest short-wave superheterodyne receiver, have paid special attention to the requirements of the overseas listener. To withstand the effects of heat and humidity, the cabinet is constructed of specially treated teak, and is designed to prevent the ingress of insects. The chassis is heavily zinc plated, and wide use is made of “keramott” moulded insulating material for coil formers, etc., as this is found by experience to stand up well to the rigours of a tropical climate.

The circuit is perfectly straightforward, and consists of an anode-bend first detector, separate oscillator, one I.F. stage, leaky grid second detector, and power pentode output valve. In view of the need for compact wiring on short waves and the difficulty of ensuring reliability under tropical conditions of complicated switch mechanisms, interchangeable coil units are employed for each of the three wavebands. On the two short-wave ranges a single tuned circuit in the aerial provides adequate selectivity, but on the medium-wave band an inductively coupled band-pass filter is employed. A row of contacts running along the edge of the coil base effects the necessary change in the circuit in each

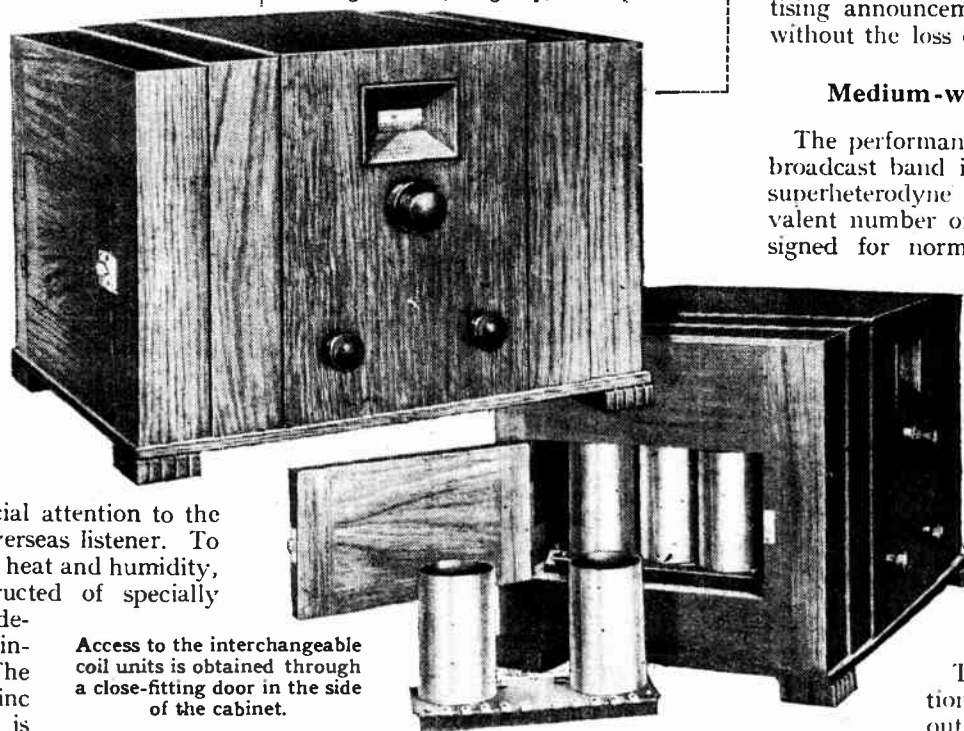
General:—A.C. mains five-valve superheterodyne for short and medium waves. Interchangeable coils. Sockets for external loud speakers and gramophone pick-up. Teak cabinet and moisture-proof insulation throughout.

Circuit:—Anode bend S.G. first detector, oscillator, I.F. amplifier, S.G. leaky grid second detector, power pentode. Full-wave valve rectifier. Single-circuit aerial tuning on short waves, band-pass filter on medium waves.

Controls:—(1) Main tuning with illuminated dial, calibrated in degrees. (2) Volume control and on-off switch. (3) Compensating condenser (short waves only). (4) Switch for heterodyne reception of C.W. signals.

Price:—£25 4s. Chassis only, £23.

Makers:—The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.



Access to the interchangeable coil units is obtained through a close-fitting door in the side of the cabinet.

case. Coils for the oscillator are, of course, included in each unit.

An unusual feature of the circuit, and one which is invaluable on the ultra-short waves, is the provision at the back of the set of a “C.W.” switch, by means of which the I.F. stage may be made to oscillate. A fixed condenser of a few micro-mfd. couples the anodes of the I.F. and the second detector, and the switch earths a centre screening electrode when continuous wave signals are not required.

The main tuning control is provided with direct and slow-motion drives, and the dial has a finely graduated 100-degree scale with a hair-line indicator free from parallax.

On short waves the set handles just as easily as on the medium-wave broadcast band. The stability of tuning is remarkable, and it is possible actually to touch

the aerial lead without appreciably altering signal strength. During the period of our tests the 13/30-metre band was not very productive, but there was plenty of activity on the 30/80-metre band. Space does not permit a catalogue of the number of stations received; readers will probably be more interested in the performance at long range from the point of view of programme value. At the first attempt three American stations, Schenectady (31.48 metres), Pittsburg (48.86 metres), and Bound Brook (49.18 metres), were received at good loud speaker strength. For a period of nearly two hours from 11 p.m. onwards the programmes from the two latter stations, which were principally occupied with talks and advertising announcements, could be followed without the loss of a single word.

Medium-wave Performance

The performance on the 200/560-metre broadcast band is quite equal to that of superheterodyne receivers, with an equivalent number of valves, specifically designed for normal broadcast reception.

Only one channel is lost on either side of the two Brookmans Park stations at a distance of five miles, and the range is limited only by the ratio of signal strength to the atmospheric background. Two second-channel interference whistles were prominent, but the remainder were of negligible volume.

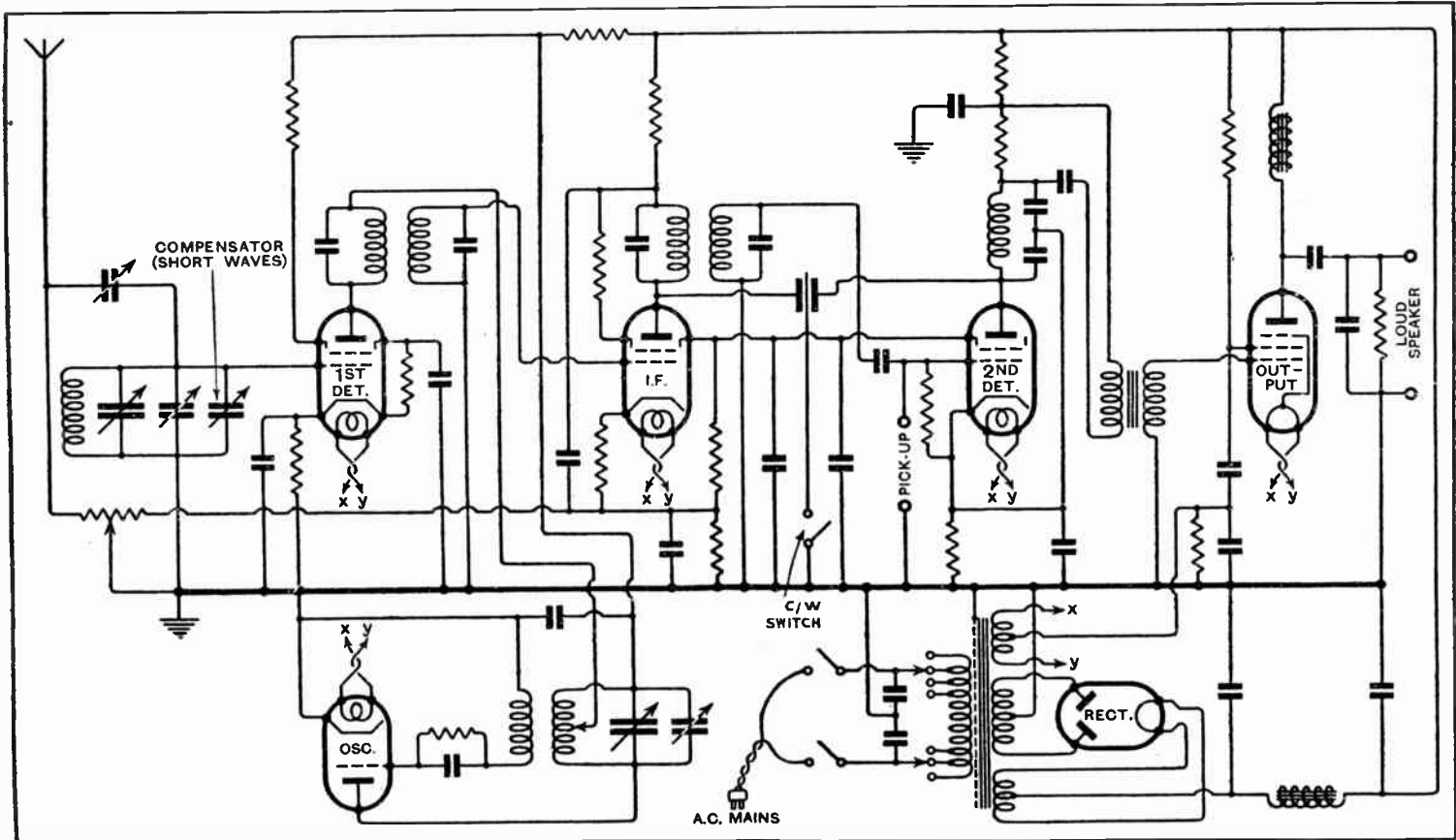
The quality of reproduction is clear and crisp, without being deficient in bass, and in addition to its many

other rôles the receiver might justly claim that of a quality reproducer for the local station. The power output is of the order of 2 watts, and a moving-coil loud speaker is definitely worth while.

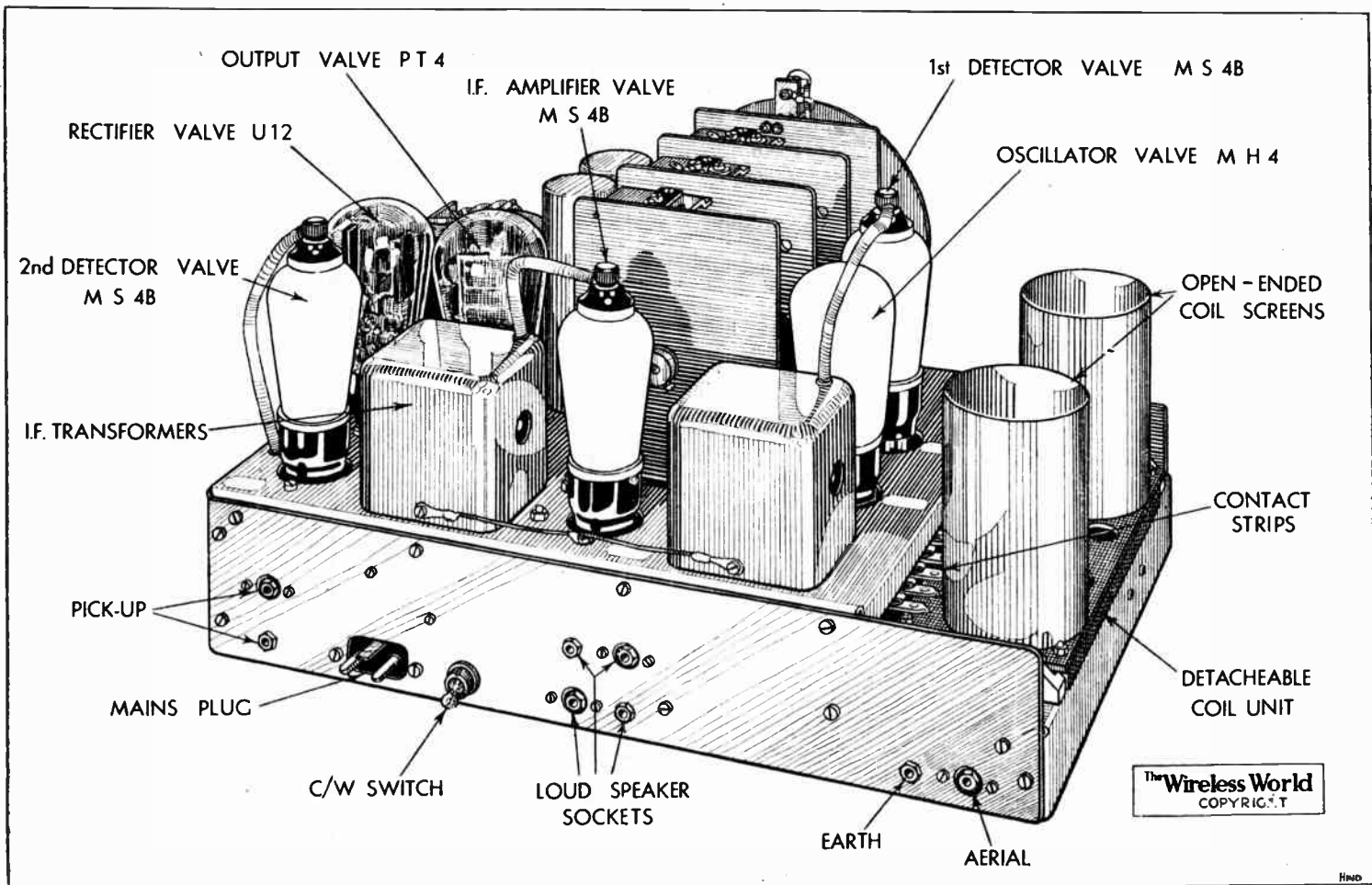
The hum level was fair, but could be noticed when the speaking voice was reduced to a natural volume level. Subsequently it was discovered that the mains transformer laminations were contributing the greater part of this noise—a small point for which the cure is obvious.

Finally, a word of praise concerning the service manual. In view of the fact that the set may have to be maintained miles from the nearest service agent, instructions complete down to the smallest detail are given, and there is no reason why anyone with an elementary knowledge of electricity should not be able to keep the set in commission.

Short-wave Superheterodyne for the Tropics



Circuit diagram of the G.E.C. "Overseas" superheterodyne receiver for ultra-short waves. On the medium waveband a two-circuit filter is employed in the aerial circuit.



The chassis is easily removed from the cabinet for inspection. Sockets are provided for two external loud speakers in parallel.

LETTERS to the EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents

Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Tudor Street, E.C.4, and must be accompanied by the writer's name and address.

Broadcasting in the Highlands

I AM interested to read the comments of your special correspondent in your issue of February 24th, under the heading, "Broadcast Brevities," on the subject of the allocation of a new additional wavelength for the service of Highland listeners.

I agree that the Highlands "have been poorly served by the B.B.C. in the past." The position is worse than that. The Highlands have no proper service at all. Those of your readers who are interested should consult page 43 of this year's "B.B.C. Year Book," when the position will be seen at a glance.

The B.B.C. charter states that the Corporation is set up in the National interest. They have already admitted that their service falls short of their obligations, so far as the North of Scotland is concerned. Further, when Droitwich transmitter is completed, they have admitted, too, that the twin-transmitter scheme will have to be largely modified.

Your correspondent should not, therefore, write of the "waste of a good wavelength" north of the Caledonian Canal, when that calamity actually exists elsewhere.

No exception has been taken to the erection of the new B.B.C. Short-wave Empire transmitter for service to the thinly populated outposts of Empire. It is the thinly populated parts which need wireless most, and it is for the B.B.C. to honour the trust committed to their care by giving a service to the North of Scotland. I am sure no decent, fair-minded Englishman will deny this obvious duty to the Highlander, who pays his share towards the Empire transmitter. Charity begins at home. Highlanders do not ask for charity, but fair treatment only.

ANDREW MURRAY, Provost.
Town House, Dingwall.

What Does the Public Want?

IF "Diagnostic" lived in the Isle of Wight he would appreciate a selective set that can reach out to all the main European stations, as Daventry is the only British station that is reliable and worth listening to; the others on the broadcast band suffer from fading and distortion. Compared with foreign stations the British stations seem to be played through cotton-wool; band orchestras from the studios are badly balanced, and lack the crispness of foreign orchestras, especially from Germany; in fact, the only British programmes worth listening to are the outside broadcasts from places like the Queen's Hall and the Grand Hotel, Eastbourne.

I consider Broadcasting House a big mistake and not worth the money spent on it. As regards foreign stations, Radio Paris, Berlin (Konigswusterhausen), Fécamp, Leipzig, Breslau, Brussels, Rome, Huizen, Muh-

lacker, and Prague are all good stations, and can always be relied upon. I may say my views are typical of all my friends who use wireless. The main opinion is that the average of the B.B.C. is below these other stations, both as regards quality and variety of programme.

J. L. DYER.

Isle of Wight.

IT is obvious that "Diagnostic's" "personal observations" have been made over a very small area and most probably close to one of the newer B.B.C. transmitters.

The B.B.C. transmissions are of no use to me, and without the Continental programmes 10s. would be a dear rate to pay.

The best transmission from B.B.C. aerials here is Scottish Regional, but it transmits a programme, which is mostly American jazz, or discord called modern classics, with very little harmony or entertainment, and even these items are spoilt by effects or drums.

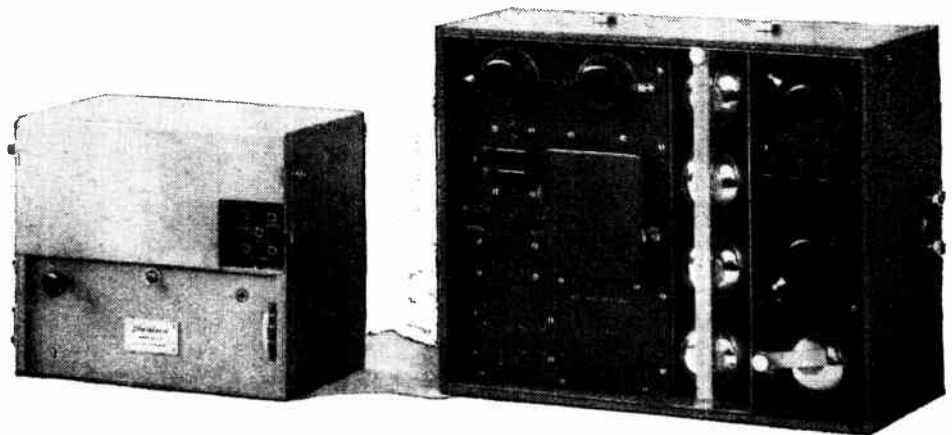
In this district, which is, I imagine, fairly representative of about half of the

radio I have had many receivers, and now use the "W.W." Baby Super, and always find something to suit me from the Continent of very good quality and value.

Chichester. FREDK. A. FITCH.

MANUFACTURERS make the type of set that past experience has shown to be the most likely to sell! as so few local station sets are offered it is safe to assume that the demand is proportionately small. The demand for long-range receivers is real, and there is a good solid reason at the back of it. Men do not, as is suggested, spend the extra two pounds, or ten pounds, for a long-range receiver just for the satisfaction of being able to feel that they really could receive foreign stations if at any time they should ever happen to want to. I disagree, too, that the excuse for the long-range receiver is based on the two assumptions (1) that the B.B.C. programmes are inferior to foreign ones, and (2) that foreign programmes can be received with as good a quality as the locals. I doubt if any but the few simple souls who believe all the advertisements they read have ever assumed anything of the kind. The average man buys a long-range receiver, if he can afford it, because he knows quite well that, excellent as the B.B.C. fare is, it will not always be to his taste.

For, say, three-quarters of the listening time the B.B.C. provide excellent fare, and with as much choice among the national and



THE CONQUEST OF EVEREST. Portable transmitting and reception equipment supplied by Standard Telephones and Cables, Limited, to the Rutledge 1933 Everest Expedition. The receiver (on left) and the transmitter (right) are for use at the base camp, and will communicate with Darjeeling.

British Isles, the B.B.C. quality is quite definitely inferior to most Continental stations. At 60 miles S.W. of London's transmitters both programmes are horribly distorted by a peculiar fading of a nature not obtained on any other stations that I am able to receive.

During the ten years that I have used

various regional programmes as their resources will allow, but for one-quarter of the time they provide fare that is likely to leave the majority of their listeners dissatisfied. This is such a wise and far-sighted policy that it is hard to believe that it is accidental: it must be deliberate. Broadcasting of to-day is a miracle compared with

that of ten years ago, and there is no slackening in its progress. This progress could not have occurred unless there was a public demand for it. Because the ordinary man has never been quite satisfied with the radio he has had and has all the time been willing to spend a little bit more in the hope of getting something better, he has been both subsidising the industry and putting a premium on enterprise and invention. The progress of broadcasting will continue for just so long as the ordinary man is not quite satisfied and is willing to spend a bit more in the hope of getting something better. The B.B.C. most certainly are keeping this spirit alive, and the proportion of satisfying and dissatisfying listening time is so nicely adjusted, particularly in respect to time and programme material, for keeping it alive, that I, personally, shall never believe it to be accidental. D. F. VINCENT.

Reading.

"DIAGNOSTIC'S" letter (in January 27th issue) appears to me as if he were trying to throw a monkey wrench into the machinery just to see the sparks fly. And I would condemn him for it to using a crystal set *only*—if at all.

Listeners, I believe (in this case) to be divided into two parts, the essentially foreign and local listener. Granted that the second may receive *better* reception (though it be not always appreciated), their numbers comprise those showing a lack of breadth of view, a lack of desire to hear anything else than the usual stereotyped local items—or those suffering from an unfortunate lack of funds.

The foreign programme listener, however, secures a broader view, a greater variety, and truly *alternative* programme (which are still denied us by the B.B.C.).

Personally, I have sought foreign programmes since the Eiffel Tower put them out on 2,500 metres. But these programmes now come to both one's front and back doors and I derive much pleasure from them, though overcrowding detracts. With super-het., band-passing, etc., this is partly overcome, and also the quality much improved, so comparing favourably with perhaps any except the local station.

The manufacturer, then, should build for both classes (local and foreign listeners), just as he does for mains and battery users. Ealing, W.13. DEEXER.

AS an owner of a super-het. and other sets, I feel justified in confirming much of what "Diagnostic" has to say. I insist that the value of entertainment derived from wireless is much overrated and that manufacturers and designers, together with the B.B.C., have duped us. There is a snag in evidence which they have yet to discover. I am one of the public. What do I want? Constant, reliable, undistorted reception, and if there is a set on the market to do this I have yet to hear it. The editor infers there is. I can prove there isn't, and that is the gist of "Diagnostic's" article. He considers the public should have more stability and well-nigh perfect sound, and I for one agree with him, considering the high price one has to pay, to say nothing of the fixed licence. The public have been sold pigs in pokes and have made the best of the swindle. "You may bluff some of us for some of the time, and some the whole time, but not all of us all the time." Some months ago we tried out a mains set which was reputed to bring in fourteen stations. It had the wonderful moving coil, etc., and the price was £12. We got the local and

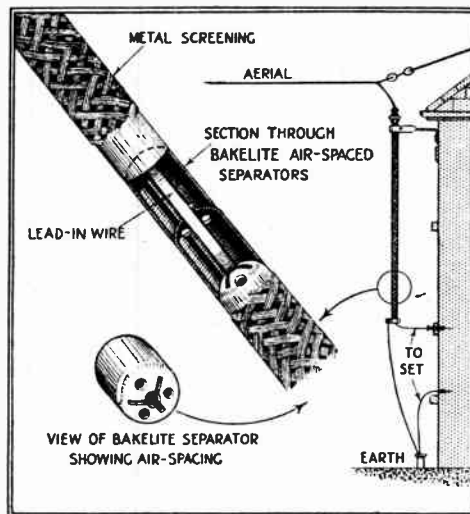
nothing more. This is an example of many. You are doing a real service to the listening community by opening your enterprising paper to such a grievance. Why it has not been brought forward before is a mystery to me. Referring to the National programmes, I consider them lacking the happy medium. They swing from vile, cat-wailing jazz to monotonous symphony concerts, week in, week out, the same syllabus. One wonders the directors do not get sick of it themselves. Where are the brass bands, the light variety items that are so popular? It is high time certain listening martyrs had a seat on the B.B.C. As truth and quality go in a small compass, I trust they will be the final factors in this discussion, and not the remarks of the majority, as so often happens. Here's to better quality, better reception, and better programmes.

"SEARCHLIGHT."

Boscombe, Hants.

GOLTONE SCREENED DOWN-LEAD

IT has been conclusively proved that a great deal of electrical interference reaches our receivers by re-radiation from the household wiring system. Recent work by independent authorities has led to the conclusion that the field of interference pro-



Construction and installation of the Goltone screened down-lead.

duced in this way does not extend far from the building, but that the aerial downlead is particularly likely to be affected.

Up to the present time it has been impossible to apply the obvious remedy of shielding the down-lead, for the reason that ordinary screened wire has an excessive self-capacity. With commendable enterprise, the firm of Ward and Goldstone, Ltd., of Pendleton, Manchester, has now produced a special form of low-capacity cable for this purpose. A series of bakelite thimbles, articulated on the "crocodile spine" principle, are used to centre a rubber-insulated conductor in a metal-braid cover.

A practical test, made under conditions where interference is normally heavy, proved highly successful. Signal strength was reduced to a slight extent, but, with a receiver having a margin of sensitivity, this is not serious. What really matters is that the signal-to-noise ratio was improved to a more-than-acceptable extent; indeed, certain forms of interference disappeared entirely.

Low-capacity screened cable of this sort cannot be cheap; a 30-foot length costs 36/-, but in many circumstances it is well worth its cost.

CLUB NEWS

Golders Green and Hendon Wireless Society

MR. ALEXANDER BLACK'S recent talk on "Tone Correction," before the Golders Green and Hendon Radio Scientific Society, aroused great interest. Various methods were described and illustrated by means of frequency records, visual indication being obtained by means of the valve voltmeter and aural effects with dual moving-coil loud speakers.

Mr. F. E. Henderson, A.M.I.E.E., of the G.E.C., recently lectured on the "Vari-mu Valve," describing the great advantages of the valve in pre-detection volume control.

Mr. J. C. Emerson, B.Sc., dealt in a recent paper with direct-coupled amplifiers.

All communications should be addressed to the President: Lieut.-Col. H. Ashley-Scarlett, D.S.O., 60, Pattison Road, London, N.W.2.

All About the Cathode Ray

THE Cathode Ray Oscillograph formed the nucleus for an entertaining evening at a recent meeting of the North Middlesex Radio Society. The lecturer was Mr. G. Parr, representing the Edison Swan Electric Co., Ltd., and he had brought with him interesting apparatus and many lantern slides. Numerous experiments were carried out, and the audience were shown how the cathode ray was projected and how it could be controlled by magnetic or electric fields.

Hon. Secretary: Mr. E. H. Laister, Windflowers, Church Hill, London, N.21.

Choosing a Subject

ANOTHER new idea was exploited by Slade Radio at a recent meeting when, in the absence of the appointed lecturer, Mr. Peck offered to fill the vacancy and allowed members to choose the subject of discussion. Five subjects were proposed, and two were ultimately agreed upon by vote, namely, "Screen-grid Valves as Detectors" and "Quiescent Push-pull." On the first topic details were given of coupling, rectification, quality, amplification and reaction. The second subject aroused great interest. Details were given of the quiescent push-pull circuit, and the use of transformers and eliminators was discussed.

Hon. Secretary: 110, Hillaries Road, Gravelly Hill, Birmingham.

Manufacturing Superhets

MEMBERS and Associate Members of the Crewe and District Radio and Scientific Society spent a very interesting evening on Tuesday, February 14th, when Mr. Hornby, of the Philco Radio and Television Corporation, lectured on the "Manufacture of the Philco Superheterodyne." Mr. Hornby clearly explained the action of the automatic volume control applied to Philco's main sets, also the new "Push-pull" output stage incorporated in the battery model.

Anyone interested is invited to communicate with the Hon. Secretary: Mr. R. Peach, 84, West Street, Crewe.

L.F. Circuit Phenomena

AT a recent meeting of the Smethwick Wireless Society Mr. Valentine, of the Mullard Wireless Service Co., Ltd., lectured on various L.F. circuits. By using a dual-gramophone amplifier the lecturer demonstrated the different effects produced by various couplings between valves and between output valve and speaker.

Hon. Secretary: Mr. E. Fisher, 33, Freeth Street, Oldbury, near Birmingham.

A Debatable Point

PENTODES *versus* Triodes" was the intriguing title of the lecture given by Mr. G. Parr, of the Edison Swan Electric Co., Ltd., at a recent meeting of the Catford and District Radio and Television Society. The keenness with which the lecture was followed could be judged by the vigour of the discussion, in which the speaker was never at a loss to answer the various questions put to him.

Hon. Secretary: Mr. H. W. Floyd, 38, Como Road, Forest Hill, London, S.E.23.

PERTRIX

NON SAL-AMMONIAC

H.T. BATTERIES

FOR

Q.P.P. RECEIVERS

A COMPLETE RANGE FOR QUIESCENT PUSH-PULL CIRCUITS

120 volt Pertrix Battery tapped at—0, 50, 60, 64½, 69, 75, 100, 110, and then at every 1½ volts to 120 volts. A 15 volt G.B. section is included in the same carton.

130 volt Pertrix Battery tapped at—0, 50, 60, 64½, 69, 75, 100, 120, and then at every 1½ volts to 130 volts. An 18 volt G.B. section is included in the same carton.

150 volt Pertrix Battery tapped at—0, 60, 84, 120, 135, and thereafter at every 1½ volts up to 150 volts. An 18 volt G.B. section is included in the same carton.

159 volt Pertrix Battery tapped at—0, 60, 84, and 120, and thereafter at every 3 volts up to 159 volts. A 9 volt G.B. section is included in the same carton. This battery is specially suitable for PYE "G.B." Receivers.

THE SAME DISTINCTIVE PERTRIX FEATURES:

- They are made under a patent process.
- Their zincs do not corrode, because there is no sal-ammoniac.
- They do not deteriorate when not in use.
- They recover power overnight—every night for months.
- They give cleaner current and higher voltage for a longer time.
- They are superior in every way to the common sal-ammoniac battery.

PERTRIX BATTERIES ARE OBTAINABLE FROM ALL DEALERS.

BRITANNIA BATTERIES LTD.,

233, SHAFTESBURY AVENUE, LONDON, W.C.2.

Works: Redditch (Worcs.).

ROLA

the World's Finest Reproducers

Use the Specially Designed
ROLA MODEL F5-PM-QPP
SPEAKER
 for Your Q.P.P. Receiver

If you are changing your Battery Receiver to Q.P.P. remember that Rola have produced a specially designed Q.P.P. model. When ordering specify type of valves used in Q.P.P. Write for the Rola folder to-day.

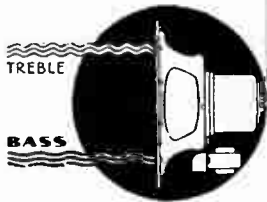
THE BRITISH ROLA CO., LTD.,
 Brondesbury Works,
 179, High Road, Kilburn, N.W.6
Telephone - Maids Vale 5017-8-9



MODEL F5-PM-QPP
 Diameter 6"

35/-

ROLA SPEAKERS
 for better
 Radio Reception



SAFEGUARD GOOD PERFORMANCE WITH



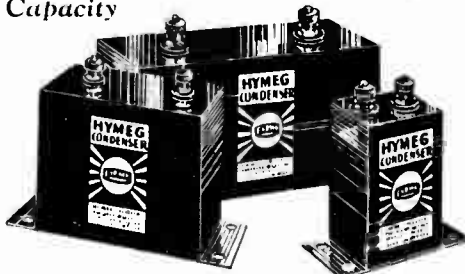
HYMEG CONDENSERS

The accuracy of Formo "HYMEG" Condensers represents a big advance in fixed condenser construction. Meticulous care has been taken to obtain and to guarantee a really LOW POWER FACTOR plus all the following points:

- 1 High Test Voltage, 1,000 volts A.C.
- 2 High Working Voltage.
- 3 Insulation resistance not less than 2,500 meg/mfd at working voltage.
- 4 Low A.C. Resistance.
- 5 TRUE to rated capacities.
- 5 Long Life. Low Price.

Guaranteed true to Capacity

- 34B 1MFD 2/6
- 35B 2MFD 3/3
- 36B 4MFD 5/6
- 37B 6MFD 8/0
- 38B 8MFD 10/6



Obtainable from all radio dealers but in case of difficulty write direct. Ask for the Formo Catalogue.

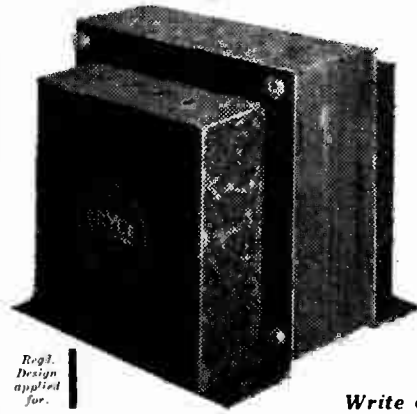
FORMO, CROWN WORKS, REGENT'S PARK, SOUTHAMPTON

FORMO COMPONENTS
 THE 'MAKING' OF A GOOD SET

1ST CHOICE OF THE DESIGNER!

OF THE
 "WW" FERROCART III-
 AGAIN RECOMMENDED FOR THE
 "A.V.C. MONODIAL"

The FIRST TRANSFORMER
 OF ITS DESIGN



Regd. Design applied for.

"W.W." FERROCART III.
 MAINS TRANSFORMER. AB191 28/6
 L.F. CHOKE, 2,500 ohms Res. - 15/-
 WILBURN 5-way Connector
 Block - - - - - 2/6

5 WATT A.V.C. MONODIAL.
 MAINS TRANSFORMER. AB404 52/-
 2 L.F. CHOKES, 28 14 Mys. - 17 6 ea.
 1 WILBURN 5-way Connector
 Block - - - - - 2/6
 4 PEAK CONDENSERS, 4 mfd. 6/9 ea.
 1 PEAK CONDENSER, 2 mfd. 3/9 ea.

2.5 WATT A.V.C. MONODIAL.
 MAINS TRANSFORMER. AB356 30/-
 L.F. CHOKE, 30 My. - 11/6
 L.F. CHOKE, 10 My. - 12/6

ADDITIONAL PARTS.
 MAINS TRANSFORMER, 4v. 1A, C.T. 8/6
 1 L.F. CHOKE, 30 My. - 11/6
 ACCEPT NO DELAY. DISPATCH
 GUARANTEED IN 24 HOURS.

Write or 'Phone - Bury 1251

W. ANDREW BRYCE & CO. WOODFIELD WORKS, BURY, LANC.

LONDON AREA - Quick Deliveries can be obtained.
 WILBURN & CO., 23, BRIDE LANE, E.C.4. 'Phone: Cent. 6994.
 On B.B.C. ELEC. CORPORATION, FOREIGN & COLONIAL LISTS.

T. W. THOMPSON & CO.

SURPLUS CLEARANCE DEPOT,
 14 & 17, STRUTTON GROUND, WESTMINSTER, S.W.1
 Telephone: Franklin 6355.

ALL ORDERS ON
 THREE DAYS
 APPROVAL AGAINST
 CASH OR C.O.D.
 (I.F.S. excepted).

OSTAR GANG KITS.—Comprising complete parts for home construction and complete with valves and blue print. The kit when assembled will operate from A.C. or D.C. mains without any alteration whatever. List price £6 10s. Price to clear, 55/-, post 1/6.

GREAT OFFER OF MAINS TRANSFORMERS.—Philips, out of all-electric sets, brand new, input 200 250 volts, outputs 250 0 250, 50 m.a. 1 v. 1 amp. and 1 v. 2 amp. Ridiculous clearance price 3 6, post 6d., all guaranteed. EKCO heavy mains transformers, input 200 250 volts, outputs 350 0 350 80 m.a. 1 v. 1 amp. and 1 v. 2 amp., 10 6, all new, post 9d. The original Pyro chokes in original boxes, 20 and 32 henry, totally enclosed, 4 6, post 6d. EKCO chokes tapped for Pentode, 50 henrys at 50 m.a., centre tapped, 5 6, post 6d. Small chokes for filters and smoothing, etc., 1 - each, post 3d.

BARGAIN OFFER.—Moving coil speakers, all 200 250 volts. Wonderful offer of the famous latest type Rola moving coil, all brand new, listed D.C. model 12 6, clearing at 22 -, post 1 -. A.C. model, fitted with Westinghouse metal rectifier, 37 6, post 1 -. The latest show model Rothenel Moving coil speaker, A.C. model, fitted Westinghouse rectifier, 42 6, post 1 -. Magnavox moving coil A.C. with Westinghouse rectifier, 42 6. Any of the above speakers mounted on the beautiful Magnavox walnut firescreen baffle, 20 - extra, carriage 1 6. Browns Permanent Magnet moving coil speaker in oak cabinet, listed, 9 19 6, to clear, 45 -. Browns Cubist 100 250 volt D.C. moving coil speakers mounted in 20in. solid oak cabinet, listed at 19 Gns., bargain offer, £3. Approx. weight 40 lbs. Amplion moving coil, 17 6, post 1 -. All speakers are complete with matching transformers.

THE LAST OF THE TUNGAR CHARGERS.—The famous B.T.H., brand new and complete with valve (please state mains voltage with order), charging 2, 4 and 6-volt accumulators at 3 amp., price 12 6, post 1 -.

ELECTRIC LIGHT CHECK METERS.—200/250 volt 50 periods A.C., highly suitable for checking other consumers' use of current. Cost £9. To clear, 5 - each, post 1 3.

AMAZING OFFER OF EKCO RECORDING GRAMOPHONE TONE ARMS.—Complete with geared tracking gear for cutting home records. The complete article with pick up was listed at 5 Gns. We are offering the instrument as above at the low price of 1 6, post 6d. In original Ekco box. Useful to all experimenters.

BRAND NEW T.C. ELECTROLYTIC 8 m.f. 440 volt.—D.C. working, 3 9, post 4d. T.C.C. new 9 m.f. banks 4 4 1 m.f., 4 6 post 6d. T.C.C. 1.2 m.f., 1 - each, Western Electric 1 m.f. 250 volt, 6d., post 3d. Small Bakelite .0005 .0001, .0002, .0003, .00025, .001, .002, .005, 2 - per half-dozen, assorted, post 4d. Variable condensers, .0003 and .0005, latest type, 2 - each, post 4d. Fixed condensers, Bakelite moulded cases, 2 m.f. 700 volt test 1 10, 1 m.f., 1 6, 2 m.f. 1000 volt test, A.C., 2 -, 500 volt test, A.C. 1 9, 1 m.f. 1,000 volt test, 4 -, 500 volt test, 3 -, 1 m.f. 1,000 volt test, 1 6, 500 volt test, 1 4.

DUBILIER BLOCK CONDENSERS.—12 m.f. 1 - 4 11,000 volt test, 5 - each. BRITISH RADIOPHONE TWIN GANG VARIABLE CONDENSERS.—Fully screened, 7 6. 6 m.f. T.C.C. condenser banks, 3 6 each, new, post 6d. Twin coupled utility gang switches, 6d. each. Polar .0005, complete with escutcheon plate and illuminated dial, 4 6, post 6d.

(See Classified Adts. in "For Sale" col. 2, page. 18).

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

THE CHARGE FOR ADVERTISEMENTS in these columns is

12 words or less, 3/- and 3d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

SERIES DISCOUNTS are allowed to Trade Advertisers as follows on orders for consecutive insertions, provided a contract is placed in advance, and in the absence of fresh instructions the entire "copy" is repeated from the previous issue: 13 consecutive insertions 5%; 26 consecutive, 10%; 52 consecutive, 15%.

ADVERTISEMENTS for these columns are accepted up to **FIRST POST ON MONDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Tudor Street, London, E.C.4, or on **SATURDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 280, Deansgate, Manchester, 3; 26, Renfield Street, Glasgow, C.2.

Advertisements that arrive too late for a particular issue will automatically be inserted in the following issue unless accompanied by instructions to the contrary. All advertisements in this section must be strictly prepaid.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed & Co. Notes being untraceable if lost in transit should not be sent as remittances.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

RECEIVERS FOR SALE.

FOR SALE, one grammo radio (Averington), exponential horn with unit, 5-volt model, list £22 10, our price £12/10; also 27 I.X.227, 6 I.X.226 American valves, 2/6 each.—Palladium, Littlehampton. [2136]

CLIMAX A.C. Mains 2-valve Pentode Receiver, brand new, unused; £3/10, complete.—Aldridge, 29, Chatterton Rd., London, N.4. [2170]

AUTOTONE, tested, adjusted, less valves and cabinet, excellent condition; £4.—Harron, 40, Waldeck, Galms. [2153]

ONE ONLY, Philips Super Inductive Five £24/3, almost new, guarantee unsigned; £17; demonstration, 5, West Side, Wimbledon. [2147]

MONODIAL, A.C., valves and speaker; £18.—Warnley, 40, Ainsworth St., Blackburn. [2143]

CLIMAX Band Pass Three All-electric, 200-240 A.C., in walnut cabinet, with Rola M.C. speaker, list price £16/16, in original carton, unopened; £8, 6, c.o.d., carriage paid.

MACNAMARA Golden Voice 3-valve A.C. Set, complete with moving coil loud speaker, in walnut cabinet, list price £15/15, in original packing, unopened; £8, c.o.d., carriage paid; in white cabinet, £7/7.—Kay, 167, City Rd., London, E.C.1. [2069]

MODERN Straight Five Power Chassis, push-pull, output, complete valves, Westinghouse rectifier, Amplion energised speaker; £7.—Barford, Dorincourt, Beech Av., Radlett. [2150]

APPLEBY'S, Central London Office, 46, Bloomsbury St., New Oxford St., London, W.C.1. Museum 8195. [1853]

RECEIVERS, components, or valves accepted part exchange for 1933 products, liberal allowances. Write Dept. R., British Radio Exchange Corporation, 26-27, D'Arbly St., London, W.1. [2040]

CLEARANCE Lines in Mains Receivers, stamp brings list.—Woods Radio, Holcombe Brook, near Bury. [2145]

CHARGERS AND ELIMINATORS.

MONODIAL Super, add A.V.C. using Seradex alternatives.

SERADEX Components for 2.5 Watt Monodial Mains Transformer, as specified; with leads £1.5, terminals £1/7/6.

SERADEX Chokes for 2.5 Watt Model, 1 C.L. 10h., 12/6; 1 C.D., 30h., 12/6; for 5 watt chassis; 2 type C.A., at 12/6 each.

SERADEX Speaker-field Replacement Choke (if P.M. speaker is used), 2,500 ohms; 12/6.

SERADEX Mains Transformer, for 5-watt chassis, stripped type, 19/6; terminal type, £1.12/6; lists for stamp.

SERADEX Resistances, Kit for Monodial A.V.C. chassis, 13/6; kit for 2.5 watt power chassis, 3/4; kit for 5.0 watt chassis, including 10 watt 2,500 ohm, 6/6.

SERADEX Complete Kits Save You Money; let us quote you.

SERADEX Condensers—Type B, 400v. working, 1 mfd., 1/6; 1x1 mfd., 2/6; 2 mfd., 2/3; 4 mfd., 4/5; 4x4 mfd., 7/3; 8x8 mfd., 14/6.

SERADEX Power Packs, complete kits of parts, giving smoothed rectified output of 350 volts at 70 m.a., with 4 volts 5 amps., £1/17/6; valve extra if required, 10/-.

SERADEX Battery Chargers Reduced; lists for stamp.

SERADEX Products are Obtainable through Your Dealer or Direct from Makers (carriage paid).—Trevor Pepper, Wake Green Rd., Birmingham. [2163]

A SET IS AS GOOD AS ITS COMPONENTS

You cannot hope to get best results unless your set is built with the most efficient and reliable components.

Ask for the **BURTON** Binocular H.F. Choke. Scientifically designed to avoid peaks and external magnetic field. Will cover a wave band of 50-3,000 metres. Sold by leading Radio Dealers. PRICE 5/- Made by C. F. & H. BURTON, PROGRESS WORKS, WALSALL.



BUILD A BETTER SET WITH

BURTON COMPONENTS

CRESSALL RESISTANCES

"Cressall" Asbestos-Wire Woven Resistance Nets for voltage absorbing on D.C. Mains Receivers. Mica - Wound Resistance Units. Sliding Resistances. Resistance Wires.

Please write for Lists.

CRESSALL MANUFACTURING COMPANY, 31-32, TOWER STREET, BIRMINGHAM.

SCOTT SESSIONS for "W.W." SETS

A.C. MONODIAL - £29.10.0

D.C. MONODIAL - £30. 0.0

All-Wave Battery

Model - - - - - £23. 8.6

Straight Five Receiver **£28.15.0**

Specially recommended—

A.C. MONODIAL

with Straight 5

Output - - - - - £34. 0.0

Modern Quality

Amplifier - - - - - £22. 0.0

All prices inclusive of valves, royalty and complete assembly—but excluding speakers and cabinets, which will be supplied to individual requirements.

Enquiries invited for the **IMPROVED MONODIAL RECEIVER** (described in this issue of "W.W.")

SCOTT SESSIONS ARTIFICIAL FIELD CHOKE for replacing the field winding in the Monodial Receiver when a permanent magnet or non-specified speaker is used. **Price 16/-.**

REPAIR SERVICE

We undertake repairs to all "W.W." designs, and for over 7 years we have been building sets for all requirements with first-class workmanship.

SCOTT SESSIONS & CO.

RADIO ENGINEERS, MUSWELL HILL, LONDON, N.10
Telephone No. : Tudor 5326.

Contractors to H.M. Government Departments, Crown Agents for the Colonies, Electricity Corporations, etc.

NUMBERED ADDRESSES.

For the convenience of private advertisers, letters may be addressed to numbers at "The Wireless World" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Wireless World." All replies should be addressed to the Box number shown in the advertisement, c/o "The Wireless World," Dorset House, Tudor Street, London, E.C.4. Readers who reply to Box No. advertisements are warned against sending remittance through the post except in registered envelopes; in all such cases the use of the Deposit System is recommended, and the envelope should be clearly marked "Deposit Department."

DEPOSIT SYSTEM.

Readers who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Wireless World," both parties are advised of its receipt.

The time allowed for decision is three days, counting from receipt of goods, after which period, if buyer decides not to retain goods, they must be returned to sender. If a sale is effected, buyer instructs us to remit amount to seller, but if not, seller instructs us to return amount to depositor. Carriage is paid by the buyer, but in the event of no sale, and subject to there being no different arrangement between buyer and seller, each pays carriage one way. The seller takes the risk of loss or damage in transit, for which we take no responsibility. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50, 5/-. All deposit matters are dealt with at Dorset House, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

SPECIAL NOTE.—Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post. When sending remittances direct to an advertiser, stamp for return should also be included for use in the event of the application proving unsuccessful.

Chargers and Eliminators.—Contd.

TRICKLE Chargers, ½ amp., with Westinghouse rectifiers, complete, 2-6v., 11/9; trickle chargers, 1¼ amps., ditto, 19/11.

TRICKLE Chargers, with Tantalum rectifiers, 7/6; 7 days' approval; postage 6d.—Arlen Agency, Wollaston, Wellingborough. [2107]

POWER Box Eliminators, input 100-260v., output 60v. and 120v., 20 m.a., guaranteed, complete; 25/-—Platt, 10a, Canonbury Park North, N.1. [2110]

EKCO, D.C. H.T., 4 tappings, 1 variable, 60 m.a., L.T., G.B.; £3, 15s. Box 6339, c/o The Wireless World. [2146]

BROWN and SALTER, Vortexion, Wimbledon, for the finest transformers made regardless of price; all models guaranteed 12 months, tested on full load and 2,000 volts between windings before despatch; all finished in cast aluminium frames or shroudings.

VORTEXION Model Specified for the Modern A.C. Quality Amplifier, 400-0-400, 110 milliamperes, 4v. 3a. C.T., 4v. 2a., 4v. 1a. C.T., any input, 50c., insulated terminal type; 24/-.

VORTEXION Model for the Ferracart III, 350-0-350v., 60 m.a., 4v. 2.5 C.T., 4v. 3.5 C.T., screened primary open type, 13/6; shrouded, 16/-.

VORTEXION—W5, 6, or 7 for Westinghouse H.T.5, 6, or 7, with 4v., 1-4a., C.T.; 11/6.

VORTEXION—W8, 9, or 10 for Westinghouse H.T.8, 9, or 10, with 4v. 1-2a., C.T., 4v. 2-5a., tagged leads, shrouded; 16/6.

VORTEXION—W11 for Westinghouse H.T.11, with 4v. 1-2, 4v. 1-6a., all C.T., shrouded; 40/-.

VORTEXION—250-0-250, 60 m.a., 4v. 1-2, 4v. 2-4a., all C.T., open type tagged leads; 11/6.

VORTEXION—350 0 350, 120 m.a., 4v. 2.5, 4v. 1-5, 4v. 2-4, all C.T., shrouded type tagged leads; 16/6.

VORTEXION—400-0-400 or 450 or 500-0-500, 120 m.a., open types, 4v. 2-4a., 4v. 2-5a., 4v. 2-5a., all C.T.; 19/-; tagged leads.

VORTEXION—500-0-500, 150 m.a., or 450-0-450, 160 m.a., or 400-0-400, 190 m.a., 4v. 2-5a., 4v. 4a., 4v. 2a., 4v. 2a., 4v. 2a., all centre tapped, any input, 50 C.T., beautifully shrouded, core size, 2¼x1¼, screened primary, and strips, a £5 model, 35/-.

VORTEXION—30h, 50 m.a. chokes, 5/6; 20h, 120 m.a., 8/6; 15h, 350 m.a., excellent for rough D.C., shrouded, 15/-.

VORTEXION for Helshy Condensers, 750 D.C. working, 6 mfd.; 6/6, list price 21/6.

VORTEXION—Transformers made to your specification.

VORTEXION—Brown and Salter, 182, The Broadway, Wimbledon. Tel.: Liberty 2814. [2034]

TANTALUM for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [2139]

N.P. Battery Chargers for A.C. Mains; stamp for trade list and photographs.

N.P. Range of Chargers for all Purposes, 44 models from which to select, prices from 65/- to £32.

N.P. Have a few Slightly Soiled Instruments, bargains; list for 11d. stamp.

N.P. with Westinghouse Metal Rectification for A.C. Mains; also cheaper models with valve rectification.

N.P. Senior Two, 105/-, will do 1 to 30 2v. batteries, also H.T. variable resistance, ½ to 3 amps., guaranteed.

N.P. for all Chargers, A.C. or D.C. mains; trade list for stamp.—Nash Products, Ltd., Stechford, Birmingham. [2160]



Particularly well-made filament transformers, giving an output of 4 volts, and especially well suited for use when converting a receiver to A.C. mains operation, are obtainable from F. C. Heayberd & Co. Three models are available, the types 723, 727 and 731, their respective current outputs being 3 amps., 5 amps. and 10 amps.

Tests were made with the smallest model, which will supply one to three A.C. valves... the regulation is quite satisfactory... The transformer is provided with a core of adequate size, and the winding is fully protected by the special cast aluminium end-plates adopted. It has a tapped primary winding to suit supply mains of from 200 to 250 v. at 50 cycles, while the secondary winding has a centre tapping.

Test Report, "Wireless World," March 3rd issue.

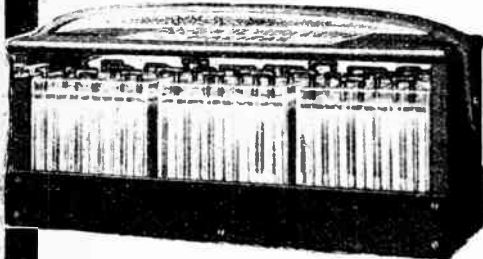
Prices: ZS 723 - 12/6, 727 - 17/6, & 731 - 22/6 POST COUPON TO-DAY

Enclose 3d. stamps for 36-page Handbook, containing technical hints and circuit diagrams

Mr. Address W.W.

F. C. HEAYBERD & CO., 10, FINSBURY STREET, LONDON, E.C.2. One minute from Moorgate Station.

No other H.T. Accumulator Possesses Such Patented Features—



ACCUMULATORS ELITE

SEMI-OIL SUBMERGED

The reason of the ever-increasing popularity of "ELITE" H.T. Accumulators is not far to seek. The film of oil, which definitely prevents loss by CREEPAGE, is a feature of tremendous importance, and is found only on "ACCUMULATORS ELITE" H.T. Batteries.

Again—these Accumulators last practically FOR EVER, since any damaged plate can be replaced instantly by anyone, without skill. They are as clean in operation as a dry battery, and are DEAD SILENT.

Prices:—Type O2 60V. 3-amp-hour £1-2-6 120V. 3-amp-hour £2-4-0 Write for Lists, Post Free.

To the TRADE It will pay you handsomely! our remarkable H.T. BATTERY HIRE SERVICE SCHEME Write for Particulars—

ACCUMULATORS ELITE Hebble Mills, Salterhepple, HALIFAX.

CABINETS.

RADIO-GRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon, [1686] WE Can Supply Brand New Complete Gramophones, London made cabinets, at less than the cost of cabinets; ideal for converting radiograms; 28 models to choose from; 52/6 to £10; illustrated list free.—Radley's, Ltd., Canal Rd., Bradford. [1786]

DYNAMOS, ETC.

EX-GOVERNMENT 6-volt 15 amps. Charging and Lighting Dynamoes, well made, totally enclosed, condition guaranteed; 7/6 each; carriage forward; rail.—Wickham, 18a, Hercules Rd., Lambeth, S.E.1. [2173]

LOUD-SPEAKERS.

B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus, original price 6 guineas, highly sensitive and wonderful tone response, will handle up to 10 watts output, available for 6v., 100v., 200v., 50/-; also A.C. models, £2/10; carriage paid, c.o.d., or cash with order; send for list of other unused bargains.—Seckamp, 46, Farringdon St., London, E.C.4. [1425]

1933 New British Tested, guaranteed P.M. or M.E. moving coil speakers, £1 (list 39/6); "Classic" model, 25/- (list 50/-); 20 m.a. eliminator, D.C., £1; A.C., 30/-; 120v. H.T. batteries, 6/6; new, half-price bargains; speaker units, 2/6 and 5/-; Amplion, 21/-; cone speakers, 10/-; oak or walnut cabinet speakers, 15/-; cash or c.o.d., carriage paid; cash refunded if not approved; trade enquiries invited.—Collins, Riversley Rd., Nuneaton, Warwicks. [2124]

18/9 snip.—W type P.M. moving coil speaker, reputable manufacturers' new surplus, modern and guaranteed; Magnet weighs over 4lb., cone 8 1/4 in. dia. overall, complete with tapped transformer; originally 49/6, most genuine bargain ever offered; cash with order, returnable within 7 days, carriage paid.—Stroete, 84, Riversdale Rd., N.5. [2127]

EDIBELL, Wright and Horn, £6; Ferranti field transformer to suit, £1; Epnel super cinema m.c., 6-volt field, £5; Film Industries unit and 9ft. horn (cost £15), £6/10; can be heard working.—Neali, Cinema, Daventry. [2132]

SET Manufacturer's Brand New Surplus Rolas (3 each only), F.6 7 1/2 cones, all voltages, with transformer, list 35/6, 18/-; F.9 9 1/2 cones, list 45/6, 25/6; permanent magnets, F.6 P.M., 7 1/2 cone, list 49/6, 28/6; model F.9 P.M. 9 1/2 cone, list 60/6, 32/6; Mullard P.M. 8 1/2 cones, with transformer, list 49/6, 26/6; Rola dual compensated speakers (3 sets only), state requirements, 2 F.6, list £3/10, £2/6; (1) F.6 and (1) F.9, list £4/5, £2/10; (2) P.M., list £5/2/6, £3; cash with order or c.o.d. (carriage paid).—Chal-Electric, 6, Conduit St., W.1. [2109]

30/-!!—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; weight 30lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.

27/6!!—6v. D.C. speaker, as above; £2/7/6, speaker as above, for 100-250 A.C. [2115]

CARRIAGE Paid, cash with order, or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [2115]

ROLA British Speakers, surplus, model F.6, either 2,000 or 6,500 ohms fields, state whether required for power or pentode; these speakers are guaranteed perfect, with 7 1/2 in. cone; listed 35/-; price 21/-; postage extra.—R. A. Arnell, 8, Fishponds Rd., Upper Tooting, S.W.17, Streatham 8209. Callers invited. [2156]

PAIR Dual Standard Magnavox, pentode, tested only, 45/-—Buck, 9, Vincent Square, S.W.1. [2142]

THE New Hartley-Turner Speaker, including pentode transformer, hardly used; £4.—Fortescue, Marlborough Rd., Swindon. [2176]

ROLAS!—100 to 175 volts, F2,000, with transformer, sealed boxes; c.o.d., 19/6.—Smith, Bradwell Works, Gorleston-on-Sea. [2135]

VALVES.

WRITE for Details of Our Unique Valve Exchange Offer.—Dept. V., British Radio Exchange Corporation, 26-27, D'Arby St., London, W.1. [2041]

NEW Large Purchase of a Set Manufacturer's Stock of Valves, guaranteed as new, all latest types, and any valve differing from the maker's characteristic exchanged free.

210H.L.s, 210H.F.s, 210L.F.s, P.M.H.F.s, P.M.H.L.s, 211L, 210s, H.210, D.E.H.210s, 1210s, 3/9; 215P.s, 220P, P.2s, P.215, D.P.215s, P.M.2s, P.220s, P.M.2A, 4/9; D.H.s, 41M.H.L.s, 41M.H.s, M.H.4s, A.C./H.L.s, A.C./2H.L.s, 354V.s, 904V.s, D.C.3/H.L., 7/-; 41M.P.s, M.L.4s, A.C./P.s, 7/6; P.T.4, P.T.41, P.E.N.4V, M.P./P.E.N.s, 12/-; latest metallised S.4V.B.s, M.S.4.B.s, M.S.G./H.A., A.C./S.G.s, 9/-; Coss. M.V.S.G., 12/-; 432B.V., 1807s, 7/9; 1821s, 7/6; 620T., 15/-.

2,000 Valves are Always in Stock for Immediate Dispatch, prompt attention, for cash or c.o.d.—Newman, 309, Roman Rd., E.3. [1659]

THE Following Valves are Guaranteed as New, and any valve differing from the makers' characteristics will be exchanged; all latest types.

A.C./Pens., A.C.S1/V.M.A., M.P.T.4s, D.C.2/Pens., V.M.4V.s, Pen.4V.s, D.C.2S.G./V.M.s, 11/-; M.N.4s, M.S.4B.s, A.C.S.G.s, S.4V.A.s, M.S.G./L.A.s, D.S.B.s, A.C.S. 2s, D.C.2/S.G.s, 9/6. M.L.4s, A.C.P.s, 41M.P.s, P.M.24s, 8/-; A.C.H.L.s, A.C.2 H.L.s, 354V.s, 41M.H.L.s, P10s, P.U.60/250s, M.H.4s, 7/6; P.T.2s, V.S.2s, 215S.G.s, P.M.22As, 9/-; D.C.3H.L.s, D.W.3s, 8/-.

A.L.L. Types of Brand New American Valves in Stock; 247s, 235s, 224s, 236-, 237-, 227s, 242s, 226s, 280s, 245s, 232s, 10/6.

U.X.250s, 7 watts output, 16/-; 282M, mercury vapour rectifiers, 11/-; for quickest delivery send telegraph money order.

OVER 2,000 Valves are Always in Stock for Immediate Dispatch; carriage paid, cash with order or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [2144]

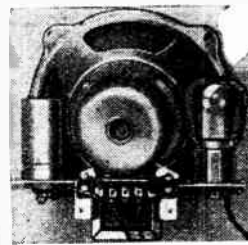
OSTAR-GANZ

HIGH VOLTAGE MAINS VALVES

These valves work direct off either A.C. or D.C. supply. No transformers or resistances required. Remarkably free from mains hum. A.520. U.P. - 17/6 E.G.50. 50 m.a. Half Wave - 14/6 W.310. R.C. - 17/6 E.G.100. 125 m. do. - 15/6 U.920. L.F. Power 17/6 E.G.40. 40 m.a. Voltage Doubler 28/6 L.1525. Super Power 18/- V.G.45. 45 m.a. Full Wave - 42/-

UNIVERSAL

RECEIVER AND AMPLIFIER KITS



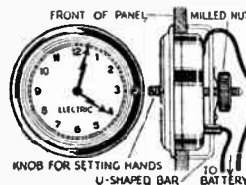
With British Components. Work off either A.C. or D.C. 2-v. Receiver with Rectifier - £8 10 0 3-v. Receiver with Rectifier - £3 9 0 2-v. Amplifier with Rectifier - £4 4 0 3-v. Amplifier with Rectifier - £5 5 0 Latest type Energised Moving Coil Loud-speaker, complete with Ostar-Ganz Valves £2 5 0 Write for leaflet. EUGEN FORBÄT, c/o Sivright Ltd., 1, Rosebery Avenue, E.C.1. Tel.: Clerk 1227.

THE BRITISH RADIO INSTITUTION

Founded 1930; membership steadily increasing. Objectives: closer technical co-operation between, and subsequent advancement of, its members. Office-bearers honorary and elective. Associateship by examination or approved qualifications. Subscription Membership open to all at 5/- per annum (plus 2/6 on entrance). Balance Sheet published annually. Explanatory brochure post free from Hon. Sec.—J. D. Fox, 25 Kingswood Drive, King's Park, Cathcart, Glasgow. London Branch Chairman, J. J. Denton, 25 Lisburne Road, Hampstead, N.W.3. Read its chief organ,

The British Radio Annual, 1932,

which will be publicly available March 18th. Contents: Heaviside layers, band-pass filters, tone correction, L-f. amplification, frequency multipliers, sound-film operation, echo sounding, writing technical articles, etc. Price 2/- net; obtainable through W. H. Smith & Son, Ltd. (England), John Menzies & Son, Ltd. (Scotland), or direct from the Hon. Sec. Order now.



FIT THIS ELECTRIC CLOCK TO YOUR SET! NO MAINS NEEDED! KEEPS CORRECT TIME! NO WINDING!

Works off small battery lasting 12 months, or can be plugged into G.B. Battery without affecting reception. Uses practically no current. Fits into hole 3 1/4" dia. in any panel up to 1 1/2" thick. Easy to fix—no screws required. Only 1" from front of panel to back of case. Swiss movement. Hands set from front. Nickel plated bezel. Useful addition to any set. RIVERSIDE MFG. CO., LTD., COMPLETE WITH BATTERY DEPT. 20, GRIP RD., HAMMERSMITH, W.6. Telephone: Riverside 6395. POSTAGE 6D

engineers LET'S GO INTO THIS TOGETHER

YOU MAY HAVE THIS 250 PAGE BOOK ABSOLUTELY FREE!

All we ask is the chance to prove to you that you can earn £300, £400, £500 per year and more. Other men are doing it and you can do the same.

The first thing to do is to send for our FREE Handbook "ENGINEERING OPPORTUNITIES." This 250-Page book contains details of B.Sc., A.M.I.C.E., A.M.I.Mech.E., I.E.E., A.M.I.A.E., M.I.M.T., G.P.O., etc. Exams., outlines Home-Study Courses in all branches of Civil, Mech., Elec., Motor, Aero, Wireless and "Talking-Pictures." Engineering, and explains the advantages of our unique Employment Dept. We urge you not to neglect our offer. Send for your copy of our Handbook to-day, Free of any charge.

BRITISH INSTITUTE OF ENGINEERING TECHNOLOGY, 387, SHAKESPEARE HOUSE, 29 31, OXFORD STREET, LONDON

ERIE Write for NEW Technical Brochure THE RADIO RESISTOR CO 1, Golden Sq., Piccadilly Circus, London, W.1

Valves.—Contd.

AMERICAN Valves.—Why ruin your set with unknown makes! Brand new Arcturus and R.C.A. at special prices; from 9/6.—Norman Michel, 51, St. Matthew's Parade, Northampton. [2134]

WIRE.

ENAMELLED, D.S.C., D.C.C., copper, and resistance; list W.P.4.—Frost Radio. 4/6 Gross.—No. 4 stampings, post 9d.; bobbins, 1/-; clamps, 9d.—Frost Radio, 21, Red Lion St., E.C.1. [2177]

COMPONENTS, ETC., FOR SALE.

WESTON Moving Coil Milliammeters (301), 0.15 upwards 22/6; Turner ditto, 17/6; Turner thermo couple ammeters, 0.15, 25/-; 3-range moving coil meters, 0.3 m.a., 6 and 120 volts, 22/6; electrostatic and moving coil voltmeters, 0.2, 0.000, 32/6; moving coil milliammeters, 0.10 upwards, 10/6; alterations and repairs of every description.—The Victa Electrical Co., 47, High St., Battersea, S.W.11. [10355]

CONDENSER Blocks 6d. per mfd., 650 volt test, in blocks of 6 mfd. upwards, wired in 2 mfd. units; 2 years' guarantee; send by return of post on 7 days' approval; cash with order.—Butlers Radio, Ltd., 191, Forest Rd., Walthamstow, E.17. [Phone: 3134.] [0396]

SOUTHERN RADIOS Guaranteed Wireless Bargains.—Set manufacturers' new surplus: Ready Radio Meteor 3-valve screen grid new battery kits, in original sealed cartons, with three Mullard valves (P.M. 12a., P.M.21X., P.M.2), £2, 10/6; without valves, 27/6 (listed £5 7/6); Meteor 3-valve screen grid Model "A" kit complete with Celestion moving coil speaker and cabinet and three Mullard valves, £4 7/6, without valves £3 2/6, brand new, in original cartons (listed £8 17/6); Ready Radio 303 three valve battery kits, new, in original cartons, with three Mullard valves, 37/6, without valves 21/- (listed £3 10/); Mullard Radio for Million 3-valve A.C. kits, in original cartons, with Mullard valves, P.E.N.4V., 354V., 84V., £3 12/6 (listed £6/10), three valve battery sets, complete with valves, Drydex batteries and accumulator incorporating Columbia speaker, contained in polished dome shaped cabinet, £2, in original cartons (listed £5 19/6); Radiophone volume controls, 3—each; dial gang variable condensers, 0.0005 (H.M.V.), with trimmers and shrouded, 6—(listed 29/6); screened chokes, H.M.V. 1/-, 9/-; dozen; condensers, 4 mfd. 2/6, 2 mfd. 1/9, 1 mfd. 1/1 each, all 750 volt test; genuine Amplion loud speaker units, 2, 9 each; S. G. Brown's A.C. speakers, incorporating Igranite Elcon rectifier, 12in. cone, 35—each, brand new, in original cartons (listed £8/10); mains transformers, 250-0.250, 60 m.a., 4 volts 1 amp., 4 volts 3 amps., 10/3 each; all goods brand new, guaranteed and carriage paid. Southern Radio, 323, Euston Rd., London, N.W.1 (near Warren St. Tube). [Phone: Museum 6324.] [2165]

TLE Rejotostat Aerial, really does its job; price 45.—R. E. Blakey, A.B.R.L., Bull's Head Chambers, Manchester. [2157]

EXPERIMENTERS' Receiving Surplus, ganged condensers, coils, etc.; very cheap; stamp for list, 100, Westcath Avenue, Sunderland, Co. Durham. [2155]

RADIOPHONE Radiopak, with gramophone switch, 45/-; Colvern 2K B.L.G. and K.G.R. ganged, 15/-.—Bryant, 2, South Ridgway Place, Wimbledon. [2171]

AMERICA Nightly! All-wave tuner, 20-2,000 metres, reaction incorporated; 6/6.—Evans, 77, Jernyn St., London. [2141]

FERRANTI Transformers.—O.P.3 (C.), 10/-; A.F.3 (C.), 12/6; O.P.M. (3), 12/6; O.P.2 (C.), 8/-; A.F.4, 10/-.—Corke, 4, Claye St., Long Eaton. [2158]

FERRANTI Triple Range Meter, 250v., 10v., 50 m.a., 30—; 10-watt speakers, 6v., 15—; 100v., 22/6; 15-1 transformer, 6v.—Spencer, 120, Dhury Lane, W.C.2. [2154]

SET of Magnum Screened Ganged Coils, Band-pass and H.F. 12/6; Polar 3-gang condenser, 5/9; mains transformer, 400-0.400, 150 m.a., 7.5 volts 3 amps., 6 volts 3 amps., 4 volts 4 amps., 22/6; choke for same, 200 m.a., 30 henrys, 9/-; all above as new; post free.—Nicoll, 25, St. David St., Falmouth Rd., S.E.1. [2151]

COLVERN Coils, K61-23, £1; R. & A. "100" Perm Magnet M.C. speaker and transformer, 25/-, or exchange lot for Garrard universal electric gramophone motor.—Croucher, 30, Orchard St., Canterbury. [2137]

VARLEY H.D. Push-pull Input and Output, 15/- each; Heyburn, 100 m.a. choke, 10/-; K.B. dual D.C. gramophone motor and turntable, 20/-; new L.S.6A valve, unused, 17/6.—Wainwright, 3, Seaford Ave., Blackpool. [2133]

QUIESCENT Push-pull Valves, speakers, components; we can supply from stock; send enquiries.—Below.

FERROCART Coils and Other Components.—We allow up to 50% for second-hand parts; write for quotation.—Radio Exchange, 68, Colville Rd., London, E.11. [2131]

BARGAIN Offer.—Manufacturers' surplus S.G.3 mains table receivers, A.C. or D.C., Rola energised speaker, a limited number only, B.Y.A. valves (4 including rectifier), perfect condition, cannot be repeated; £6/10.

YOUR Chance for that Extra Speaker.

ROLA P.M. Speaker (49 6), in walnut veneered front radio cabinet, drilled for chassis, complete, shop suited, as new; 36/-.

RADIOPHONE 4-gang Condensers, 0.0005, as new; 9/6.

A FEW Colverdyne Intermediate Frequency Transformers, 110 ks.; to clear, 6/5.

ABOVE Supplied, cash with order, on 7 days' approval.—J. Dorsild, 24, Legrasus Av., Bradford. [2130]

EXPERIMENTERS' Surplus, everything guaranteed perfect.—M.L. converter, new, 12 volts input, 500 volts 60 m.a. output, £5/10; Weston thermosammeters, 1.5 amp. type 5117, £1; dual Magnavox, push-pull transformer, £2; Novotone, 30—; B.T.H. pick-up, 15—; Burndey N.A. pick-up, 15—; Mazda P650, 7/6; set of Tunewell "Diode Four" coils, 15/-; Wsartite I.F. transformers, 7/6; Colvern K63, K.G.R., 6/-; T.G.S.C., 3/6; Utility drum dial, 4/6.—Box 6328, c/o The Wireless World. [2129]

RADIO BY MAIL

A.C. MONODIAL SUPER

KIT "A" Author's Kit of FIRST SPECIFIED Components for Set only including Ready Drilled Polished Oak Panel, Ready Assembled and Drilled

PLYMAX Set Chassis, screws, wire and sleeving but excluding Eliminator Components, Valves and Cabinet.
Cash or C.O.D. Carriage Paid. **£11-10-6** or Deposit £1-10-6 and 11 monthly payments of £1-0-0.

ELIMINATOR KIT COMPLETE KIT

Includes all FIRST SPECIFIED Components for 2.5 Watt Power Chassis with ready drilled and assembled Plymax Chassis with screws, wire and sleeving but, less Valves, Cash or C.O.D. Carriage Paid. **£26-18-0**, or Deposit **£4-18-0** and 11 monthly payments of **£2-4-0**.

KIT-BITS

- Selected C.O.D. items for the A.C. Monodial. You pay the postman. We pay post charges on orders over 10/-.
- 1 PETO-SCOTT "PLYMAX" Chassis, 12" x 14", completely assembled and ready drilled for Set ... **10 0**
 - 1 PETO-SCOTT Oak Faced Ply Panel, 14" x 9" ... **2 6**
 - 1 British Radiophone Variable Condenser, .0005 mfd., 3-gang, Screened with Slow Motion Dial ... **1 15 0**
 - 3 Colverdyne (110 K.C.) ... **1 17 6**
 - 1 Set of Varley B.P. Square Peak Coils, Type B.P.19 ... **1 10 0**
 - 19 Dubilier Fixed Condensers, As specified for Set portion ... **2 4 8**
 - 1 Dubilier Resistances, As specified for Set portion ... **1 1 0**
 - 1 Sound Sales L.F. Choke (10 Henrys) ... **10 0**
 - 1 R.I. Hypercore L.F. Choke (30 20 Henrys) ... **17 6**
 - 1 Bulgin L.F. Choke, Type L.F.11 ... **10 6**
 - 1 Challis Mains Transformer ... **1 19 0**
 - 1 Ferranti A.F.5 L.F. Transformer ... **1 10 0**
 - 1 PETO-SCOTT "PLYMAX" Chassis ready drilled and assembled, for Power Pack, 9" x 12" ... **7 0**
 - Set of 9 Specified Valves, including Rectifier ... **7 5 0**

PILOT AUTHOR KITS—FERROCART III

KIT "A" Author's Kit of FIRST specified Parts complete down to the last screw, including READY DRILLED Peto-Scott Panel with assembled and drilled Peto-Scott PLYMAX CHASSIS but less Valves and Cabinet.

CASH or C.O.D. Carriage Paid.

12 GNS.

or 12 monthly payments of 23/-
Set of 4 Specified Cossor **£3.7.6**
Valves
or add 6/2 to each Kit "A" monthly payment.

DELIVERY PER RETURN COLVERN FERROCART COILS AS SPECIFIED

By special arrangement with Messrs. Colvern Ltd., we hold stocks of their FERROCART COILS for immediate delivery.

Set of 3 coils, ganged and mounted on metal chassis, as specified: CASH or C.O.D. Carriage Paid **£2-10-0** or 12 monthly payments of 4/7.

Readers desiring to purchase any items separately can order with confidence from the EDITORIAL LIST OF PARTS for delivery against CASH or C.O.D. Orders over 10/- Carriage Paid, or C.O.D. Post charges Paid. Components or Part Kits value over 50/- by EASYWAY if preferred.

Exact to Specification PETO-SCOTT CO. LTD. 77, CITY ROAD, LONDON, E.C.1. Telephone: Clerkenwell 94067. West End Showrooms: 62, High Holborn, London, W.C.1.

Components, etc., for Sale.—Contd.

R. SELECTED Parts for Sale, as new; any c.o.d., or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take all risk of damage in transit to our customers; all goods tested for callers and guaranteed, however low price. Notice.—Payment by cheque; no goods despatched until these are cleared.

WE refund cost of telegrams received on Friday only on orders of 7/- or over.

T.C.C. type 84, 1 mfd., 375v. working, 1/3; T.C.C., 2 mfd., 375v. working, 1/6.

METERS, moving iron and moving coil, all new instruments, specially made for Ryall's Radio, all guaranteed for one year, moving coil meters to B.E.S. first grade specification, all panel flash type bakelite case.

MOVING Coil: 0-10 m.a., 0.50 m.a., 0-25 m.a., 0-5 m.a., 21—; 0-250v 1,000 ohm per volt, 51/-; 0-300v. ditto, 32/6; all with zero adjustment, size 3/4in. diameter, 2 1/2in. dial face.

MOVING Iron Meters, first grade air damped, with zero adjustment, A.C. meters, 0-250v., 18/-; A.C. and D.C. 0-50 m.a., 15—, size as above.

MOVING Iron Meters, in cases, as above, A.C. meters, 0-6v., 10—; 0-3 amp., 10/-; 0-12v., 10/-; 0-250v., 12—; 0-6 amp., 10—; A.C. and D.C., 0-20 m.a., 10/-; 0-50 m.a., 10—; (0-10 m.a., 8/6, D.C.)

RYALL'S RADIO Own Mains Condensers, offered with confidence, all with terminals, 4 mf. 250v. working, 40v. peak, 3/6; 4 mf. 400v. working, 600v. peak, 4/-; 4 mf. 750v. working, 1,000v. peak, 5/6; 2 mf. 750v. working, 3/6; new goods, guaranteed one year.

RYALL'S RADIO Mains Transformers, new goods, 250v., 60 m.a., 4v. 1 amp., 4v. 3 amp., 10/6; ditto, super type, with 4v. 5 amp., 15/6; 350v. 60 m.a., 4v. 2 amp., 4v. 4 amp., 12/9; step up or down transformers, 110v. to 220v., 10/6; 60 watt H.T.7, 10/9; filament, 4v. 5 amp., 8/6.

RYALL'S RADIO Chokes, 20H 120 m.a. resistance, 260 ohm, 8/9; 25H at 60 m.a., res. 260 ohm, 6/9; 40H 100 m.a., resistance 600 ohm, 10/6, constant inductance chokes.

IGRANITE Mains Transformers, 110/250v. input, 250v., 75 m.a., 4v. 1 amp., 12—; 460v 120 m.a., 7.5, 8v., 15v., to clear at 15/-; ditto H/W, 550v., 60 m.a., 7.5v., 6/9.

MAGNAVOX D.C. 144, with transformer, 2,500 ohms, 15/6; Rola D.C. 2,000 ohms, with pentode transformer, 17/6; 6,500 ohms, ditto; post free.

SET Cabinets for 3v. A.C. Sets, room for speaker, suit "W.W." A.C.3, etc., brand new, fitted escutcheon, 20/-; used, 16/-.

SPECIAL Offer of Pye 20h. Chokes, 40 m.a., 130 m.a., maximum, D.C. resistance 300 ohms, in brown crystalline finish, new, unused, Pye 32h. chokes, D.C. resistance, 700 ohms, 30 m.a., 80 m.a. maximum, ditto, 6/3 each, post free.

RYALL'S Own Wire Wound Resistances, wound on vitreous tubes, wire ends, wattage ratings doubled when well ventilated, accuracy plus or minus 2 per cent. in values; 250 1-watt, 500 1-watt, 550 1-watt, 500 1-watt, 510 5-watt, 540 3-watt, 715 1-watt, 750 2-watt, 800 1-watt, 1,200 1-watt, 4,000 2-watt, 5,000 5-watt; prices, 1-watt 1/-, 2-watt 1/3, 3-watt 1/6, 5-watt 1/9; guaranteed one year.

SUITCASE Cabinets in Best Crocodile Leather, 14x 14-8, ample room for 12in. turntable and pick-up; 15/-, new.

EDISON BELL 10,000, Eureka wire wound, with metal holders, 1/-; Edison Bell 0.0005 universal log all metal condensers, 1/6, new.

RYALL'S RADIO, 33, Chancery Lane, London, W.C.2 (nearest Tube Chancery Lane; bus 67 passes door, or train to Savoy St., Holborn 3529. Open Saturday afternoon. Close 7 p.m., Thursdays 1 o'clock, Saturday 6 p.m.

R. [2164]

GUARANTEED Components—

BRAND New American Valves, 224, 235, screened grid, 10/- each; 226, 227, 280, 8/-; and other types pro rata.

UTILITY 0.0005 Condensers, new, double ball bearing spindles; 3/6.

SUITCASE Cabinets, 14-14x8, guaranteed real hide, crocodile pattern; 12/6.

TABLE Radiogram Cabinets, in blue texture; 5/- each.

MICA Dielectric 0.0005 Condensers, at 9d. each.

D.C. Eliminators, all types and makes, output 10 to 50 m.a.; from 5/- each.

POWER Chokes, 30 henrys, 40 m.a.; 3/6 each.

CONDENSERS.—750v. D.C. test, 1 mfd., 1/-; 2 mfd., 1/8.

LARGE Stock of Various Components, sets, cabinets, etc., etc., in stock.

MAINS Transformers, manufacturers' type, 250-0-250, 60 m.a., 4v. 2a., 4v. 1a., C.T., 8/6; 300-0-300 60-80 m.a., 4v. 3a., 4v. 2a., C.T., 9/-.

240V. Transformers, for use with H.T.8 rectifier, 11/-; and various other types of all the above.

3-VALVE Strips, complete with ready wired filaments, with 2 fixed condensers, 0.002 and 0.0003, 1/6 each.

2-GANG Condensers (H.M.V.) with trimmers, complete; 5/6.

ROTHERMEL M.C. Speaker, heavy type, 6-12v. field; 12/6; carriage extra.

UNIVERSAL RADIO, 220-221, City Rd., E.C. [2161]

MAINS RADIO'S Usual Guaranteed Set Manufacturers' Surplus, as new. Carriage paid or rail.

SPECIAL! Parallel feed transformers, 2/2 each; N. & K. Garrard inductor speakers, 32/6.

FORMO Blocks, 1,000v. test, 8-2-2x2x1 mfd., 6/6; double wound smoothing chokes, 10h. 30 m.a. each half, 2/-.

VALVES.—M.S.4, 8/3; M.H.4, 6/3.—Mains Radio Development Co., 4-6, Muswell Hill Rd., London, N.6. [2152]

THE "Atomized" Chemical Aerial, amazing results, knife-edge selectivity, enormous power and range, fix in an out of doors; 7/6, postage 1/-.—Chemerator Unit Co., 88, Wellington St., Luton, Beds. [2138]

HINTS TO BETTER RECEPTION. II.



PERFECT BALANCE OF TONE

BULGIN VOLUME CONTROLS
 To remove excessive treble, such as is commonly necessary when a pentode is used, employ circuit A.
 To eliminate some of the bass and raise the pitch, use circuit B. The above must be used in conjunction with a filter output circuit. Fig. C shows a pick-up arranged to avoid excess of top register.

ALL VALUES SUPPLIED FROM 500 TO 100,000 OHMS.
 Send for 80 pp. Catalogue "W" and full details. Enclose 2d. Postage.

'COMPACT' PRICE FROM 3/6 **'STANDARD' PRICE FROM 5/6**




A. F. Bulgin & Co. Ltd.
 Abbey Road, Barking, Essex.

Components, etc., for Sale.—Contd.

PREMIER SUPPLY STORES Offer the Following Brand New Goods at a Fraction of the Original Cost; all goods guaranteed perfect; carriage paid over 5s., under 5s. postage 6d. extra (Ireland carriage forward), c.o.d. charges extra.

SPECIAL Offer of Mains Transformers, manufacturers' type, any input, output 250.0-250 volts 60 milliamps, 7 volts 1 amp. (c.t.), 4 volts 3 amps. (c.t.), 8/6; 180.0-180 volts 40 milliamps, 4 volts 1 amp., 4 volts 2 amps., 4/6; 175 volts 50 milliamps, 4 volts 4 amps., 4 volts 1 amp., 5/6; H.T.8, with 4 volts 3-4 amps., 8/6; with rectifier, 18/6.

MULTIRATIO Output Transformers, 6 taps giving 15 different ratios, 7/6; Pye chokes, 20 or 32 henrys, 4/6.

PREMIER Chokes, 40 milliamps 25 henrys, 4/6; 65 milliamps 30 henrys, 6/6; 150 milliamps 30 henrys, 10/6.

SMOOTHING Chokes for Series Connected Filaments from D.C. Mains, carry 1 amp., 7/6; H.M.V. 110 henry chokes (100,000 ohms resistance, carry 10 m.a.), 3/6.

AMPLION High Inductance Chokes, resistance 2,500 ohms, 80 henrys, 60 m.a.; 5/6.

PREMIER Eliminators, input 200-250 volts, 40-100 cycles A.C., incorporating Westinghouse metal rectifiers, output 250 volts at 60 milliamps, 80 and 120 volt taps, 42/6; with 4 volts 4 amps. L.T. (c.t.), 7/6 extra.

PREMIER Eliminators, output 150 volts at 30 milliamps, 80 and 100 volt taps, with 4 volts 3-4 amps. (c.t.), L.T., 37/6; with trickle charger, 42/6.

PREMIER Eliminators, output 120 volts at 20 milliamps, 80 and 100 volt taps, 27/6; with L.T. trickle charger incorporated, 35/6.

D.C. Eliminators, output 120 volts at 20 milliamps, 80 and 100 volt taps, 15/6; larger model, output 200 volts 50 milliamps, 80 and 120 volt taps, 25/6.

ACCUMULATOR Chargers, 200-250 volts A.C., all incorporating Westinghouse rectifiers, 2, 4 and 6 volts at 1 amp., 17/6; 2, 4 and 6 volts at 1 amp., 22/6; up to 12 volts at 1 amp., 27/6; up to 6 volts at 2 amps., 35/6; up to 6 volts 3 amps., 47/6; charger with 3 12-volt lamp, circuits, 75/6.

S. G. BROWN Power Units, consisting of tapped mains transformer, Westinghouse rectifier, and T.C.C. electrolytic condenser, output 6 volts 1 amp., for charging and energising; 21/6 (listed £3 15s.).

PREMIER Mains Transformers, all guaranteed terminal connections, input 200-250 volts, 40-100 cycles, output 135 volts 80 milliamps, for voltage doubling, 8/6; 4 volts 4 amps., centre tapped, L.T., 2/6 extra; Westinghouse rectifier for above, giving 180 volts at 30 milliamps, 8/6.

PREMIER Mains Transformers, output 250.0-250 volts at 60 milliamps, 4 volts 1 amp., 4 volts 2 amps., and 4 volts 3-4 amps. (all c.t.), with screened primary, 15/6.

H.T.8 Transformers, with 4 volts 3.5 amps. L.T. (c.t.), with screened primary, 15/6; with Westinghouse rectifier, 25/6.

H.T.9 Transformers, output 230 volts 200 milliamps, with 4 volts 4 amps. (c.t.), with screened primary, 15/6; with Westinghouse rectifier, 26/6.

H.T.10 Transformers, with 4 volts 4 amps L.T., 15/6; with rectifier, 27/6 (smoother output 200 volts at 100 milliamps).

PREMIER Mains Transformers, 12 volts 1 amp., 7/6; 9 volts 1 amp., 7/6; 4 volts 4 amps. and 4 volts 2 amps., 8/6; 14 volts 4 amps., 12/6; 4 volts 3 amps., 7/6; 4 volts 5 amps., 8/6; 22 volts 1 amp., 10/6; 6 volts 2 amps., 7/6.

MAINS Transformers, output 350.0-350 volts 90 milliamps, 4 volts 3 amps. (c.t.), 4 volts 2 amps. (c.t.), 12/6.

AMPLION Mains Transformers, input 100-250 volts, output 350.0-350 volts 120 milliamps, 4 volts 5 amps., 4 volts 2 amps., and 6 volts 1 amp. (all c.t.), 17/6.

T.C.C. Condensers, 250 volts working, 4x4x1 mfd., 5/6; 300 volts working, 4x4x2x2 mfd., 7/6; 375 volts working, 6x4x2x2 mfd., 10/6; 500 volts working, 4x4x2x1 mfd., 6/6.

400 Volts Working, 3 separate 4 mfd. condensers, 8/6; with 2 separate 1 mfd. condensers, 2/6 extra.

WESTERN ELECTRIC, 400 volts working, 0.01x0.01 mfd., 1s.; blocks 4x2x2x1=0.09 mfd., 400 volts working, 6/6.

FERRANTI Condenser Blocks, 300 volts working, 4x4x2x2 mfd., all entirely separate; 10/6.

T.C.C. Condensers, 750 volts working, 2 mfd., 4/6; 750 volts working 4 mfd., 6/6; 4 mfd. 400 volts D.C. working (300 volts A.C. working), 4/6; 4 mfd. electrolytic condensers, 440 volts working, 3/6; 8 mfd., 3/6.

WESTERN ELECTRIC Condensers, 250 volts working, 1 mfd. 6d., 2 mfd. 1/6; 400 volts working, 1 mfd. 1/6, 2 mfd. 2/6.

POLAR 3-gang Variable Condensers, tub type, fully screened, split end vanes and disc drive, 0.0005; 10/6.

ORMOND All brass 2-gang Condensers, semi shielded, 0.0005 5/6; Ormond all brass 0.0005 slow motion condensers, with knob and dial, 3/6; Polar 0.0005 and 0.0003 Bakelite dielectric condensers, with knob, 1/6.

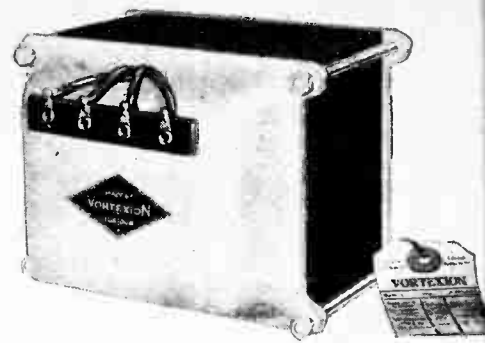
BRITISH RADIOPHONE 4-gang Condensers, with trimmers, 12/6; fully screened, 16/6.

SPECIAL Offer of Wire Wound Resistances, 4 watts, any value up to 10,000 ohms, 1/6; 8 watts, any value up to 15,000 ohms, 1/6; 15 watts, any value up to 50,000 ohms, 2/6; 25 watts, any value up to 50,000 ohms, 3/6; 50 watts, any value up to 50,000 ohms, 5/6.

WIRE Wound Potentiometers, 15,000 ohms, 1/6; Centralab potentiometer volume controls, 50,000 ohms, 2/6; Colsonstat, logarithmically wound potentiometers, 6,000 ohms, 1/6.

HEAVY Duty Variable Resistances, slider type, wound on porcelain, 2,000 ohms, 1-4-mp., 5/6; 500 ohms, 1-2-amp., 5/6.

B.T.H. R.K. Minor Moving Coil, Speaker, 2,500 ohm field, with output transformer, 15/6; A.C. model, 200-250 volts, 25/6.



VORTEXION
MONODIAL MODEL
SUPER REGULATION
SHROUDED - - - - - 32/-
 For full list see under Chargers and Eliminators.
VORTEXION, 182, The Broadway, Wimbledon, S.W. 19

EPOCH
MOVING COIL SPEAKERS
 The Finest in The World in Each of Their Price-classes.
 Ask your dealer or call for a demonstration at Exmouth House.
 Send for New Booklet W.S.5a. It is free.
EPOCH RADIO MANUFACTURING CO. Ltd.
 Exmouth House, Exmouth St., London, E.C.1
 At the junction of Rosebery Avenue and Farringdon Road.
 Phone: Clerkenwell 6866 (4 lines).

The "WHITEHALL" range



Whatever the size of your set there's a reasonably priced and handsome "Whitehall" cabinet to suit it.

WHITEHALL DE LUXE STANDARD
 16" wide, 11" deep, 17" high. Choice Figured Oak, 30/- cash.

WHITEHALL DE LUXE JUNIOR
 11" wide, 8" deep, 14" high. Choice Figured Oak, 21/- cash.

Prices for above cabinets in Walnut or Mahogany on request.

WHITEHALL GEM
 14" wide, 8" deep, 10" high. Choice Figured Oak, 16/6 cash.

INTERIOR measurements are quoted for all cabinets. All cabinets sent car's paid or C.O.D.

EASY TERMS: "Standard" 8/9 down & 3 monthly payments of 8/9. "Junior" 7/3 down & 3 monthly payments of 6/3. Write for fully descriptive leaflet W.17.

MYERS-HUNT CABINET CO.,
 7, AUSTIN ST., SHOREDITCH, LONDON, E.2

EASY TERMS PROMPT DELIVERY

Any Amplion, BlueSpot, Baker, Celestion, Epoch, R. & A. Rola, Sonochorde, or W.B. Moving Coil Speaker supplied
 Send 5/- only
 and pay the balance by monthly instalments. No references. Entirely private and confidential.

KITS, PARTS, SETS, ELECTRIC CLOCKS ON EASY TERMS.
 Write for Catalogue and details to:
TURNADGE & PARTNERS, LTD.
 111, Fleet Street, London, E.C.4
 Telephone: Central 1903

WRITE FOR OUR ALLOWANCE
 for your surplus apparatus when purchasing a new set. Our long experience in Part Exchange and Mail Order and our steady connection with satisfied customers is your guarantee. A perfected system and highly trained staff mean rapid attention, prompt deliveries and courteous dealings.

CORADIO
 Dept. W.1, 78, Neal Street, Shaftesbury Avenue, W.C.2.

ERIE RESISTORS
 Recommended and NEEDED for
 The "A.C. MONODIAL SUPER"

You definitely need Erie Resistors. They are essential for absolute safety because they are positively GUARANTEED not to break down. That's why everyone uses them and recommends them. Erie Resistors are safe, stable, silent and reliable. Use them with confidence.



1/- PER WATT in all values. SPECIAL OFFERS

Resistor kit for A.C. Monodial Super A.V.C. Chassis, 17 Hand Tested Resistors as specified—20/-
 Conversion kit of 12 Hand Tested Resistors as specified for converting A.C. Monodial to A.V.C.—15/-. Obtainable from all traders or direct.

THE RADIO RESISTOR CO.
 1, Golden Sq., Piccadilly, London, W.1.

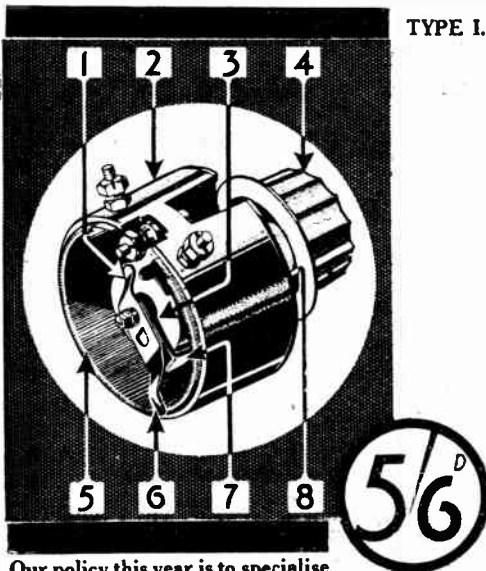
(This advertisement continued on next page.)

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

Specified for the A.C. MONODIAL SUPER

WATMEL 50,000 ohms POTENTIOMETER

TYPE I.



Our policy this year is to specialise in Potentiometers and Volume Controls of all types. You can, therefore, be certain when purchasing a Watmel Potentiometer, that you are obtaining the very best from a firm that is concentrating on this type of component.

This resistance is wound on a special non-shrinkable former, which gives perfect contact. Note the points:—

1. Back self-cleaning contact.
2. Bakelite case, protects winding.
3. Large contact plate.
4. Polished easy grip knob.
5. Wire wound former (not compound with wire contacts).
6. Contact finger, phosphor bronze.
7. Positive stop.
8. One hole fixing, brass bearing bush, resulting in perfect bearing.

Any resistance up to **5/6** 50,000 ohms

If you cannot get this component from your local dealer, write to us and we will send what you require within 24 hours. Write for Free Catalogue.

WATMEL WIRELESS CO. LTD.
Imperial Works, High Street, Edgware.
Telephone: Edgware 0323.



M.C.85.

Components, etc., for Sale.—Contd.

(This advertisement continued from previous page.)

ROLA 2,000 and 6,500 ohms, type F6, 17/6; Rola F5P.M. permanent magnet, 20/-; F6P.M. permanent magnet, 31/- (all with pentode output transformers).

AMPLION Moving Coil Speakers, type E.M.644, dual field 2,500 and 5,000 ohms (100-250 volts), with output transformer, 12/6; ditto, 200-250 volts A.C., 22/6.

B.T.H. Induction Type (A.C. only) Electric Gramophone Motors, 100-250 volts, 30/- complete; double spring gramophone motors, with 12in. turntable, 15/- complete.

SPECIAL Offer of Kolster Brandes Electric Gramophone Motors all complete with turntables, list price £5; No. 1 Super A.C., 100-250 volts, 35/-; No. 2 Super Universal, 100-250 volts A.C. or D.C., 42/-.

EKCO Microphones, complete with transformer, a really fine job, 18/6; wire wound Clarostat potentiometer, 50,000 ohms, 2/6.

WESTINGHOUSE Metal Rectifiers, 120 volts at 20 milliamps, 6/6; 180 volts at 30 milliamps, 8/6; 8 volts at 0.5 amp, 6/6; 250 volts at 60 milliamps, 10/-; 6 volts at 1 amp, 9/6; 12 volts at 1 amp, 12/6; 6 volts at 2 amps, 20/-.

ALL the Following Lines, 6d. each, or 5/- per dozen assorted; Trimming condensers, shielded S.C. or pentode leads, Polymet 0.01 condensers, 2ft. lengths of screened wire, 5-pin valve holders, Crabtree sunk 5-amp. switches.

AMPLION Six Receivers, listed £21, complete with valves, 200-250 volts A.C.; 9 guineas.

FOR Callers Only.—The following valves, guaranteed as new, at half list price: D.C. Pen., D.C.28.G., U.U.123/350; D.H., A.C.P., V.D.S., D.C.S.G., A.C.P.I., 4101.P., D.H., P.X.4, M.V.S.G., P.T.41, 84V.A., M.S.4B, D.P.T., M.S.4, A.C.S.G.

ALL Orders to 20-22, High St., Clapham, S.W.4. (Macaulay 2188. Closed 1 o'clock Wednesdays. Open to 9 o'clock Saturdays. Nearest Station, Clapham North Underground. [2172

PEPPER offers the Following Under Usual Money Back Guarantee, cash with order, c.o.d., or deposit; carriage paid on orders over £2.

VALVES.—A.C. P.E.N., V.M.S.4, 11/6; A.C. S.G., S.A.V.a, etc., 9/11; P.M.4dx, P.M.6d, P.M.6, P.M.4, 2/3; P.M.2, 4/11; P.M.16, P.M.14, etc., 7/6; 104v. A.C. P., 8/11; A.C./P.I., 9/11; D.G.210, 8/6.

CONDENSERS.—Polar tubes, two-gang, 8/6; Ormond No. 4, Astra, etc., 0.0003 and 0.0005 variables, 2/3; ditto S.M., 3/3; Telexors, 5/11; see 8-page bargain list for others.

ELIMINATOR Kits, A.C. output 300v. 125 m.a., complete, 47/6; 350v. 70 m.a., with I.T. winding for heaters, giving four decoupled tapings, and one power, 100v. valve (U.12, etc.), 52/6; metal rectified kit, giving output of 200v. at 50 m.a., 47/6.

ELIMINATOR Kits, D.C. output 200v. 100 m.a., with four lower tapings, fully decoupled; £1 15.

MAJNS Transformers, Bryce A.B.25, suitable for Ferrocart III, 15/-; Varley 250-0-250, with I.T.'s, 12/6; Savage ditto, 11/6; Igranic 225-0-225 ditto, boxed, 12/6; lists of others from 5/-.

AC. Power Amplifier Kit, used few hours, complete with speaker and new valves, power output 10,000 milliwatts, cost over £22; £12 10/- details for stamp.

T.B. Super Induction Motors, brand new bankrupt stock, complete; listed £5 17/6, our price £2 12/6.

LISTS of Other Bargains for Stamp, Trevor Pepper, 38, Wake Green Rd., Birmingham 15. [2162

PARTIDGE, B.Sc. (Eng.), A.M.I.E.E., A.I.Rad.E., Mains Specialist.—Trade enquiries invited; lists per return.

PARTIDGE Mains Transformers, manufacturers' type, guaranteed 12 months; screened primaries, 200-250v., 50 valves, all I.T.'s, C.T.'s, prices, carriage paid.

MONODIAL A.V.C. (2 1/2 watt), 350-0-350v., 100 m.a., 4v. 6a., 4v. 2 1/2a., 4v. 1a., 4v. 1a.; price 20/-.

MONODIAL A.V.C. (5-watt) 400-0-400v., 120 m.a., 4v. 6a., 4v. 3 1/2a., 4v. 2a., 4v. 1a.; price 24/-.

PARTIDGE Monodial Conversion Transformer for A.V.C. (no screen), 4v. 1a., C.T.; price 6/-.

FERROCART III, 350-0-350v. 60 m.a., 4v. 2 1/2a., 4v. 3 1/2a.; price 15/-.

MODERN A.C. Quality Amplifier (no screen), 400-0-200v., 120 m.a., 4v. 3a., 4v. 2a., 4v. 1a.; price 22/-.

PARTIDGE Chokes, 10h., 100 m.a., 120 ohms, 10/6; 28 14h., 120 m.a., 260 ohms, 11/-; 30h., 50 m.a., 400 ohms, 9/-.

PARTIDGE, B.Sc. (Eng.), A.M.I.E.E., A.I.Rad.E., King's Building, Dean Stanley St., London, S.W.1. Phone: Victoria 5035. [2159

HOYNE'S Transformers and Chokes.

250—0-250v. 60 m.a., 4v. 1-2a., C.T., 4v. 3-4a., C.T.; 10/-, post 9d.

350—0-350v. 70 m.a., 4v. 2-3a., C.T., 4v. 3-4a., C.T.; 12/6, post 1/-.

350—0-350v. 120 m.a., 4v. 2a., C.T., 4v. 4-6a., C.T., 4v. 2a., C.T.; 16/-, post 1/-.

450—0-450v. 150 m.a., 4v. 2-4a., C.T., 4v. 2-6a., C.T., 4v. 2a., C.T., 4v. 2a., C.T.; 25/-, post 1/3.

500—0-500v. 140 m.a., 4v. 2-4a., C.T., 4v. 2-6a., C.T., 4v. 2a., C.T., 4v. 2a., C.T., or 6v. windings if preferred; 27/6, post 1/3.

WESTINGHOUSE Model 150, 200, 240v., 300 m.a., 4v. 2a., C.T., 4v. 2-6a., C.T., suitable for H.T.8, H.T.9, or H.T.10; 15/-, post 1/3.

LINE Transformers (auto wound), 0-100, 110, 200, 220, 240v., 60 watt, 7/9, post 1/-; 120 watt, 11/-, post 1/-; 180 watts 15/-, post 1/3.

CHOKES, 30h. 150 m.a., 12/-, post 1/-; 20h. 120 m.a., 8/6, post 9d.; 30h. 60 m.a., 6/-, post 6d.; 30h. 30 m.a., 3/6, post 6d.

HOYNE'S Transformers are Guaranteed for One Year; every model is made from British material of best quality.

HOYNE'S Transformers.—All primaries are tapped and screened, clamped in aluminium frames, and fitted with clearly marked terminal strips.

HOYNE'S Transformers for Reliability.

HOYNE'S for Best Condensers and Resistances.

HOYNE'S Stock M.C. Speakers.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., Wimbledon, S.W.19. Phone: Liberty 3303. [1770

THE SAVAGE MAINS TRANSFORMER FOR THE FERROCART III



COSTS ONLY **22/-**

TO SPECIFICATION

Here is the reason—it is built by specialists. The Savage organisation is devoted to producing the best of mains equipment for critical users throughout the world. You too, can rely on Savage for a sound, efficient job.

FOR THE FERROCART III

Mains Transformer to exact W.W. specification, type F.C. 3. Price 22/-.

Speaker field replacement choke, type X37D. Manufacturers' type Price 16/-, Standard type Price 18/-.

FOR THE A.C. MONODIAL SUPER WITH A.V.C.

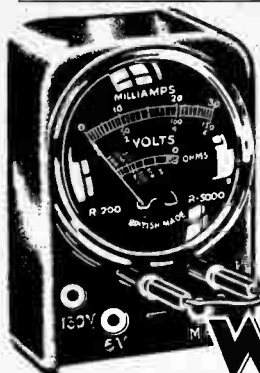
For 2.5 watt A.V.C. Power Chassis.
Mains Transformer: 350 350 v. 100 m/A, 4 v. 6 amps. centre-tapped, 4 v. 2.5 amps. centre-tapped, and twice 4 v. 1 amp. centre-tapped with screened primary; Standard type, Price 37/6. Manufacturers' type, Price 33/-.

For 5 watt A.V.C. Power Chassis.
Mains Transformer: Primary with earthed screen, secondary windings 400-0-400, 120 m/A, 4 v. 6 amps. c.t., 4 v. 3.5 amps., 1 v. 2 amps., 4 v. 1 amp. c.t. Standard type, Price 50/-, Manufacturers' type, Price 33/-.

Suitable chokes for this circuit also available. Prompt Deliveries. Send for list W.W.23.

SAVAGE

GUARANTEED MAINS EQUIPMENT
W. BRYAN SAVAGE
56/58, CLERKENWELL ROAD, E.C.1.
Phone: Clerkenwell 3068.



Every listener needs..

WATES UNIVERSAL METER

The ONLY popular priced instrument testing resistances, as well as voltage of H.T. and L.T. batteries, valves, transformers, coils, condensers, short circuits, distortion, etc. NO SKILL REQUIRED to see what's wrong, yet nearly all the experts use it. FOUR readings on one dial, (1) 0-150 v. for H.T. (2) 0-6 v. for L.T. (3) 0-30 milliamps. (4) resistance test 0-2,000 ohms. Of all Wireless Dealers, Ironmongers, etc., including 4-page instruction leaflet

12/6

Also the famous 3-IN-1 POCKET METER, L.T. (0-6 v.), H.T. (0-150 v.), 0-30 milliamps **8/6**

MILLIAMMETERS FOR Q.P.P. RECEIVERS Panel type. Reading 0-5 milliamps **7/-**

Explanatory Leaflets Post Free from

WATES RADIO LTD.,

181-188, Shaftesbury Avenue, London, W.C.2.

GRIPSO MIDGET PLUG & SOCKET
WITH PATENT FLEXIBLE SIDE SPRING
MADE IN FIVE COLOURS
THE GRIPSO COY.
28 VICTORIA ST. LONDON, S.W.1.

2 1/2 COMPLETE

Famous Maker's Offer! **PIANO-TONE! CABINETS.**
7 DAYS' FREE TRIAL (OR 10/- MONTHLY).
Piano built (Pat. 8125), the acoustic tone brings a fine thrill (Piano Oak). (Radio-Press, R.H.C. 3rd. edition) (dantele).
At Maker's Prices. **25/- to £15.**
LIST FREE.
Send for photographs, detail drawings. Picketts Piano-Tone Cabinets, Albion Rd. (W.W.) Pezlebeath, Kent.

RYALLS RADIO,
33, CHANCERY LANE, LONDON, W.C.2.
Offer range of new meters, A.C. and D.C., moving iron and moving coil, Mansbridge condensers up to 750v. working, Mains transformers and chokes, Moulded 1 watt resistances, Wire wound resistances 1 watt to 5 watt, all at very low prices. See our Classified advertisement under Components for details and prices. All new goods. Fully guaranteed.

Hear **PERFECT** radio through a **PERMAG REPRODUCER**
CHASSIS ONLY **38/6**
CABINET MODEL **49/6**
ASK YOUR DEALER OR WRITE TO:
BAKER'S SELHURST RADIO
75 & 77, Sussex Road, Croydon.
Phone: Croydon 34412.

EVERY PART FOR EVERY CIRCUIT
LEONARD HEYS
Your Quietest Push-Pull, Monodial, Station Finder, S.T.400, New Century Super, Melody Ranger and all other radio requirements can be obtained QUICKLY from **LEONARD HEYS** (WHOLESALE ONLY) Faraday House, Henry St., Blackpool, Lancs.

Components, etc., for Sale.—Contd.

CHAL-ELECTRIC Special Offers.—Brand new surplus, all carriage paid, cash with order or c.o.d.; Condenser banks, 1,500 D.C. test, 20 mfd., (2) 4 mfd., (5) 2 mfd., (2) 1 mfd., 11/-; 11 mfd., (1) 4 mfd., (3) 2 mfd., (1) 1 mfd., 6/9; variable condensers, J.B. 3-gang, Nu gang, fully screened, trimmers, disc drive escutcheon plate, etc., 14/-; 2-gang, as above, 10/-.—ChalElectric, 6, Conduit St., London, W.1. [2110]

NEWTN'S Offer Brand New Set Manufacturers' Surplus.

TRANSFORMERS. Note: These are manufacturers' current lines, guaranteed 12 months, all tapped and screened primary, all L.T. windings C.P. 500-0-500 at 120 m.a., 22/-; 450-0-450 at 120 m.a., 21/-; 350-0-350 at 120 m.a., 20/-; all above have following L.T. windings: 4v. 2.5a., 4v. 2a., 4v. 5a.; specials to "W.W." Specification Straight 5. 400-0-400 at 120 m.a., 4v. 6a., 4v. 3.5a., 4v. 2a., 25/-; "W.W." Quality Amplifier, 400-0-400 at 120 m.a., 4v. 3a., 4v. 2a., 4v. 1a., 24/-; 350-0-350 at 60 m.a., 4v. 2.5a., 4v. 4a., 14/-; 325-0-325 at 80 m.a., 4v. 2.5a., 4v. 4a., 12/-; 250-0-250 at 60 m.a., 4v. 1a., 4v. 5a., 14/6; another, 4v. 1a., 4v. 1a., 4v. 3a., 12/6, for metal rectifiers; H.T. 8, 200 volts 200 m.a., 4v. 5a., 12/-; another, with 4v. 5a., 14/-; for H.T. 9 or "W.W." Baby Super 240 volts 200 m.a., 4v. 4a., 16/-.

SMOOTHING Chokes, 20 henry 30 m.a. (400 ohms), 6/-; 30 henry 60 m.a. (600 ohms), 7/-; 50 henry 60 m.a., 8/6 (500 ohms); 20 henry 120 m.a. (375 ohms), 9/3.

CONDENSERS.—G.F.C. 750 test, 1 mfd., 1/1, 2 mfd., 1/9, 4 mfd., 2/6; 1,500 test, 1 mfd., 1/8, 2 mfd., 2/4, 4 mfd., 4/-; multiple blocks, 4-4-2+2-2-2-2-1+1, 11/-; 11 mfd. block, 4-2+2-2+1, 6/9.

AUTOMATIC Record Changers.—Garrard (2 only), with pick-up, 1 A.C., 1 D.C., listed 10 guineas, £8 each; Alton Hough's A.C. complete pick-up, etc., £6 each (few only).

COLLARO Gramophone Motors and Pick-ups Combined. with automatic stop, 100-240 A.C., £3.

VALVES (few only), as new, U.12, B.U.442, M.P.T.4, 10/- each.

VARIABLE Condensers.—J.B. Nu-Gang, disc drive, fully screened, trimmers, escutcheon plates, cover, etc.; 3-gang 14/-, 2-gang 10/-.

PARAFEED Transformers; 3/- each.

H.F. Screened Chokes, H.M.V., 50-60 m.a., 100,000 ohms, 1/- each.

RECEIVERS. Faraday All-Wave, 137,200 meters, in cabinet, and M.C. speaker; listed 27 guineas, £17.

ROTARY Converters, electric dynamo, 1933 models (2 only), used demonstration only, 90-watt model, listed £14, at £9; 180-watt model, listed £17 5, at £12, complete with silence cabinet and filter unit.

POTENTIAL Dividers, 18,000 ohms, with clips; 2/6 each.

MOVING Coil Speakers, Rola's (U.S.A.), S. type, 7 1/2 in. cones, 6-10 volts, 110-175 volts (2,000 ohms), 90-130 volts (2,500 ohms), 150-200 volts (4,700 ohms), 200-250 volts (6,500 ohms), complete with multi ratio transformers, all 17/- each; senior models, as above, 9 in. cones, listed 46/6, at 23/-; A.C. models, 30/-; P.M., 25/-; dual compensated; any 2 energised above, 7 1/2 in. cones, 36/-; Senior models, 35/-; Newth's Mayfair Radio, 31, George St., Hanover Sq., London, W.1. Mayfair 5346. [2178]

T. W. THOMPSON and Co., 14 and 17, Strutton Ground, Westminster, S.W.1.

BRITISH Radiophone Combined Volume Control and switch; list 10/6, to clear 4/6; post 4d.

KALEE Motors, 200 volt 1/4hp., D.C.; 17/6.

OSTER Gang Combined A.C. and D.C. all Mains Receivers, in modern walnut case with Rola M.C. loud-speaker, complete with 3 valves, brand new; listed £10/15, to clear £4 19/6, carriage 2/6.

COLLARO Electric Gramophone Motors, 200-250 volts A.C., complete with turntable and automatic stop, brand new; 37/6; post 1/3.

A.C. Eliminators, 200-250 volt output 150 volt variable 25 m.a., all the highest grade components, Kolster Brandes mains transformers, Westinghouse rectification, 2 pos. tapings (one variable), all new and guaranteed; 28/6; post 1/3.

D.C. Eliminators, 2 pos. tapings (one variable), 200-250 volt input, output 0 to 180 volts at 30-40 m.a., all guaranteed; 15/-; post 9d.

PANEL Mounting Switches, on and off; 6d. each; post 2d.

ECHO 5-pin Valve Holders; 4d. each; post 1 1/2d.

HEAVY Workshop Flex; 3/- per dozen yards; post 6d.

REGENSTAT Variable Controls, 2 meg. for eliminator voltage control, etc.; listed 6/6, to clear 1/3 each; post 3d.

CENTRALAB Volume Controls, suitable for radiograms, etc.; listed 9/-, to clear, brand new, 1/9; post 3d.

HIGHLY Sensitive Microphone Buttons, suitable for experimenters; 9d. each; post 3d.

VOLUME Controls and Potentiometers, 400 ohms, with engraved nickel plate; 1/- each, post 3d.; 150 ohms, 9d. each, post 3d.

AERIAL Wire, 7-strand, copper; 1/6 per 100ft.

BROWNS Metal Eliminator Cases, size 10in. x 6in. x 5in.; 9d. each; post 6d.

THERMAL Relays, for working electric signs, etc.; 1/6; post 3d.

SCREENED H.F. Chokes; 1/- each.

SEE Displayed Advert, page 12.

T. W. THOMPSON and Co., 14 and 17, Strutton Ground, Westminster, S.W.1. [2182]

"very gratifying results"

The Wireless World

THE PRACTICAL RADIO JOURNAL

".... by far the best medium for bringing one's products to the notice of both consumer and manufacturer!"

—but read the letter in full:

1, Willesden Lane, London, N.W.6

The Wireless World
Dorset House
Tudor Street
London, E.C.4

Dear Sirs,
As regular advertisers in "The Wireless World" we should like to express our satisfaction with the very gratifying results obtained through the medium of our advertisements in your journal.

After taking a very careful census we have definitely come to the conclusion that "The Wireless World" is by far the best medium for bringing one's products to the notice of both consumer and manufacturer.

Our subsidiary Company, The Rothermel Corporation Ltd. has advertised in "The Wireless World" for many years and it was the result of success achieved that Sonochorde Reproducers Ltd. came to a quick decision in regard to advertising policy.

Yours very truly,
SONOCHORDE REPRODUCERS LTD.
(Signed) E. F. Heaver
SALES MANAGER

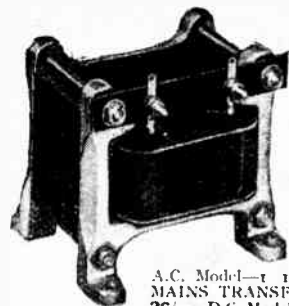
Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

Specified by the Experts

First and Foremost

... for the finest sets in the World and where only the finest components were suitable
"The Wireless World"

MONODIAL RECEIVERS



And Now Exclusively Specified

in addition, for the **AUTOMATIC VOLUME CONTROL MODEL.**

1 special 4 v. 1 amp. MAINS TRANSFORMER **12/6**
For 2.5 and 5 watt chassis.

A.C. Model—1 to-Henry CHOKE, 15/-, MAINS TRANSFORMER to specification, 36/-, D.C. Model—2 to-Henry CHOKES, D.C. H.F. Chokes, 3/6 per pair.



QUIESCENT PUSH-PULL

Special 9-1 Ratio TRANSFORMER

Primary inductance 30 Henry at 2 m.a. **15/-**

"B" CLASS TRANSFORMERS NOW AVAILABLE.

Sound Sales produced the first Quiescent Transformer to be specified for Quiescent Push-Pull by "The Wireless World."

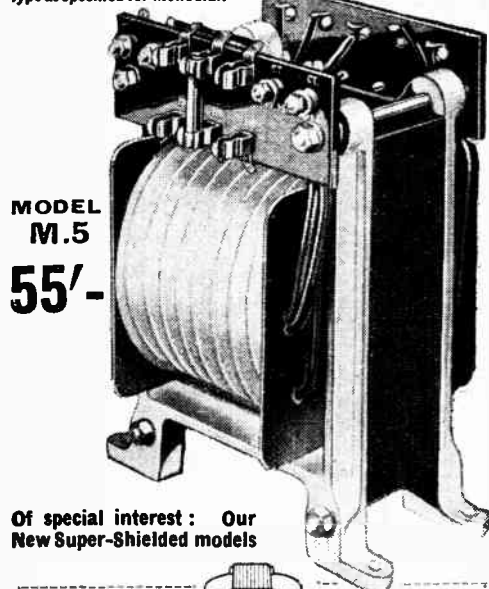
UNIVERSAL CHOKE.

Ratios 1-1, 2-1 and 3-1.

10/6

MAINS TRANSFORMERS

Here's an example showing our 5 Watt Power Chassis type as specified for Monodial.



MODEL M.5 **55/-**

Of special interest: Our New Super-Shielded models

SOUND SALES LTD.

To cut out trouble cut out Coupon and post to-day.

Please send me illustrated catalogue of all Sound Sales Products.

Mr. _____

Address _____

SOUND SALES LTD., Tremlett Grove, Highgate, London, N.19.
Telephone: _____

Components, etc., for Sale.—Contd.

POLAR Tub 0.0005 3-gang Condenser, 10/6; Varley pentode nichoke, 6/3; R.I. hypercore L.F. choke, 8/9.

R.I. Hepermu Transformer, 10/-; mains transformer for Westinghouse H.T.6, input 230v., 9/6; Formo 0.0005 3-gang condenser, 9/6.

J.B. Unitune 2-gang Condenser, fully screened, with disc drive; 10/6; unused.

SONOCHORDE Standard P.M. Speaker, with universal transformer, 22/6, unused; Westinghouse metal rectifier, 300v. at 60 m.a., 13/6, unused.

A.L. Above Goods Perfect and Guaranteed; sent on 7 days' approval against cash, or c.o.d.; we will allow you 50% of the list price on your surplus goods in part exchange for new.—W. B. Mackie, 61, Dartmouth Rd., Forest Hill, S.E.23. Phone: Sydenham 6741. [2179]

COSMIC RADIO SERVICE, 23, Water St., Liverpool.—Polar 3-gang tubs, 13/-; Ferranti A.F.3, 12/6; A.F.4, 9/-; A.F.5, 16/-; B5, 14/-; B7, 11/-; B8, 3/6; O.P.M.3C, 14/-; O.P.3C, 14/-; Varley Rectatone and pot, 11/6; R.I. 30-20H 50 m.a. chokes, 6/-; Varley Square Peak, 7/6; H.F. intervalve, 4/-; Cookson mains transformers, 200-250v., 4v. 3a. C.T., 4v. 2a. C.T., 350-0-350v. 50 m.a., 10/-; Rich and Bundy, 200-240v., 7.5v. 3a. C.T., 6v. 4a. C.T., 4v. 3a. C.T., 270-0-270v. 50 m.a., 16/-; postage extra. [2140]

ROTARY Converter, 12 volts in, 200-300 out, 50/-; Westinghouse B.O.T. A.C. wattmeter, cost 49. 25/-; A.C. charging board, 40 volts, 6 amperes, 6/6; Supremus De Luxe D.C. eliminator, 3 outputs, 50 m.a., cost 67/6, 18/6; Limit De Luxe pick-ups, cost 41/13/6, 16/6; R.I. Band-pass coil, 4/6.—Jersey, Cannon Hill, Oxford. [2175]

EVERYTHING for Movies and Talks.—Phone, write or, better still, call and inspect immense stock of bargains.

ILLUSTRATED ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard. [1621]

MISCELLANEOUS.

EASY Payments.—We supply, by easy payments, components, accessories, and sets, any make; 10% down, balance spread over 11 months.—Send list of requirements to London Radio Supply Co., 11, Out Lane, London, E.C.2. [10337]

ENGINEERS and Technical Workers of All Kinds.—A proper training by post in your spare time will take you through your right examination, then employment is waiting. Our advice on all careers free.—Dept. 92, The Bennett College, Ltd., Sheffield. [10395]

AMBITIOUS Men.—Qualify for a well-paid post by studying at home with "The T.I.G.B. Write to-day for "The Engineer's Guide to Success," 144 pages, free, which contains the widest selection of engineering and wireless courses in the world, and shows you how to become A.M.I.E.E., A.M.I.Mech.E., A.Rad.A., etc. State branch, post or qualification that interests you.—The Technological Institute of Great Britain, 82, Temple Bar House, London, E.C.4. (Founded 1917. 19,000 Successes.) [1997]

PATENT AGENTS.

PATENTS and Trade Marks, British and foreign.—Gee and Co. (H. T. P. Gee, Member R.S.G.B. and A.M.I.R.E.), 51-52, Chancery Lane, London, W.C.2. Phone: Holborn 15:5. [1001]

KING'S PATENT AGENCY, Ltd., 146a, Queen Victoria St., London, E.C.4. Phone: Central 0682. 45 years' experience. Advice Handbook free. [10381]

A. MATHISEN, B.Sc. (Elect. Eng.), specialist, patents for radio inventions.—First Avenue House, High Holborn, London. [1632]

REPAIRS.

REPAIRS to Loud-speakers, transformers and headphones, 4/- each; Blue Spots or Wula's, 5/-; mains eliminators, etc., quo. cd for; prompt service; satisfaction guaranteed; terms to trade.—Loud-Speaker Repair Works, 2, Shipka Rd., Batham London. Streatham 6618. [10394]

GUARANTEED Repairs by Experts; specialists for repairs to S.G. Brown and Amplion radio apparatus, also loud-speakers, headphones, pick-ups, Blue Spots, any type rewound, remagnetised and adjusted; 4/-; post free; mains transformer repairs; terms to trade.—Howell, 91, Morley Hill, Enfield, Middlesex. [19716]

LOUD-SPEAKERS, headphones any type, rewound and overhauled, 3/6; Blue Spots, 4/-; post free; 24 hours' service guaranteed; terms to trade, Devon Radio and Loud-speaker Repair Depot, 57, Treville St., Plymouth. [2105]

ANY Make of Loud-speaker, cone unit or pick-up, repaired and magnetised, 3/9; B.S., 4/-; special quotations for moving coil mains transformers and eliminator repairs; all work guaranteed.—F. H. Marshall, 9a, Buton St., Nottingham. Est. 1917. [2169]

ELECTRIC CLOCKS.

MAINS Synchronous Clock Movements, any voltage, 50 cycles, 3-in. diameter, without hands or dials; 12/6; postage 6d.—Lincoln Electric Clock Co., 155a, Burnt Ash Hill, S.E.12. [2181]

WANTED.

NEW or Second-hand Wireless Parts Wanted for Cash, any amount, any condition; send yours, stating reasonable price; cash by return; top prices paid for 1932 parts; also meters, etc.; will call London districts.—Mildmay Radio Exchange, 24, Mildmay Grove, London, N.1. [1637]

SPOT Cash for Components, etc. Economic Radio Co., 96-98, South Lambeth Rd., S.W.8. [1923]

CONVERTER, 12v. input, 500v. D.C. output, or larger, also large output valves.—Box 6327, c/o The Wireless World. [2128]

WANTED, one second-hand "Avometer" or combined "Ferranti and M.A."; cash if perfect.—House, Blake St., York. [2148]

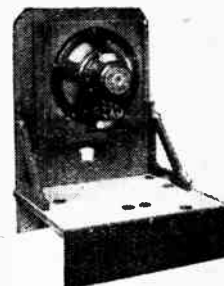
A.C. Mains Energised M.C. Speakers and Valves, S.G. Det. Pen., twin and triple gang condensers screened, L.F. chokes and transformers urgently required in part exchange for new receivers and components; allow 60-80% on reputable goods, acceptable up to one-third of order.—Woods Radio, Holcombe Brook, near Bury. [2144]

BUILD THE FERROCART III BY THE NEW RADIO FURNITURE CONSTRUCTION



THE REASONS WHY!

The cabinets follow furniture construction adapted to suit the technical requirements of a radio instrument. The principal framework of the cabinet is one-half inch thick and the outside of the highly figured case is finished to piano standard. The panel base and terminal board are constructed to form one unit and may be removed complete from the case. The components are separate pieces and are bolted together so that the units may be built up individually, a point that will be appreciated by all constructors. All the large holes in the combined chassis are drilled and a different fret is supplied when the electric clock is not required. Setbuilding is facilitated by means of this construction, which is of enormous assistance when testing. The complete receiver being on one chassis no external connecting wires are required beyond those for feeding the set.



Receiver Cabinet

Dimensions: 15 1/2 x 13 1/2 x 21 1/2 high.

Finish: Polished Walnut.

PRICES:

- RECEIVER CABINET ONLY** including combined panel board and double faced plymax baseboard with large holes drilled, insulated terminal board and supporting brackets **47/6**
- CABINET AS ABOVE** including mains energised Celestion speaker mounted on heavy half-inch baffle board drilled and fixed..... **82/6**
- CABINET** including speaker and synchronous electric clock with oxidised silver bezel mounted with special swivel mounting for the speaker..... **132/6**
- GRAMOPHONE AND RECORD STORAGE CABINET** as illustrated..... **90/-**

THE ABOVE AND OTHER CABINETS MAY BE INSPECTED AT **106, VICTORIA STREET, LONDON, S.W.1**

RADIO FURNITURE & FITTINGS LTD.

'Phone: Victoria 3955.



**FOR VOLUME & TONE
IGRANIC
ALONE**

PARIMA SELENIUM CELLS
FOR ALL PURPOSES.
Parima Light-Sensitive Resistances are constant mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months. 5/- Prices from
PARIMA MANUFACTURING CO.
21, BROMLEY ROAD, S.E.6 *Hither Green 3623*

**Grippleshell
Aerial Brackets**

are simple and economical to install and avoid unsightly poles. Write for leaflet to:—
PARTRIDGE WILSON & CO.,
Dept. 29, Davenset Works, Leicester.

SERADEX RESISTANCES
New list now ready.
Send Stamp to:—
TREVOR PEPPER
WAKEGREEN ROAD, BIRMINGHAM

Cage Birds
BIRD WORLD

The weekly journal for all who keep Canaries, British Hybrids or Foreign Pet Birds.
EVERY FRIDAY 2d.
Specimen copy of recent issue free on request from
The Publisher (W.W.), 4, Carmelite Street, London, E.C.4

Wanted.—Contd.

WANTED. all types of A.C., D.C., and battery valves, also A.C. and D.C. receivers, and any other components, in quantities for spot cash.—Ward, 12, Tredegar Rd., Bow, E.3. [211]

TUITION.

WIRELESS as a Career.—Whether you are engaged in the radio industry and wish to improve yourself, or if you wish to obtain employment in this profession, we can help you. Our students are engaged in responsible positions in the majority of the large wireless firms in England. Booklet describing Home Study Course, post free.—Northern Counties Wireless School, Preston. [037]

BUSINESSES AND PROPERTY FOR SALE TO BE LET, OR WANTED.

RADIO Business for Sale, double-fronted shop, Southall, recharging plant, office, workshop, and showroom fittings; £150; s.a.v.—Liquidator, 27, Fitzroy Sq., W.1. [217]

SITUATIONS VACANT.

IF You Wish to Enter the Wireless Profession with Thorough Training, or if you wish to improve your present position, you will need the certificate issued by Britain's leading wireless college. This is not a correspondence college. Apparatus of all leading makes installed for instructional purposes. Boarders accepted. Training fee can be paid after appointment. Prospectus free.—Wireless College, Colwyn Bay. [038]

AMBITIOUS Men Should Apply for Free Particulars of Training or Appointments in Radio or Talkie Engineering; valuable introductions.—Radio Training Institute, St. John St., Newcastle-on-Tyne. [1907]

TEST Department of Large Radio Factory Requires Radio Engineer for Design of Test and Inspection Apparatus; main requirements are special experience and knowledge of H.F. measurements and a good mechanical sense. Write fully, stating approximate salary required, to Box 6357, c/o *The Wireless World*. [2167]

SITUATIONS WANTED.

DO You Want Skilled, Certified Service Engineers and Salesmen? Then consult the Principal, The Wireless College, Colwyn Bay. 'Phone: 2407. [038]

YOUNG Man (26), 6 years' experience, servicing all makes of sets, own car and workshop, seeks progressive position; outside service preferred.—Box 6359, c/o *The Wireless World*. [2168]

RADIO Engineer, 10 years' experience, sales, servicing and test; moderate salary.—Box 6358, c/o *The Wireless World*. [2166]

BOOKS, INSTRUCTIONS, ETC.

RELAY.—All who operate (or contemplate operating) "Wired Wireless" or relay installations should read the "Radio Relay Review."—Obtainable to order from newsgagents or direct from "Radio Relay Review," Smithgate Mill, Padiham, Launce, 4d. monthly, subscription 4/- per annum. [2140]

**FOR HIRE
RADIO, MICROPHONE &
GRAMOPHONE
AMPLIFIERS**
giving exceptional quality and volume, suitable for Dances, Sports Meetings, Fêtes, etc., from 15/- per day.
McMichael Portable Sets 15/- a week; £2-12-6 a month.

ALEXANDER BLACK
WIRELESS CONSULTANT
55, EBURY STREET, LONDON, S.W.1.

ESTABLISHED
IN 1924

SLOANE 1655

Trade Enquiries Invited.

SERVICE

SETS OF ALL TYPES

Supplied, Serviced and Visited in any district, or may be sent for Full Test and Report, at 2/- per valve-holder; portables, 1/6 per valve-holder.

WIRELESS WORLD —

**MONODIAL
RECEIVERS**

- COMPLETE RECEIVERS
- COMPLETE KITS OF PARTS
- INDIVIDUAL PARTS
- CONVERSION KITS

We specialise in Monodial Receivers and have scores of satisfied users

SEND US A LIST OF YOUR REQUIREMENTS AND LET US QUOTE

WEBB'S

RADIO ELECTRIC STORES
41, Carr's Lane, BIRMINGHAM

RICH & BUNDY

Mains Transformers & Chokes

For "The Wireless World"

A.C. MONODIAL SUPER"

with Automatic Volume Control Valve

For 2.5 watts A.V.C. Power Chassis

MAINS TRANSFORMER MODEL "39A."

Primary 200/250v. 40/100 cycles (screened)

Secondaries: 350-0-350v. 100 m.a.;

4 v.c.t., 2.5 amps.; 4 v.c.t., 6 amps.;

4 v.c.t., 1 amp.; 4 v.c.t., 1 amp.

Price £2 7 6

SMOOTHING CHOKE MODEL "E104M."

10 Henries, 100 m/a. D.C.— Price £1 2 0

SMOOTHING CHOKE MODEL "E20."

20 Henries, 50 m/a. D.C.— Price £1 0 0

For 5 watts A.V.C. Power Chassis

MAINS TRANSFORMERS MODEL "44A."

Primary 200/250v. 40/100 Cycles (screened)

Secondaries: 400-0-400v. 100 m.a.;

4 v.c.t., 3.5 amps.; 4 v.c.t., 6 amps.;

4 v.c.t., 2 amps.; 4 v.c.t., 1 amp.;

Price £3 5 0

SMOOTHING CHOKE MODEL "E104D."

15 Henries, at 100 m/a D.C. — Price £1 2 0

Manufactured by:

RICH & BUNDY LTD.

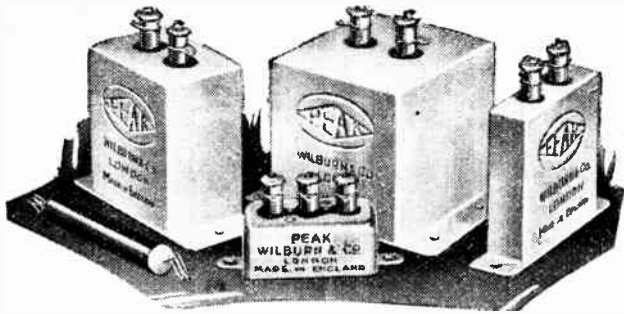
Transformers Manufacturers,

NEW ROAD, PONDERS END, MIDDX.

'Phone: Enfield 0777.

Sole Distributors in I.F.S.: Kelly and Shiel Ltd., 47, Fleet Street, Dublin, C.

PEAK NON-INDUCTIVE CONDENSERS



TYPE 1500		TYPE 800	
Tested 1,500 V.D.C. Working Voltage 500 V.D.C. Maximum Peak Voltage 700.			
1 mfd.	2/2	1 mfd.	4/6
25 "	2/4	2 "	7/3
1 "	2/6	3 "	10/-
2 "	2/8	4 "	12/6
4 "	3/9	6 "	19/6
2 "	6/9		

COMPLETE WITH SCREW TERMINALS.



SPECIAL BUFFER TYPE 2000

Non-Inductive, +01 +01 mfd. 750 V.A.C. working. Terminals 3/3. Tags 2/9. For reducing hum and electrical interferences.

WILBURN & COMPANY

Northern Distributors: W. Andrew Bryce & Co., Bury, Lancs.

SPECIFIED

for the

A.C. MONODIAL WITH AUTOMATIC VOLUME CONTROL

- 4 ... 4 mfd. Type 1500 @ 6/9
- 1 ... 2 mfd. " " @ 3/9
- 1 ... 5 way Connector @ 2/6

Immediate deliveries from stock.

Full details and particulars of the complete Peak range to be found in descriptive leaflet sent on request.

23, BRIDE LANE, LUDGATE CIRCUS — LONDON, E.C.4.
Phone ... CENTRAL 6994

AMERICAN STATIONS GUARANTEED AFTER 1.30 p.m. ON FARADAY ALLWAVE

All FARADAY ALLWAVE Superhets must pass the rigid test of receiving American stations under average conditions before leaving factory—therefore FARADAY ALLWAVE receivers are sold to you under this money-back guarantee.

Write for full technical details and "Wireless World" Test Report.

FEATURES.

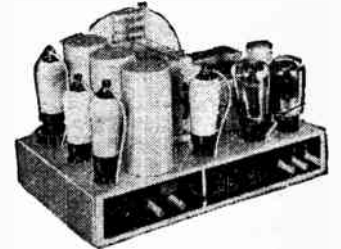
GENERAL. A self-contained five/six-valve superheterodyne with built-in moving-coil loudspeaker of the energised type. For operation on A.C. mains with external or mains aerial; D.C. model also available. Four wave-ranges: short, 15-30 metres; long-short, 30-60 metres; medium, 215-560 metres; long, 950-2000 metres. Seven tuned circuits with one-knob control, compensating tone control, provision for mains aerial and gramophone pickup. Additional loudspeaker or headphones if desired for extra charge.

CIRCUIT. Signal frequency H.F. stage; combined oscillating frequency changer, one I.F. stage, anode-bend second detector, resistance coupled to output pentode. Full-wave power rectifying valve. In all, four screened grid valves, power pentode, and rectifier.

CONTROLS. (1) Single-knob tuning. (2) 4-position wave-range switch. (3) Combined volume control and on-off switch. (4) Tone-control switch.

BATTERY SET

As above, but a seven-valve set, incorporating Class B quiescent push-pull output, giving 2 watts undistorted output off 15 milliamps H.T. consumption.



PRICE 27 GNS. (inclusive of Royalties). Table stand 35/- extra. Chassis complete with speaker and valves: £25:13:0 including Royalties. Special model for Overseas available, £30 in walnut cabinet or £32 in teak cabinet.

FARADAY ALLWAVE WIRELESS LTD.

1, Salcott Road, S.W.11
Tel.: Battersea 2085.

FOURTH EDITION HANDBOOK of TECHNICAL INSTRUCTION

for WIRELESS TELEGRAPHISTS

by H. M. DOWSETT, M.I.E.E., F.Inst.P., M.Inst.R.E. (1930)

In this edition the scope of the book has been widened to meet the present day requirements of operators. It provides a complete theoretical course for the P.M.C. Certificate. Full particulars and synopsis of chapters sent on request.

PRICE 25/- BY POST 25/9

From all leading Booksellers or direct from the Publishers

LILIFFE & SONS LTD., Dorset House Tudor Street, London. E.C.4
W.W.96

35/- NEW RADIO-GRAM CABINET BY OSBORN



MODEL No. 201. Same Osborn standard of workmanship, but at this amazing price—35/- in figured oak, 3' 2" high, 1' 10" wide, 1' 4" deep. Height between motor board and baseboard 12". Height for pick-up 4". Accommodates a baseboard 18" x 14" or smaller. Ample room for any type of speaker and batteries. Mortised and tenoned throughout. Silk fabric, baffle board and baseboard are included. The panel above fret will be cut to your specification.

PRICES:
Machined Ready to Assemble ... £1 15 0
Assembled Ready to Polish ... £2 10 0
Assembled and Polished ... £3 5 0
ALL MODELS CARRIAGE PAID.

Figured Mahogany or figured Walnut 10/- extra. Carving on top rail omitted on all Mahogany and Walnut models, as it is not suitable for these woods.

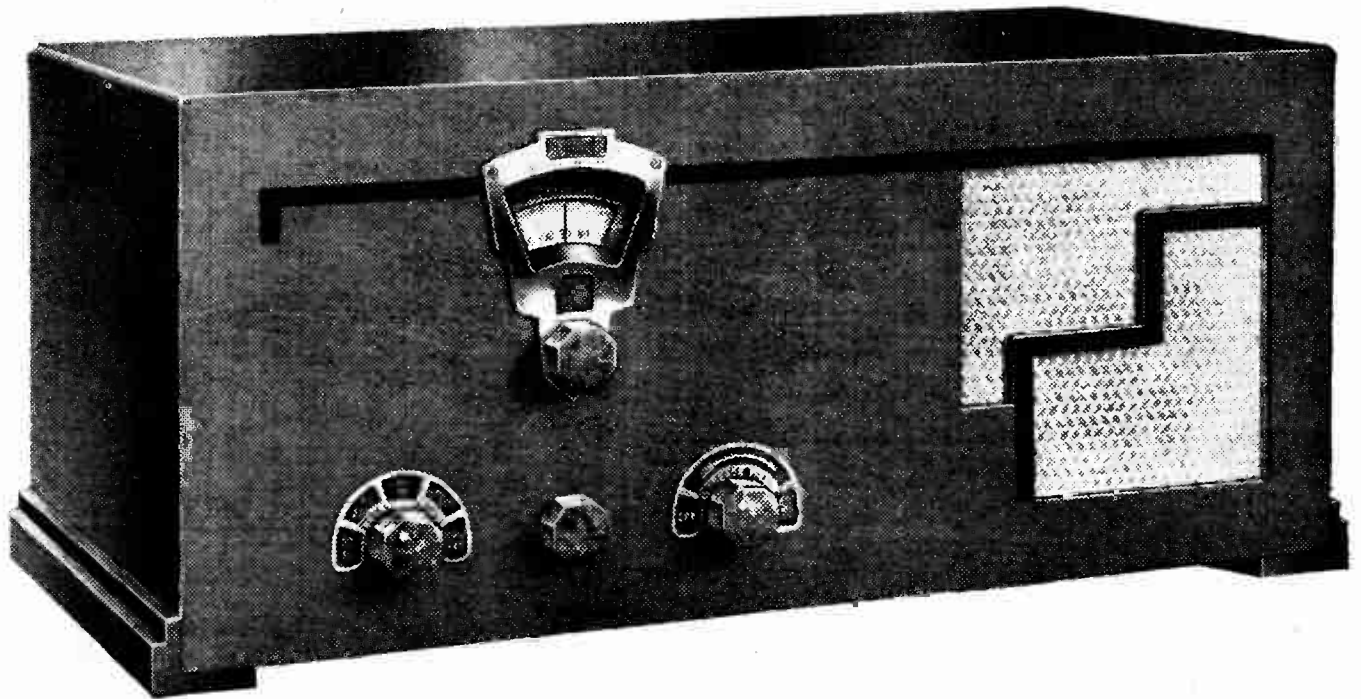
WRITE FOR FREE CATALOGUE
CHAS. A. OSBORN, Dept. W.W., Regent Works, Arlington St., London, N.1. Tel.: Clerkenwell 5095.
Showrooms: 21, ESSEX RD., ISLINGTON, N.1. Tel.: Clerkenwell 3634.

OSBORN SUPER ACOUSTIC Baffle BOARD. Prevents 90% speaker worry. Any size hole cut FREE. Guaranteed no vibration. 18in. x 18in., 3/-; 24in. x 24in., 5/-; 30in. x 30in., 8/-; 36in. x 36in., 11/3. Carriage paid U.K. Send for FREE SAMPLE.

INDEX TO ADVERTISEMENTS:

	PAGE		PAGE		PAGE
Alton Battery Co., Ltd.	14	Electrical Trading Association	vi	Players	vi
Accumulators Elite	14	Epoch Radio Manf. Co., Ltd.	16	Radio Furniture & Fittings, Ltd.	19
Atwater-Kent (G. A. Brittain & Co., Ltd.)	Inside Front Cover	Exide Batteries	3	Radio-Gramophone Development Co.	v
Automatic Coil Winder & Elec. Equipment Co., Ltd.	Front Cover	Faraday Allwave Wireless, Ltd	21	Radio Resistor Co.	14 & 16
Baker's "Selhurst" Radio	18	Forno Co.	12	Reproducers & Amplifiers, Ltd.	20
Black, Alexander	20	General Electric Co., Ltd.	9	Rich & Bundy, Ltd.	20
British Institute of Eng. Technology	14	Gripso Co.	18	Riverside Manufacturing Co., Ltd.	14
British Pix Co., Ltd.	14	Hoayberd, F. C. & Co.	14	Ryals Radio	18
British Radio Institution	8	Huys, Leonard	18	Savage, W. Bryan	17
British Radiophone, Ltd.	12	Igranie Electric Co., Ltd.	20	Scott Sessions & Co.	13
British Rola Co., Ltd.	12	Lyons, Claude, Ltd.	8	Sound Sales, Ltd.	19
Britannia Batteries, Ltd.	11	Myers-Hunt Cabinet Co.	16	Telegraph Condenser Co., Ltd.	2
Bryce, W. Andrew & Co.	12	Multitone Electric Co., Ltd.	2	Telsen Electric Co., Ltd.	Front Cover
Bulgin, A. F. & Co., Ltd.	16	Osborn, Chas. A.	21	Thompson, T. W. & Co.	12
Burton, C. F. & H.	Front Cover and 13	Ormond Engineering Co., Ltd.	Back Cover	Turnadge & Partners, Ltd.	16
Challis, O. M.	4	Ostar-Ganz (Eugen Forbat)	14	Varley (Oliver Pell Control, Ltd.)	7
Cole, E. K., Ltd.	10	Parma Manfg. Co.	20	Verexion	16
Columbia Graphophone Co., Ltd.	Front Cover & 1	Partridge & Mee, Ltd.	Inside Front Cover	Wates Radio, Ltd.	18
Colvern, Ltd.	16	Partridge Wilson & Co.	20	Watmel Wireless Co., Ltd.	17
Conadio	16	Pepper, Trevor (Seradex)	20	Webb's Radio Electric Stores	20
Cosser, A. Co., Ltd.	22	Peto-Scott Co., Ltd.	19	Westinghouse Brake & Saxby Signal Co., Ltd.	Inside Back Cover
Cressall Manfg. Co.	13	Picketts	18	Wilburn & Co.	21
Dubilier Condenser Co. (1925), Ltd.	6			Wright & Weaire, Ltd.	6
Edison Swan Electric Co., Ltd.	5				

★ SUPER-HETERODYNE CIRCUIT



★ MOVING COIL LOUD SPEAKER

Designed for reception of the B.B.C. Empire and other Short-wave transmissions, Cossor Short-wave Receivers incorporate many developments ensuring exceptional efficiency. A standard autodyne arrangement is employed in the Battery Set, while the A.C. Mains Model embodies a two-valve variation of this circuit. In both types, a low intermediate frequency, resulting in high amplification, is used. Wave-range changing is effected by a multi-position switch. The I.F. amplifier employs a Cossor Variable-Mu S.G. valve giving distortionless volume control. Mains energised and permanent magnet moving coil loud speakers are fitted to the All-Electric and Battery models respectively. Both Receivers have handsome walnut-finished cabinets. To ensure efficiency under varying climatic conditions all coils, condensers, etc. are specially impregnated.

4-VALVE BATTERY MODEL 358

In well-made cabinet 23½" x 11" x 10½" (similar to illustration) with permanent magnet moving-coil loudspeaker. 4 Cossor valves: 210 HL (metallised), 220 V5G (met.), 215 5G (met.), and 220 HPT. Pentode output valve. Individually shielded coils. One knob tuning. Variable-Mu I.F. volume control. Bias control for oscillator. On-off switch and multi-position wave-range switch. Wavelengths covered: 13.5 to 70 and 220 to 500 metres. This model requires 120 volts H.T. battery, 2 volts L.T. accumulator and 9 volts Grid Bias Battery.

ALL-ELECTRIC MODEL 359

6 valves including Rectifier. In handsome cabinet 25" x 11" x 10½" (as illustrated) with self-contained mains energised moving-coil loudspeaker, 6 Cossor Mains Valves: 41 MHL (metallised), 2, MSG LA (met.), MSVG (met.), 41 MXP Super Power Output and 442 BU, full-wave Rectifier. Individually shielded coils. One knob tuning; combined variable-Mu I.F. volume control and on-off switch. Bias control for oscillator. Multi-position wave-range switch covering 13.5 to 70 and 200 to 550 metres. For A.C. Mains only, 100 to 125 volts and 200 to 250 volts (adjustable), 40/100 cycles.



THESE MODELS
ARE FOR SALE
OVERSEAS ONLY

COSSOR

Short-Wave RECEIVERS

PRICES ON
APPLICATION

A. C. Cossor Ltd., Head Office & Works: Highbury Grove, London, N.5. Depots at Birmingham, Bristol, Glasgow, Leeds, Liverpool, Manchester, Newcastle, Sheffield, Belfast, Cardiff & Dublin.

♥ 2495

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time, Weather, Stock Report, and Popular Music on Gramophone Records. In the interval, Grand National Sweep Results. 6.0, Light Music on Gramophone Records. 6.15, Programme for Children. 7.0, Variety Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, German Lesson. 8.0, Concert of Opera Music by the Dublin Operatic Society. 9.0, In a Fog—Play presented by Elizabeth Young and Company. 9.30, Philip Martin (Millcum Pipes). 9.45, The Station Orchestra. 10.30, Time, News, Weather, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Modern Dance Music, relayed from the Ritz Hotel. 7.30 (in an interval), Exchange Quotations. 8.0, Light Music on Gramophone Records, followed by News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 9.5, Concert by the Station Orchestra. 9.45, Concert of Music by Juan B. Lambert. 10.15, Sextet Concert relayed from the Granja Royal. 11.0 (in an interval), News. 12 Midnight (approx.). Close Down.

BARI

270 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Report and Dopplavoro Announcements. 7.20, Giornale Radio and Press Review. 7.30, Time and Announcements. 7.35, Chamber Music Concert. Soloists: Franco Ruggiero (Pianoforte), Mario de Santis Bruno (Soprano), and Andrea Mongelli (Bass). Overture, Figaro (Mozart); Pianoforte Solo: First Movements from the Sonata in F Sharp Minor (Brahms); Soprano Solo: O flore (Santoliquido); Bass Solo: Song (Schubert). (a) Die junge Nonne (Schubert); Soprano Solos: (a) Triste veglia (Cuarnieri), (b) Ich liebe dich (Grieg); Pianoforte Solos: (a) Legend (Paderewski), (b) A briglia sciolta (Gubitosi); Bass Solo: Nie loves me (Vaccà); Soprano Solo: L'assiuolo (Zandonai); Pianoforte Solo: Scene infantili (Napoli); Bass Solo: The Cossack from the Volga (Vaccà); Soprano Solo: Spring (Giuseppe Mulé); Pianoforte Solo: The great gate of Kiev (Mussorgsky). In the interval, Talk. 9.30, Popular Music on Gramophone Records. 9.55, News Bulletin.

Basle.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.8 kW.—4.0 p.m., Medical Talk. 5.55, Time and Programme Announcements. 6.0, Reading. 6.45, Orchestral Concert of Rhapsodies: Yugoslav Rhapsody, No. 3 (Domini); Hebrew Rhapsody (Lewandowski); Rhapsody in B Minor (Hartung); Second Hungarian Rhapsody (Liszt). 7.45, Radio Play. 8.15, Quintet, Op. 12 for Pianoforte, Two Violins, Viola and Cello (Novak). 8.45, News, followed by relay of European Stations.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert from Berlin (Witzleben). 1.45, Programme for Children. 2.30, Weather and Exchange. 2.45, Reading: Das Bettelweib von Locarno (Heinrich von Kleist). 3.0, Talk: What is Stereoscopy? 3.30, See Hamburg. 4.10, Talk: Contemporary Systems of Defence—France. 4.30, Talk: Countries and Peoples. 5.0, Duet Recital by Traute Liencr (Soprano); and Friedrich Hansburg (Tenor); Two Duets (Schubert); Friedrich Hansburg (Tenor); Two Duets: (a) Liebe ist ein süßes Licht, (b) Nur wer die Sehnsucht kennt; Tenor Solo, Entfieh mit mir (Schumann); Soprano Solo, Es fiel ein Reif (Schumann); Duets (Schumann); (c) Auf ihrem Grab, (d) Liebhabers Ständchen, (e) Unter Fenster, (f) Dance Song. 5.25, Topical Talk. 5.40, Wireless Technical Talk. 5.55, Weather and Announcements. 6.0, English Lesson. 6.30, A Poem. 6.35, Hugo Wolf Song Recital, by Rose Walter (Soprano); Heb auf dein blondes Haupt; Das verlassene Mägdlein; Auf einer Wanderung; Three Sacred Songs: (a) Nun wandre, Maria, (b) Auf ein altes Bild, (c) Fähr mich, Kind, nach Bethlehem; Verschwiegene Liebe; Nun lass uns Frieden schließen. 7.0, Talk: Roman Law and German Law. 7.30, Programme from Leipzig. 9.10, Weather, News and Sports Notes. 9.45, Weather Report for Shipping. 10.0 Programme from Langenberg. 11.0 (approx.). Close Down.

BERLIN

WITZLEREN, 419.5 metres; 1.5 kW.—5.20 p.m., Max Reger Commemoration from the Marienkirche, Berlin: Introduction and Passacaglia in D Minor for Organ; Talk: Reger and his Influence on Church Music; Two Songs for Soprano, Op. 137: (a) Lass dich nur nichts dancern, (b) O Herre Gott, nimmi du von mir; Intermezzo for Organ, Op. 50, No. 3. 5.45, Talk by Bruno Doehring: Books in my Life. 5.55, The Witzleben Station informs its Listeners. 6.0, Topical Talk. 6.10, Folk Songs. 6.40, Topical Talk. 6.55, Announce-

WEDNESDAY

MARCH THE TWENTY-SECOND

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Mr. Maurice Dobb: "Communism." Symphony concert from Queen's Hall. Strange music. Variety programme. Orchestral concert. LONDON REGIONAL Pianoforte recital of works by Moszkowski. "Six to Four on the Field," a musical farce, by E. Lewis, C. Brewer and G. Squiers. MIDLAND REGIONAL Programme of music by Newcastle composers. NORTH REGIONAL Orchestral concert from the National Museum of Wales. WEST REGIONAL Choral concert from St. Andrew's Hall, Glasgow. SCOTTISH REGIONAL Orchestral concert from Stranmillis. BELFAST

ABROAD

BERO-MUNSTER BRUSSELS (No. 1) 6.45 p.m. Music by Arthur Honegger, from Zurich. 9 p.m. Lamoureux concert, from Paris. BUDAPEST 6.30 p.m. Operetta: "Die Fledermaus" (J. Strauss). 9.15 p.m. Music on Old Instruments, by the Frieberg Chamber Trio. 9.25 p.m. The Hanover Station Orchestra. 8 p.m. The Königsberg Opera House Orchestra. 9 p.m. Lamoureux concert from the Salle Gaveau. 8.30. Symphony concert from the Palais des Fêtes. 7 p.m. "Welcome Spring!" by the Station Orchestra. COPENHAGEN 6.45 p.m. Music by Arthur Honegger, from Zurich. 9 p.m. Lamoureux concert, from Paris. HAMBURG HEILSBURG RADIO-PARIS STRASBOURG WARSAW 6.30 p.m. Operetta: "Die Fledermaus" (J. Strauss). 9.15 p.m. Music on Old Instruments, by the Frieberg Chamber Trio. 9.25 p.m. The Hanover Station Orchestra. 8 p.m. The Königsberg Opera House Orchestra. 9 p.m. Lamoureux concert from the Salle Gaveau. 8.30. Symphony concert from the Palais des Fêtes. 7 p.m. "Welcome Spring!" by the Station Orchestra.

ment. 7.0, See Vienna. 8.0, Talk by Ina Seidel: Books in my Life. 8.10, Pianoforte Recital by Wilhelm Kempff, relayed from the Singakademie: Impromptu in F Minor, Op. 142, No. 1 (Schubert); Pianoforte Piece in B Minor from Aus meinem Tagebuch, Op. 82 (Max Reger); Swedish Wedding Music (Wilhelm Kempff). 9.0, Weather, News, and Sports Notes, followed by Dance Music. 11.0 (approx.). Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News and Market Prices. 7.40, Theatre Review. 7.55, Lottery Results. 8.0, Agricultural Talk. 8.30, Symphony Concert: Semper Adels (Sousa); Waltz, Les Sirenes (Waldteufel); Overture, The Grand Duchess of Gerolstein (Offenbach); Les roses de Grand'mère (D'Avray-Cabanne); Je n'ai qu'un amour, c'est toi (Boyer-Sylviano); Air from The Land of Smiles (Lehar); Air from Paganini (Lehar); Selection from La Bohème (Puccini-Tavari); Ballet russe (Luigini-Fourdrain); Melody (Sculle-Salabert); O nuits de Rio (Thompson); La pluie, le vent, le neige (Scott); La ronde des heures (Sylviano); Nous dire adieu (Moretti); Selection from The Count of Luxembourg (Lehar-Mouton); Guitare (Bizet); L'amour (Verdum-Offenfeld-Salabert).

BRATISLAVA

279 metres; 14 kW.—4.40 p.m., Hungarian Programme: Bozema's Sin—Play in Three Acts (Novak). 6.0, See Prague. 6.25, Max Reger Recital for the Sixtieth Anniversary of the Composer's Birth, relayed from the Franciscan Church. Sonata in F Sharp Minor for Organ, Op. 33; Four Sacred Songs. 7.0, Light Music on Gramophone Records. 7.20, See Prague. 9.15 (approx.). Close Down.

BREMEN.—See Hamburg.

BRESLAU

325 metres, 60 kW.; and GLEIWITZ, 253 metres.—12.10 p.m., Gramophone Concert: Prologue to I Pagliacci (Leoncavallo); Air from Madame Butterfly (Puccini); Madame Butterfly's Opening Song, from Madame Butterfly (Puccini); Song from La belle Hélène (Offenbach); Aria from Il Seraglio (Mozart); Aria from Figaro (Mozart); Elizabeth's Greeting, from Tannhäuser (Wagner); Song from Der Bettelstudent (Müllacker). 12.45, Time, Weather, News, and Exchange. 1.5, Strauss Gramophone Concert: Concert Waltz, Loreley-Rheinklänge (Joh. Strauss, Sen.); Mein Lebenslauf ist Lieb und Lust (Jos. Strauss); Mazurka, Frauenherz (Jos.

Strauss); Waltz, Leuchtkäfer'n (E. Strauss); Waltz, Arabian Nights (Joh. Strauss); Gondola Song from A Night in Venice (Joh. Strauss); Waltz, Tales from the Vienna Woods (Joh. Strauss); Radetzky March (Joh. Strauss, Sen.). 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Talk: The City Street from a Cultural Point of View. 3.0, Educational Talk. 3.30, Eugen d'Albert Pianoforte Recital: Four Pianoforte Solos, Op. 5, Nos. 1-4; Nocturne, Op. 29, No. 3; Scherzo, Op. 29, No. 5. 4.0, Review of the March Number of Der Oberschlesier. 4.20, Agricultural Prices. 4.25 (approx.), Talk: How to obtain an Apprenticeship. 4.40, Recital of Upper Silesian Songs by Karl Mirus. 5.10, Talk: The Roads of Upper Silesia. 5.30, Talk: Protection against Poison Gases. 5.50, Talk: How a Miner amuses himself after his Day's Work. 6.10, Concert of Light Music by Bertis and his Soloists. In an interval at 6.35, Weather and Farmers' and Market Prices. 7.0, Talk: Goethe's Philosophy. 7.30, Jitz mus der Tod zum Durfe nans—a Silesian Spring Cantata (Karl Sezuka). 8.30, Announcements. 8.40, Orchestral Concert of Old Dance Music. 9.30, Time, Weather, News, Sports Notes, and Programme Announcements. 9.50, Dance Music from Berlin (Witzleben). 11.0 (approx.). Close Down.

BRNO

342 metres; 85 kW.—5.25 p.m., German Transmission: News, Talk on Films and Talk for Workers. 6.0, See Prague. 6.25, Popular Band Concert. 6.50 till Close Down. See Prague. 9.15 (approx.). Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Concert, relayed from the Memline Hall, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Radio Orchestra, conducted by C. Walpot: March of the Footballers (Bury); Waltz, Memories of Josef Strauss (Fahrbach); Overture, Masaniello (Anber); Habanera, The Blue Pavilion (Armandola); Orchestral Suite (Rogister); Xylophone Solo, Czaras No. 1 (Michiels); Ballet Suite (Popy). 5.0, Concert by Mickey's Club Jazz Attraction. 6.0, Talk on the Belgian Sculptor, Ernest Wynants. 6.15, La Procession Nocturne (Rabaud), on Gramophone Records. 6.30, Song Recital by Alice Plato: Berceuse (Diepenbroeck); Tristesse (Pierne); Connaissez vous mon hirondelle (Pierne); Rain (Respighi); Aria from The Snow Maiden (Rimsky-Korsakov); Lioubava's Aria from Salko (Rimsky-Korsakov). 6.45, A Sketch. 7.0, Song Recital by Marc Chaustraine: Erlkönig (Schubert); The Two Grenadiers (Schumann); Danse macabre (Saint-Saëns). 7.15, Talk: Political Parties in Yugoslavia, Romania, and Czechoslovakia. 7.30, Medical Talk. 8.0, Elegiac Melodies, Nos. 1 and 2 (Grieg), on Gramophone Records. 8.10, Asile de Nuit—Comedy in One Act (Maurcy). 8.35, Suite, La Ferial (Lacôme) on Gramophone

Records. 8.45, Answers to Correspondence. 9.0, See Paris (Radio Paris). In the Interval, Le Journal Parlé.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Concert by the Station Orchestra, conducted by Charles Walpot: March of the Marionettes (Hullebroeck); Overture, Poet and Peasant (Suppé); Waltz, Dolores (Waldteufel); Selection from Paganini (Lehar); Baby plays Soldiers (de Micheli); Bei Zigeunerkapelle (Meyer-Hellmund); Anbade à Kiki (de Boeck); Ballet Music from La Gioconda (Ponchielli). 1.0 p.m., Le Journal Parlé. 1.10, Concert relayed from the Memline Hall, Antwerp. 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot: Overture, The Bohemian Girl (Balfe); Waltz, Tales from the Vienna Woods (Joh. Strauss); Rhapsody in B (Hartung); Algerian Scene (Kötelbey); Selection from The Merry Widow (Lehar); Love Song (Candael); Orchestral Suite, Four Ways (Coates). 6.0, Gramophone Records of Schumann and Liszt Music. 6.15, Talk: Tales of the Congo. 6.30, Nine Songs (Karel Candael), sung by Mme. Anna Candael; the Composer at the Pianoforte. 6.45, Gramophone Concert of Light Music. 7.15, Talk: Dramatists and Critics. 7.30, Talk on International Affairs. 8.0, Pinksternacht—Musical Play in Two Acts (Roels). In the intervals: Tales of the Congo and Le Journal Parlé. 10.45, Dance Music on Gramophone Records.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra: Piersa March (Strauss); Waltz (Faulx); Hungarian Dances, Nos. 1 and 2 (Brahms); Selection from Rigoletto (Verdi); Cossack Song (Gavin). 5.0, News and Time Signal. 5.10, Talk. 5.25, Concert (contd.): Selection from La Fête chez Thérèse (Hahn); Potpourri (Dron). 6.0, Talk: New Tendencies in Romanian Literature. 6.40, Light Music on Gramophone Records. 7.0, Song Recital. 7.20, Pianoforte Recital. 7.50, Talk. 8.5, Violin Recital: Two Romances in G and in F (Beethoven); Chanson Louis XIII and Pavane (Cooper-Kreiser); Tambourin (Leclair-Kreiser). 8.35, Dance Music from the Elysée Restaurant. 9.0, News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 8.0 metres from 6.30 p.m. till Close Down.—4.0 p.m., Dance Music. 4.50, Italian Lesson. 5.20, Gramophone Concert: Traumnovnen (Weinberger); Prayer from Tosca (Puccini); Selection from Carmen (Bizet); Es ritten drei Ritter (Römer); Song (Erster); Song (Sander); Grock in Items from his Repertoire: Waltz, The Cuckoo (Jonasson); Die Dorfmusik (Fryberg); Tango Song (Gross); Tango Song (Vertes); Blues (Mogyeri); Knowst thou my love (Drda); Original Tanguania (Bazant); Vmetaglocken (Lindsay-Thimer); Selection from Ball in Savoy (Abraham); Maucica (Eisemann). 6.30, Die Fledermaus—Operetta (Joh. Strauss); relayed from the Opera House. News in the intervals. After the Operetta: Gányú Concert from the Hotel Britannia.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—11.0 a.m., Time and Chimes from the Town Hall. 11.5, String Ensemble Concert conducted by A. Bendix, relayed from the Wivex Restaurant. 12 Noon, Memorial Programme for the 125th Anniversary of the Battle at Odde, relayed from Odde. 1.0 to 2.0, Interval. 2.0, Gramophone Concert. 2.30, Concert by the Mogens Hansens Instrumental Ensemble: Spanish March, Hispania (Dreyer); Overture, La Sonnambula (Bellini); Concert Waltz, Elfentanz (Lehar); Romanian Folk Dance (Behl-Bartok); Soranade, An dieh (Czibulka); Intermezzo, Burlesca (Ullotta); Selection from Show-Boat (Kern); Valse triste (Vescey); scherzo for Strings from Novellette; The Merry Marionettes (Petras); Waltz, Air de Ballet (Petras); March (Ryming). In the Interval at 3.15, Talk for Women. 4.40, Exchange and Fish Market Prices. 4.50, Agricultural Talk. 5.20, Elementary French Lesson. 5.50, Weather. 6.0, News. 6.15, Time Signal. 6.30, Talk on De Valera. 7.0, Town Hall Chimes. 7.1, Charles Kjerulf Concert by the Radio Orchestra, conducted by Emil Reesen; Soloists, Tenna Frederiksen Kraft (Songs), Ely Fischer Kjerulf (Songs), and Marjus Jacobsen (Songs); Prelude to Densen paa Koldinghus; Introductory Talk by Axel Kjerulf; Three Songs from Sange ved Havet; Dans and Blancheffeur from Dansen paa Koldinghus; Toreh Dance; Songs (a) Hvor staaes nu min Gierud, (b) Solen skinner paa Kristianshavn; Two Songs from Gadens Digte; Song from Gadens Børn; Song from Gadens Digte. 8.0, Topical Talk. 8.30, The Nutcracker Suite (Tchaikovsky), by the Radio Orchestra. 9.0, News. 9.15, Music on Old Instruments of the Baroque and Rococo Period by the Freiburg Chamber Trio; Glee (Berrabosco); Zart schön Jungfräulein (Metcher Franck); El du feiner Reiter (Schmidt); Der rheinische Wein (Krieger); Wie er wollte geküsst sein (Hammerschmidt); Invention (Bach); Die Tabakspfeife (Bach); Minuet (Telemann); Die

Quand je vais au jardin; Musette; Aus dem Augsburger Tafelkonfekt (Rathgeber). 10.0 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—6.0 to 7.0 p.m., Programme in English by the I.B.C. C. Danvers-Walker, R. McNabb and F. Lampy announcing. 6.0, Concert of Light Music for Portsmouth and Southsea Listeners; Hornpipe (arr. Byng); Songs: (a) Call me Darling, (b) Home (van Steeden); (c) Only a Rose (Friml); Jigs and Reels (arr. Byng); Songs: (a) Marta, (b) Save the Last Dance for me, (c) Song of the Vagabonds (Friml). 6.30, Pianoforte Recital for Isle of Wight Listeners: Rhythm Selection; A Bench in the Park; You, just wonderful you; Selection from Words and Music; Just hummin' along; Some more Rhythm; Swingin' in a Hammock. 7.0, Programme in French. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music: One Night alone with you; Lucy Luck; Sweet Jennie Lee; Telling it to the Daisies; The Alpine Milkmaid; Shout for Happiness; My Heart is bluer than your Eyes; I've got a feeling; Oh what a Night; Bandy Bertha's Birthday; In a quiet Corner; Reaching for the Moon; Yet you forgot; It's Unanimous now; If I didn't have you. 11.0, Military Band Concert: Overture, Rienzi (Wagner); El Abanico (Javaloyes); La Grive (Cole); Light of Foot (Latann); March, Pomp and Circumstance (Elgar); A Française (Costa); Here, there and Everywhere (Bose). 11.30, Opera Music: Selection from Il Trovatore (Verdi); Aria from The Magic Flute (Mozart); Way for the Factotum, from The Barber of Seville (Rossini); Selection from Rigoletto (Verdi); Aria from Figaro (Mozart); Vulcan's Song from Philémon et Baucis (Gounod). 12 Midnight, Variety Concert: Rhapsody in Love; I'd rather not; Marche Joyeuse; I am the Words; Annette; Silly Dick; Little White Lies; Il Bacio. 12.30 a.m. (Thursday), American Songs: I don't work for a Living; I'm gonna yodel my way to Heaven; Fortunes Galore; Can't we talk it over; Hallelujah I'm a Bum; They cut down the Old Pine Tree; The Railroad Boomer. 1.0, Concert by an Accordion Band: Javanette (Bozi); Volante March (Alexander); The Waltz that made you mine; Senorita (Alexander); Lullaby of the Leaves (Young); Bertina Waltz; Leven Pounds of Heaven (Malneck). 1.30, Concert of Popular Songs; Only for you (Weinberg); A Banjo Song (Homer); My Song of the Nile (Meyer); Wid de Moon, Moon, Moon; Mammy is gone (Henderson); Since you went away (Johnson); Just keepin' on (Carter); Lonesome Moonlight (Strickland). 2.0, Dance Music: Too many Tears; Listen to the Germau Band; We all wanna know why; A great big Bunch of you; Bahama Mama; Mad about the Boy; If you were only mine; The Younger Generation; Moonlight, the Danube and you; Let's put out the Lights; You're my Everything; Moon; There's another Empty Saddle; Gettin' Sentimental. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259.3 metres; 17 kW.; CASSEL, 245.9 metres, and TRIER, 259.3 metres.—12.30 p.m., Concert from Langenberg. 1.0, News Bulletin. 1.10, Sponsored Concert. 2.0, Weather Report. 2.10, Time and Exchange. 2.15 to 3.15, Programme for Young People. 3.50, Exchange. 4.0, See Munich. 5.15, Market Prices. 5.25, Talk: The Future of Employees' Insurance. 5.50, Talk: Max Reger. 6.15, Time, Programme Announcements, Weather and Exchange. 6.20, Organ Recital of Music by Max Reger, relayed from the Friedenskirche. 7.15 to 9.10, See Stuttgart. 9.10, Time, News, Weather and Sports Notes. 9.45, See Stuttgart 11.0, (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—3.30 p.m. (from Bremen), Ballad Concert by the Bremen Municipal Orchestra, conducted by Eduard Martini and Fritz Schweinsberg (Bass). 4.30, How a Book is produced—a Tour through a Hansentick Publishing Firm. 5.50, Frankfurt Exchange and Hamburg

MARCH 22nd

WEDNESDAY

continued

Market Prices. 6.0 (from Bremen), Talk: The German Mail Boats' Trips to Australia in Earlier Days. 6.55, Weather Report. 6.30, Paul Alverdes reads from his own Works. 7.0, Concert by the Station Orchestra, conducted by José Eibenschütz; Soloist: Palma von Paszthury-Erdmann (Violin); Concerto Op. 77 for Violin and Orchestra (Brahms); Symphony No. 5 in E Minor, From the New World (Dvorak). 8.25, News. 8.35, Organ Recital by Heinz Bergmann, relayed from St. Martin's Church, Bremen; Organ Sonata No. 3 in A (Mendelssohn); Ave Maria (Arenaldt-Liszt); First Movement from the Fantasia Sonata in A (Rheinberger). 9.5, Time and News. 9.15, Topical Talk. 9.25 (from Hanover), Concert by Hanover Station Orchestra, conducted by Otto Ebel v. Sosen; Soloists: Emil Bartels (Cello) and Fritz Zille (Flute); Largo for 'Cello (Haudel); Adagio from the Pathetic Sonata (Beethoven); Andante from the Concerto in D for Flute (Mozart); Allegretto from the Sonata Op. 164 (Schubert); Allegro from the Symphony in B Flat (Schumann); Saltarello from the Italian Symphony (Mendelssohn); Grand Chromatic Galop (Liszt). 10.20, Ice Report. 10.25, Concert relayed from the Café Wallhof.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—12.5 p.m., Popular Music on Gramophone Records. In the interval at 12.20, News. 1.30, Programme arranged by the Post Office, with Gramophone Records. 2.0, Agricultural Prices and Exchange Rates. 2.20, Hints for the Housewife. 2.30, Programme for Children. 3.0, Talk for Parents. 3.30, See Hamburg. 4.30, Book Review. 4.50, Dr. Heinrich Bauer reads from his book, Schwert im Osten. 5.15, Agricultural Prices. 5.20, Ice Report. 5.30, Violin and Harp Recital by Franz Schmidt and Friedel Elguth: Nocturne (Chopin); Gavotte (Gossec); Minuet (Hasselmann); Spring Song (Mendelssohn); Minuet (Mozart); Liebesfreud (Kreisler). 6.0, Bridge Lesson. 6.25, Weather Report. 6.30, Every Man is the Architect of his own Fortune—Radio Play (Otto Zoff), with Music by Harry Ralton. 7.50, News. 8.0, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetitzky; Overture in C. No. 2, in Italian Style (Schubert); Symphonic Poem, Spätherklänge (Halken); Suite, Frühlingsreigen (Schjelderup); Capriccio (Graedener); Geheft from Hölleisch Gold (Bittner); Spanish Rhapsody, Op. 8 (Ferroni); Waltz (Waldfenfel). 9.20, Weather and News. 9.40, Dance Music relayed from Berlin (Witzleben). 11.0 (approx.), Close Down.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Christian Radio Society (N.C.R.V.). 11.55 a.m., Spring—Trio Concert, with Songs. 1.40, Agricultural Talk. 2.25, Programme to be announced. 2.40, Reading. 3.10, Organ Recital. 3.40, The Italian Symphony in A (Mendelssohn), on Gramophone Records. 4.10, Organ Recital (contd.). 4.40, Programme for Children. 5.40, Gramophone Music: Selection from Masaniello (Auber); Coronation March from The Prophet (Meyerbeer). 5.55, Talk by Heer Amelink. 6.10, Elementary English Lesson. 6.40, Talk arranged by the Department of Buildings and Roads. 7.10, Police Notes. 7.25, News Bulletin. 7.40, Programme of Music and Addresses arranged by the Salvation Army. 9.10, Organ Recital from Amsterdam. 10.10, News Bulletin. 10.20, Gramophone Concert: Potpourri, Also sprach Meyerbeer (Urbach); Musikalisches Wandelparadisa (Lincke); Chanson (Friml); In a Clock store (Orth); Love's old sweet song (Molloy); Prelude in E Flat, Op. 99 (Saint-Saëns); Choral; (a) Der Herr ist König (Brüning); (b) Jauchzet dem Herrn (Thiel); Psalm 89, Verse 1. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—Programme of the Workers' Radio Society (V.A.R.A.). 11.40 a.m., Concert by De Notenkrakers, conducted by D. Wins. España (Dreyer); Wiener Praterleben (Trauslauer); Scandinavian Suite (Fredriksson); The Capricious Musical Box (Fresco); Rosita (Dupont); Gnomenzug (Armandola); Gramophone Records; Eisblumen (Leuschner); The Musical Snuff-Box (Nikolaievsky); The Cockshafers' Tea Party (Nouck); Patsy (Myddleton); Gramophone Records; Take me back again (Calzelli); Réve (Muller); Far away where the Light-house wakes (Gray); Wenn du dein Herz verlierst (Stransky); Lawd, you made the Night too long (Young); Seville (Abraham). 1.25 to 1.40 p.m., Interval. 1.40, Programme for Women. 2.40, Programme for Children. 5.10, Organ Recital by J. Jong. Selection from Czar and Carpenter (Lortzing); Selection from The Nutcracker Suite (Tchaikovsky); Russian Serenade (Bakalainikov); The

Juggler (Groitsch); Lehar Potpourri (Hrthy). 5.55, Popular Music on Gramophone Records. 6.10, R.V.U. Programme. 6.40, Talk. 7.0, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot; Wir gehen am Mosel vorbei (Cornelius); Waltz, The Blue Danube (Joh. Strauss); Am Bosphorus (Lincke); Moonlight on the Aister (Petras); Was die Donau erzählt (Morena); Wolga-Geister (Leuschner). 7.35, S.O.S. Messages. 7.40, The St. Matthew Passion—Oratorio (Bach), by a Mixed Choir, a Boys' Choir, an Orchestra, and Soloists. 9.10, Talk. 9.30, Concert by the V.A.R.A. Orchestra (contd.). 10.40, News Bulletin. 10.55, Variety Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Prague.

KOSICE.—See Prague.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert, conducted by Eysoldt. In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Economic Notes and Time. 2.50, Programme for Children. 3.20, Talk: In a U-Boat, 1917-1918. 4.30, Talk: Evening and Night. 4.0, Concert, conducted by Wolf; Soloist: Andreas Holzer (Baritone); Overture, Orpheus in the Underworld (Offenbach-Binder); Ballet Egyptian (Lugmire); Viennese Songs; Selection from The Mikado (Sullivan); Cigany Music (Pataky); Potpourri, Mousseux (Waldfenfel). 5.20, Talk: The Rhishish Politician, August Reichenspergen, on the 125th Anniversary of his Birth. 5.45, Weather, Time, Economic Notes, and Sports Results. 6.0, Talk: An Interview with a Private Welfare Organisation. 6.20, Health Talk. 6.35, Talk: Causality and Freedom. 6.55, News. 7.0, Concert by the Station Orchestra, conducted by Buschköster; Soloist: Udo Dammert (Pianoforte); Fantasia for Pianoforte and Orchestra (Debussy); Caprice for Pianoforte and Orchestra (Stravinsky). In the interval from 7.50 to 8.10, Book Day Programme: On reading Books (Hermann Hessel). 9.0, News and Sports Notes. 9.20, Serenade and Dance Music, conducted by Eysoldt.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319 metres.—3.0 p.m., Programme for Children. 4.50, Weather, Time and Exchange. 5.0, Review of Books about Hugo Wolf. 5.30, Italian Lesson. 5.50, The Leipzig Station informs its Listeners. . . 6.0, Talk in connection with Book Day; Contemporary Literature. 6.15, Choral Concert: Spring Song (Grell); The Nightingale (Mendelssohn); Liederfrühling (Hegar); Folk Songs: (a) Es lieg ein kleines Waldbrüglein, (b) Ich bin Kuckuck (arr. Othegaver), (c) Mein Herz hat sich gesellt (arr. Witzke); Der Greis (Haydn); Gewalt der Liebe (Nägeli); Bohemian Folk Song, The Gosling (arr. Walden); Silesian Folk Song, Bettelente (arr. Wolfram); Schweißhölzle (arr. Berger). 6.45, Film-Organ Talk. 7.15, The Soldier's Life is a Merry One—Variety Programme. 9.5, News Bulletin. 9.30, Concert by the Leipzig Symphony Orchestra, conducted by Paul Schmitz; Symphonic Poem to a Tragedy (Rogier); Serenade, Op. 18 (Frankenstein); Symphony No. 8, in A, Op. 92 (Beethoven).

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 7 kW.—5.0 to 5.30 p.m., Programme in English by the I.B.C.: Light Music: Blaze Away; Trees; Maybe it's the Moon; Titania; Out of the Blue; An old Violin; Pardon me Pretty Baby; My Heart Sings a Broken Melody. 5.30, Popular Music on Gramophone Records. 6.0, Russian Lesson. 6.30, Literary Programme. 7.0, Concert of Music by Villhar. 8.15, Quietet Concert. 9.15, Time and News.

LWOW

381 metres; 16 kW. 6.10 p.m., Miscellaneous Items. 6.30, See Warsaw. 8.25, Chamber Music Concert by the Conservatoire String Quartet, Op. 18, No. 4 (Beethoven); Quartet, Op. 27, in G Minor (Grieg). 9.15, See Warsaw. 10.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.45, Concert, conducted by M. Gaston Bilet. Soloists: Mlle. Aliette Alain (Soprano), Mlle. Rosel Brillat (Soprano), and M. Alex Reymond (Baritone). Part I: Overture, Les Mousquetaires au Couvent (Varney); Berceuse from Arlequin (D'Ollone); Femme sensible (Lully); Extase (Ganne); Selection from Les cent vierges

(Lecocq); Russian Dance (de Tave); Alette (Schorer); Selection from Die geschiedene Frau (Fall). Part II: L'Education maquée—Operetta in One Act (Chabrier). News after the Programme.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—10.30 p.m., Concert of Popular Music. 10.45, Radio Chronicle. 11.0, Concert (contd.). 11.35, Talk. 11.40, Light Music. 12.0 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Literary Talk, and Request Gramophone Records. 8.25, News Bulletin. 8.30 to 9.30, Interval. 9.30, Chimes, Time, and Political Review. 9.45 (approx.), Programme to be announced. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—4.10 p.m., Dramatic Programme. 5.5, Agricultural Report. 6.10, Gramophone Records. 5.15, See Prague. 5.25, Cello Recital by G. Hahn; Adagio and Allegro from Sonata No. 4 (Bocherini); Sarabande (Corelli); Minuet from the Little Suite (Debussy). 5.45, Talk. 6.0, See Prague. 9.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—4.30 p.m., Extracts from Rigoletto—Opera (Verdi). 5.30, Symphony Concert, relayed from the Conservatoire. 8.0, Talk in English: The Work of a Railway Employee.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—4.0 p.m., Orchestral Concert, conducted by Fritz Müller-Rehrmann. Soloist: Ernst Konrad Haase (Baritone). Overture, Figaro (Mozart); Selection from Hansel and Gretel (Humperdinck); Eigenreigen (Klose); Four Songs from the Italian Song Book (Wolf); Orchestral Suite No. 2 (Müller-Rehrmann). 5.15, Talk for the 20th Anniversary of the Birth of August Hermann Francke. 5.35, Physical Exercises for Women. 5.55, Time, Weather and Agricultural Notes. 6.5, Talk: The History of the German Customs Union. 6.25, Gramophone Concert. Selection from Lilac Time (Schubert-Berté); Selection from Der Rosenkavalier (R. Strauss); Mattinata (Tosti); Waltz, Wo die Zitronen blühen (Joh. Strauss); Song from Gasparone (Müllhofer); The Capricious Musical Box (Franco); Hawaiian Melody (Mandostat); In the Toy Shop (Jessel); La Cinquantaine (Gabriel-Marie); Selection from The Maid of the Black Forest (Jessel); The Match Parade (Wehle); March, Alte Kameraden (Teke). 7.35, The German Customs-Union—a Radio Picture (Schöningh). 8.30, Chamber Music by the Studien Quartet. String Quartet in C Minor, Op. 57 (Schubert); String Quartet in D, Op. 11 (Tchaikovsky). 9.20, Time, Weather, News and Sports Notes. 9.45, Concert from Stuttgart. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 53.2 and Rjukan, 447.1 metres.—4.30 p.m., Violin Recital by M. Birger. 5.0, French Lesson. 5.30, Talk for Boys on Aeronautics. 6.0, Announcements, Weather and News. 6.30, Scientific Talk: New Discoveries in the North. 7.0, Time Signal. 7.1, Dramatic Programme. 8.30, Agricultural Report. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Concert by the Station Orchestra, conducted by Hugo Kraum; Potpourri of Waltzes by Strauss (Weber); In the Harbour of Port Said (Armandola); Romance (Rubinstein); Neapolitan Serenade (Sgambati); Ave Maria Stella (Grieg); Selection from The Three Musketeers (Friml); A Night on the Volga (Russo); Marche lorraine (Ganne). 10.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—7.0 p.m., Dopplero Notes, Tourist Talk, Agricultural Report and Giornale Radio. 7.20, Light Music on Gramophone Records. In an interval at 7.30, Time Signal and Announcements. 8.45, Concert of Variety Music. Soloists: M. Pollicino (Tenor) and Mlle. Gonnaga (Soprano). Overture, Der Freischütz (Weber); Tenor Bolos: (a) Non passò

MARCH 22nd

WEDNESDAY

continued

disparar (de Luca), (b) Rosa mesta (Tronchi); Waltz from Etienne Marcel (Saint-Saëns); Soprano Solos: (a) Waltz, Belta (Pieroni), (b) Aria from Lakmé (Delibes); Talk. Tenor Solos: (a) Song from Act III of I Puritani (Bellini), (b) Song from Act I of La Favorita (Donizetti); Intermezzo from Manon Lescaut (Puccini); Soprano Solos: (a) Ideale (Tosti), (b) Waltz from Act III of Dinorah (Meyerbeer); Overture, Norma (Bellini). After the Concert, Popular Song Recital. 9.55, News Bulletin.

PARIS

13 kW.—Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Le Journal Parlé. 7.20, Weather Report. 7.30, Programme for Young People. 8.5, News Bulletin. 8.15, Concert by the Radio Orchestra, conducted by Edouard Flament: Paysages normands (Sporek); Violin Solo: Selection from La Basoche (Messager); Selection from The Barber of Seville (Rossini). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Gramophone Concert of Variety Music. 8.0, Tourist Reports. 8.5, Talk on Economics. 8.15, Interval. 8.30, Sponsored Concert. 9.0, Interval. 9.10, Sponsored Concert. 9.40, Interval. 9.50, Variety Music on Gramophone Records. 10.10, Dance Music by the Lido Orchestra. 11.0, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture. 7.45, Gramophone Records: Selection from Orpheus in the Underworld (Offenbach-Myldeleton); Selection from The Cat and the Fiddle (Kern). 8.0, Press Review and Weather. 12 Noon, Talk: How to read Molière. 12.15 p.m., Concert by the Radio Paris Orchestra: Selection from François les bas bleus (Messager-Bernicat). 12.30, Organ Recital by G. T. Desserre, relayed from the Gaiumont Palace: Overture, Semiramis (Rossini); Whistling Waltz (Reyves); Selection from Le Petit Duc (Lecocq); I love me (Waller). 1.0, Exchange, News, and Weather. 1.5, Orchestral Concert (contd.); Melody (Battie); Sentimental Reverie (Barlow); Britania (Berger); Pastoral Introduction (Borchard); Ambépins en fleurs (Brun); Babil d'oiseaux (Sachs); Amoureux causerie (Delamary); Spring Song (Mendelssohn); Idyll printanière (Delmas); Le réveil des fleurs (Flament); Pomme fleurie (Ganne); Nuit de printemps (Jumain); Aux premières feuilles (Pesse). In the interval at 1.30, Exchange. 2.0, Exchange. 3.45, Exchange and Market Prices. 6.10, Agricultural Talk. 6.40, German Lesson. 7.0, Medical Talk. 7.20, Concert: In the Garden of Love (Harting); Egyptian Caprice (Seibold); Allegro (Brusselmann); Florentine Serenade (Seibold); Overture, The Loreley (Lincke); Melody (Paderewsky); Persian Suite (Rubinstein). 7.50 (approx.), Commercial Prices and News. 8.0, Literary Talk: Poems by Jean Richelin. 8.30, News and Weather. 8.40, Fashion Review by Mlle. José. 8.45, Gramophone Records: Second Suite for Small Orchestra (Stravinsky); The Midnight Review (Glinka). 9.0, Concert by the Lamoureux Concert Society, conducted by Karl Elmendorff, relayed from the Salle Gaveaux: Soloist: Marcelle Bunlet (Songs); Overture, Rienzi (Wagner); The Moldau (Smetana); Overture, Faust (Wagner); Prelude to Act III and Overture to the Mastersingers (Wagner); Siegfried's Rhine Journey and Forest Murmurs from Siegfried (Wagner); Songs: (a) Funeral March, and (b) Finale from The Twilight of the Gods (Wagner).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relay by W8XX on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Blue Ridge Buddies. 9.57, David Lawrence Dispatch. 10.0, KDKA Orchestra. 10.15, Programme to be announced. 10.30, The Singing Lady. 10.45, Little Orphan Annie, from New York. 11.0, Booth Tarkington's Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45, Today's News by Lowell Thomas, from New York. 12.0 Midnight, Amos 'n' Andy, from New York. 12.15 a.m. (Thursday), Programme to be announced. 1.0 to 3.15, New York Relay. 1.0, Eno Crime Club. 1.30, Time Signal and Harriett Lee and her Leaders. 1.45, The Contry Doctor. 2.0, Adventures of Sherlock Holmes. 2.30, Woodbury Programme with Morton Downey and Donald Novis. 3.0, D. W. Griffith's Hollywood. 3.15, Around the Cracker Barrel. 3.30, Bridge School of the Air by E. Hall Downes. 3.45, Music Magis, from New York. 4.0, Time Signal. 4.1,

Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Smith Baller and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, College Inn Orchestra, from New York. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., Concert by the Station Orchestra and Karl Hasler. 4.0, Talk for Mothers. 4.10, See Moravská-Strava. 5.5, Agricultural Talk. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission—Talk for Workers. 6.0, Chimes and News. 6.10, Talk on the Modern House. 6.25, Dance Music on Gramophone Records. 6.50, Concert by the Prague Chamber Choir. Soloist: Prof. Friedrich Wiedemann (Organ). Introductory Talk by Dr. Troida. 7.20, The Fantastic—A Comedy in Three Acts (Edmond Rostand); Czech by Adolf Cervinka. In the interval at 8.0, Time Signal. 9.0, Time, News, and Sports Notes. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.0 p.m. (from Lausanne), Programme for Children. 6.0 (from Geneva), Weather Forecast, News Bulletin and Announcements. 6.30 (from Lausanne), Talk: Poultry Farming. 7.0 (from Geneva), Talk on Parsifal—Opera (Wagner). 7.15, Concert by a String Orchestra, conducted by Robert Echenard. 8.15 (from Lausanne), Choral Concert, with Recitations by Mme. Germaine Mattan. 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva), Talk: The Work of the League of Nations. 9.25 (from Lausanne), Dance Music, relayed from the Bel-Air Metropole. 10.0 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Music Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Violin Recital by Thorarinn Gudmundsson, followed by Arias and the Brandenburg Concerto (Bach) on Gramophone Records.

RJUKAN.—See Oslo.

ROME

Call IRO, 441 metres; 50 kW. Relay by Naples, 319 metres; and 2RO, 25.4 metres.—5.45 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Concert of Light Music. In the interval at 12.30, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange, Report of the Royal Geographical Society and Giornale Radio. 4.30 to 5.15, Concert of Chamber Music. 6.0 (Naples), Shipping and Sports Notes. 6.10, Agricultural and Dopolavoro Notes. 6.20, Giornale Radio and Light Music on Gramophone Records. 7.0, Time, Announcements and Gramophone Records (contd.). 7.15, Medical Talk. 7.30, Sports Notes and Tourist Report. 7.45, Relay from a Theatre. In the intervals, News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relay at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—7.30 p.m. to 12.15 a.m. (Thursday), New York Relay. 7.30 p.m., Westminster Choir. 8.0, Two Seats in the Balcony. 12 Midnight, Mischa Weishord (Violinist). 12.15 a.m., Stock Reports. 12.30, Gold Medal Band. 12.45 to 2.30, New York Relay. 12.45, The Goldbergs—Comedy Sketch. 1.0, Royal Vagabonds. 1.30, The Shadow—Mystery Drama. 2.0, General Tire and Rubber Company. 2.30, Supper Club Orchestra, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; BASLE, 244.1 metres; and BERNE, 245.9 metres.—11.28 a.m., Time Signal from Nenchâtel Observatory. 11.30, Weather and News. 11.40 (from Berne), Gramophone Records of Cortot, Busch, Casals, Tito Schipa and Richard Strauss. 12.35 p.m., Weather and Exchange. 12.40 to 2.30, Interval. 2.30 (from Zürich), Concert by the Small Radio Orchestra. 3.30 (from Zürich), Programme for Children. 4.0 (from Zürich), Popular Music on Gramophone Records. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from Zürich), Talk on Books. 6.0, Time, Weather and Market Prices. 6.15 (from Zürich), Elementary English Lesson. 6.45 (from Zürich), Concert of Music by Arthur Honegger, Walter Frey (Pianoforte),

Fritz Reitz (Cello) and Raffaele Terminiello (Clarinet). 8.30, Weather and News, followed by Dance Music with Gramophone Selections. 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relay by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.5 p.m., Folk Music, relayed from Karlstad (217 metres). 4.30, The Practical Corner. 4.45, Popular Music on Gramophone Records. 5.45, Technical Talk. 6.30, Military Band Concert, conducted by Ivar Widner. 7.15, Weather and News. 7.30, Talk, relayed from Göteborg. 8.0, Piano-forte Recital by Josefa Rosanska. 8.30, Talk, relayed from Malmö (231 metres). 9.0, Modern Dance Music. 9.45, Weather and News. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 115 kW.—11.30 a.m., Schubert Concert on Gramophone Records. 12.45 p.m., News Bulletin. 1.0, Time Signal. 1.1, Market Prices. 1.5, Gramophone Concert of Variety Music. 2.0 to 4.45, Interval. 4.45, Talk in German: Electricity. 5.0, Orchestral Concert, conducted by Roskam: March (Siede); Waltz, Acclamation (Waldteufel); Overture, Le Postillon de Longjumeau (Adam); The Dreary Steppe (Gretchaninov); Dance (Gretchaninov); Selection from La Vivandière (Godard); Three Pieces (Gillet): (a) Loin du Bal, (b) Babillage, (c) La fête du hameau; Byzantine Suite, Ilyis (Ganne). 6.0, Variety Concert, relayed from Lille (265.4 metres). 7.0, Legal Talk in French: Indian Politics. 7.15, Light Music on Gramophone Records. 7.30, Time Signal. 7.31, News Bulletin. 7.45, Popular Concert on Gramophone Records. 8.20, Lottery Results and Announcements. 8.30, Symphony Concert, relayed from the Palais des Fêtes; The Municipal Orchestra, the Conservatoire Choir, and Soloists; Conductor: Fritz Münch: Cri du Monde (Honegger); Third Symphony (Brahms). 10.30, Dance Music, relayed from the Savoy. 11.0 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—12.30 p.m., Concert from Langenberg. 1.0, Musical Programme, arranged by the Post Office. 1.15 to 1.50 (from Mannheim), Musical Programme, arranged by the Post Office. 2.30, Dialogue between Bookseller and Reader in connection with Book-Day. 3.0, Programme for Children. 4.0, See Munich. 5.15, Time, Weather and Agricultural Notes. 5.25, Talk: The Army in the Time of the Thirty Years' War. 5.50 (from Freiburg), Talk. 6.15, Time and News. 6.30, Little Known Europe—Provence—a Programme on Gramophone Records. 7.15 (from Freiburg), Die Welt auf dem Monde—Comic Opera in a Prelude and two Acts (Haydn). 8.45 (from Mannheim), Else—Wagner in a Recital of Prolific Songs, with Lute accompaniment. Part I, Das Mannheimer Lied (Else Wagner); Von Wein und Frauen (Gehert); Der Buschsehr (Adolf Kieser); Im Herbst (Else Wagner); Seelewanderung (Else Wagner); Part II, Songs (Else Wagner); Wagner; Part II, Songs (Else Wagner); Wagner; E. Pölzer Werbeplakat; Mei Herzerweiterung; Der ausgekante Kerschkeue; Es Lewerwäseht; Es kleine Bärselche. 9.10, Time and News. 9.45, Concert conducted by Harry Risch. Soloist: Käthe Mann (Soprano) and Walter Maurer (Tenor). 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Airs from Opera: Songs from Rigoletto (Verdi); Si l'était roi (Adam); Werther (Massenet); The Barber of Seville (Rossini). 6.30, Instrumental Music: Andante from the Quartet in G Minor (Debussy); Cheritza (Brou); Moment musical (Schubert); Overture, Poet and Peasant (Suppé); Scherzo (Chabrier); Talk, March (Stravinsky). 7.15, News, Racing Results and Market Prices. 7.25, Local News. 7.30, Accordion Solos. 7.45, Sound Film Music. 8.0, Orchestral Music. 8.30, Songs from Opérettas: Ciboulette (Hahn); Les Mousquetaires au Couvent (Varney); and Véronique (Messager). 8.45, Military Music. 9.0, Concert by the Société La Sirène, conducted by M. Jehac; Light Music in the interval. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Viennese Music. 11.30 to 12 Midnight, Programme in English by the I.B.C. 11.30, The Mad Major (Alford); On the Quarter Deck (Alford); The Empire March (Tulip); Old Comrades (Teike); Le rêve passe (Holmer); Marche Lorraine (Ganne); March, King Cotton (Souza); March, Blaze away (Holzmann). 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5

a.m. (Thursday), Symphonic Music: Danse macabre (Saint-Saëns); Jubel Overture (Brahms); Selection from Schwanda the Piper (Wienberger). 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.0 to 6.0 p.m., See Turin. 6.0, Popular Music on Gramophone Records. 6.20 to 6.35, See Turin. 6.35, Orchestral Music from the Café Dante. 7.0 (approx.), till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relay by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—4.0 to 5.0 p.m., Soprano and Tenor Song Recital. 5.35, Giornale Radio, Agricultural, and Dopolavoro Notes. 6.0, Gramophone Records of Variety Music. 6.20, Giornale Radio. 6.30, Time, Announcements, Tourist Report, and Gramophone Records (contd.). 7.0, Giornale Radio and Weather. 7.15, Medical Talk. 7.30, Comedy in Three Acts, followed by Programme of Orchestral Music: Selection from The Caliph of Bagdad (Boieldieu) Selection from Anima allegria (Vittadini); Selection from The Flower of Hawaii (Abraham); Paleinella (de Nardis); Selection from Napoli canta (de Curtis). 10.0, Giornale Radio. 10.5, Dance Music from the Rajala. 10.30 (approx.), Close Down.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in Spanish. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relay by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.1 metres.—4.0 p.m., Concert by Bernard Wolfstgal and his band: Britanniens-Overture (Scussola); Waltz, Loreley-Rheinklängel (Josef Strauss); Selection from Rigoletto (Verdi); Torch Dance of the Brides of Kashmir (Rubinstein); Dance of the Dervishes (Bendix); Polpoumri of Popular Melodies (Geiger); March, Der Sieger (Muelho). 5.30, Medical Talk. 5.55, Talk for Workers: The Building Trade. 6.20, Time, Weather, and Programme Announcements. 6.30, Talk: The Empress Maria Theresa and German Dualism. 7.0, Bunte Stunde—Talk, Songs, Humorous Items, Whistling Solos and Recital on Two Pianofortes. 8.0, Reading, Satzung (Friedrich Griese). 8.35, Music Notes. 8.45, News, Weather and Announcements. 9.0, Concert by the Vienna Chamber Orchestra, conducted by Rudolf Pelm: Overture, Djamilah (Bizet); Suite in A (Dvorák); Two Pieces for Flute: (a) Melody from Orpheus and Eurydice (Gluck), (b) Aria and Allegro in Old Style (Pech); German Dances (Schubert); Am Sonntag Morgen (Kirchberger); Turkish March (Mozart); Danze Suite (Mraczek); Waltz, Abendsterne (Lammer); Three Pieces (Joh. Strauss); (a) Overture, Indigo, (b) Waltz, Wiener Bonbons, (c) Entry March.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.15, Programme Announcements. 11.40, Light Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.30, Boy Scouts' Report. 2.35, Programme. 3.0, Light Music on Gramophone Records. 3.20, Educational Talk. 3.40, Talk on the United States. 4.0, Pianoforte and Violin Recital by I. Paderewsky and M. Elman on Gramophone Records. In the interval, Announcements. 4.40, Talk: Welfare Work among the Young Unemployed of Vienna and Munich. 4.55, Programme Announcements. 5.0, Talk. 5.20, News. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Report. 6.30, Recitations. 6.45, Radio Journal. 7.0, Welcome Spring! Concert by the Station Orchestra, conducted by S. Nawrot. Soloist: S. Witas (Tenor). Frühlingswache (Bach); March, Frühlings-einkunft (Blon); Waltz, O Frühling wie bist du so schön (Lincke); Rustle of Spring (Sinding). Tenor Solos: (a) Song (Maszynski), (b) Serenade (Niewiadomski); An der Frühling (Grieg); Frühlingsstimmen (Joh. Strauss); Spring Song (Mendelssohn); Entry of the Spring Flowers (Kockert). Tenor Solos: (a) The Violet (Niewiadomski), (b) Spring (Mahlowy), (c) May Idyll (Kossobudzky); Spring Suite (Nevin-Artok); March, Frühlingskinder (Blankenburg). 8.15, Sports Notes. 8.20, Radio Journal. 8.25, Chamber Music relayed from Lwów, 381 metres. 9.15, Topical Talk. 9.30, Dance Music. 9.40, Talk in Modern Greek: Joseph Pilsudski. 9.55, Weather Report and Police Notes. 10.0, Dance Music. 11.0 (approx.), Close Down.

WILNO

563 metres; 16 kW.—5.55 p.m., Miscellaneous Items. 6.0, Reading. 6.10, Miscellaneous Announcements. 6.15, Theatre Talk. 6.30, See Warsaw. 10.5, Humorous Talk. 10.35, See Warsaw.

ZURICH.—See Schweizerischer Landessender.

ATHLONE

Call 2RN (413 metres), 60 kW.; and GORK, 224.4 metres.—1.30 to 2.0 p.m., Time, Weather, Stock Report, Variety Music on Gramophone Records and Grand National Sweep Results. 6.0, Light Music on Gramophone Records. 6.15, Programme for Children. 7.0, Popular Music on Gramophone Records. 7.10, Dublin Cattle Market Report. 7.20, News Bulletin. 7.30, Time Signal. 7.31, French Lesson. 7.45, Literary and Dramatic Talk. 8.0, The Station Orchestra. 8.30, Soprano Solos by Hilda Dorrian Dawson. 8.45, Violin Solos by Sydney Rosehill. 9.5, Variety Programme by the Leinster School of Music. 9.35, The Station Orchestra. 9.50, The Green Field—Play by Gabriel Fallon and Company. 10.20, The Station Orchestra. 10.30, Time, News, Weather and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations and Educational Talk in Catalan. 8.0, Light Music on Gramophone Records and News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 9.5, Concert by the Station Orchestra. 10.0, La Negra—Comedy in Three Acts (J. F. del Villar). 11.0 (in an interval), News Bulletin. 12 Mid-night (approx.). Close Down.

BARI

370 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Talk and Dopolavoro Notes. 7.20, Giornale Radio and News Bulletin. 7.30, Time Signal and Announcements. 7.35, Military Band Concert, conducted by Salvatore Rubino; Fifth Symphony (Beethoven); Selection from Rigolotto (Verdi); Andante and Minuet from the Quartet in D for Strings (Mozart); Spanish Suite in Three Movements, La Fera (Lacome); Waltz, Idillio (Franco Valentini Vista). In the interval, Literary Talk. 9.30, Light Music on Gramophone Records. 9.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

480.4 metres; 2.8 kW.—4.0 p.m., Talk. 5.25, Time and Programme Announcements. 5.30, Dialogue in French. 6.0, Popular Music on Gramophone Records. 6.30, Recital of Folk Songs. 7.5, See Vienna. 9.0 (approx.), News.

BERLIN

KONIGS WUSTERHAUSEN, 1.635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert from Berlin (Witzleben). 2.0, Musical Programme for Children. 2.30, Weather and Exchange. 2.45, Reading (Jörk Wickramx). 3.0, Talk for Women. 3.30, Concert from Berlin (Witzleben). 4.10, Talk: The Political Struggle against the War Guilt Accusation. 4.30, Sonata in D Minor for Violin and Piano, Op. 121 (Schumann). 5.0, Advanced Shorthand Lesson. 5.30, String Quartet (Rudolf Peterka). 5.55, Weather and Announcements. 6.0, Talk: German for Germans. 6.30, A Poem. 6.35, Agricultural Talk. 7.0, Berlin at Work by Night—a Radio Report. 7.40, Talk on the following Relay. 8.0, See Munich. 8.40, Hans Voss reads from Edda. 9.10, Weather, News and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Dances from Hamburg. 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—1.0 p.m., Gramophone Concert. 1.55, Exchange and Agricultural Prices. 2.20, Talk for Housewives: Protection against Accidents in the House. 2.35, Concert by the Franz Stepani Orchestra: Waltz, Marienklänge (Jos. Strauss); Selection from Martha (Flotow); The Hermit (Schmalstiel); Potpourri, Deutscher Kampf im Lied (Stepani); Badenweiler Marsch (Fürst). 3.15, Gardening Talk. 3.30, Max Reger Organ Recital by Walter Drzewski: Sonata in D Minor, Op. 60; Benedictus and Gloria from Op. 59. 4.5, Pianoforte Recital by Hermann Hoppe: Four Pieces from Op. 14 (Draeseke); Romance, Op. 59, No. 1 (Graener); Three Intermezzi from Op. 77 (Graener). 4.30, Talk by Hermann Claudius: Examples one should follow in Real Life. 4.50, Talk for Young People. 5.10, Hugo Rasch Song Recital by Eva Liebenberg (Contracto): Songs to Words by Wilhelm Busch; Der schöne Sommer ging von ihnen; Ich ging zur Bahn; Ich kam in diese Welt herein; Es flog einmal ein muntres Fliegl; Wenn ich dereinst. 5.30, Herbert Menzel reads from his own Poems. 5.45, Magdeburg Programme. 5.55, The Berlin Station informs its Listeners. . . . 6.0, Topical Talk. 6.10, Talk: Should there be a Uniform Armament System for Continental Europe? 6.30, Concert by the Police Symphony Orchestra, relayed from the Academy of Music; Conductor: Erich Boehlke. 8.15, Announcements. 8.20, Sunshine and Shadow—Pictures of the Welfare Work in a Great City. 9.20, Weather, News, and Sports Notes. 9.30 (approx.), Dance Music by Three Bands, on Gramophone Records. 11.0 (also relayed by Zeesen on 31.38 metres). Repetition of The Call—Radio Picture (Hermann Kasack),

THURSDAY

MARCH THE TWENTY-THIRD

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Mr. J. Gielgud: "Macbeth from the Actor's Point of View." "Three Soldiers," a play by L. du Garde Peach. Mr. Vernon Bartlett: "Leaders in Other Lands."

LONDON REGIONAL "Jubilation of Fifty Years of Boyhood." Hallé Pensions Fund concert.

MIDLAND REGIONAL Concert from Queen's College, Birmingham. Light musical programme.

NORTH REGIONAL Hallé Pensions Fund concert from Manchester.

WEST REGIONAL Concert from New Siloh Chapel, Laudore, Swansea.

SCOTTISH REGIONAL "Dr. Johnson's Secret," a romantick play by Moray McLaren. Reid Orchestral concert. Vaudeville programme.

BELFAST 7.35 p.m. Military Band concert.

BARI 8.25 p.m. Relay of "Parsifal" (Wagner), from Geneva.

MUNSTER 9 p.m. The Symphony Orchestra, conducted by J. Kumps.

BRUSSELS (No. 1) 8 p.m. Concert from the Institut de Notre Dame aux Epines.

BRUSSELS (No. 2) 7.10 p.m. The Radio Symphony Orchestra.

COPENHAGEN 9.25 p.m. Concert by the Joseph Haydn Orchestra, from Amsterdam.

HUIZEN 8 p.m. Opera: "Manon" (Massenet), on gramophone records.

RADIO-PARIS 7.45 p.m. Symphony concert, conducted by R. Santarelli.

ROME 8.45 p.m. Extract from opera: "Thais," by Massenet.

TOULOUSE 7.35 p.m. Military Band concert.

ABROAD

arranged by Ottoheinz Jahn, Music by Karl Krauer.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE 304 metres; 13 kW.—7.30 p.m., News and Exchange. 7.40, Talk for Workers. 7.55, Lottery Results. 8.0, Talk on Wines. 8.15, News and Weather. 8.30, The Dolls' House—Play in Three Acts (Hsen).

BRATISLAVA 279 metres; 14 kW.—5.5 p.m., Henri Martean Recital by G. Artardiev (Violin), B. Beza (Flute), and L. Kratochvílova (Viola). Divertissement for Flute and Violin, Op. 42; Trio for Flute, Violin and Viola, Op. 32. 5.35, Readings from New Slovak Books. 6.0, See Prague. 6.10, Gramophone Records of Popular Music. 6.25, See Prague. 9.15, Light Music on Gramophone Records. 10.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU 325 metres; 60 kW.; and GLEIWITZ, 253 metres.—12.10 p.m., Weather Report. 12.15, Orchestral Concert, conducted by Hermann Behr: Overture, Orpheus in the Underworld (Offenbach); Waltz from The Rose of Stamboul (Fall); Two Minnets (Boccherini); Quick Polka, Mutig voran (Joh. Strauss). 12.45, Time, Weather, News, and Exchange. 1.5, Gramophone Concert in Blue: Rhapsody in Blue (Gershwin); Valse bleue (Margis); Cornflower Song (Mylius-Krigger); Contralto Solo, Das Veilchen (Mozart); By the Blue Hawaiian Waters (Ketchey); Blues, Blue Night (Rollins); Blau, blau, himmelblau—Duet from Frühlingsstürme (Weinberger); The Blue Danube (Joh. Strauss). 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Market Prices. 2.40, Talk: Suggestions for Spring Rambles. 2.50, Review of Books. 3.10, Concert, conducted by Franz Marszalek: Potpourri, Memories of Potsdam (Noack-Kirsch); Tango Serenade, Bolivia (Castaldo); Potpourri of Student Songs and Marches (Thiele); Paraphrase on Tom the Rhymer (Homann-Webau); Valse Boston, Singende Wasser (Schmitt); Intermezzo, The Old Musical Clock (Humphries); Selection from Hotel Stadt Lemberg (Gillert). 4.0, Wurst wider Wurst—Radio Play for Children (Lisa Tetzner). 4.30, Market Prices. 4.35, Chamber Music: Tallahassee—Suite for Violin and Pianoforte (Cyril Scott); Three Movements from the Suite to Pictures by Carl Spitzweg, Op. 84 (Walter Niemann). 4.55, Talk: Old and New Viols. 5.20, Topical Talk. 5.35, Talk: The Position of Employees' Cases of

Bankruptcy. 6.0, Talk: School Conditions among the Expatriated Germans of the East European States. 6.30, Weather Report. 6.35, Concert, conducted by Franz Marszalek: Overture, Abu Hassan (Weber); Selection from Tiedland (d'Albert); Valse triste (Sibelius); Ballet Suite, Faun and Elfenreigen (Karl); Violin Solo: Schön Rosmarin (Kreiser); Potpourri of Marching Songs, Jung-Deutschland (Weninger). 7.30, From the Gramophone Archives of the Breslau Station. 8.30, News Bulletin. 8.40, Songs by the Usinger Quartet. 9.0, Time and News. 9.20, Talk in Esperanto. 9.30, Talk: Spring in the Bartsch Valley. 9.50 (approx.), Close Down.

BRNO 342 metres; 35 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by J. Janota. Soloists: Oldrich Slavicek (Flute). Overture, Iphigenia in Aulis (Gluck); Suite in B Minor for Flute and String Orchestra (Bach); Symphony No. 8 in B Minor—the Unfinished (Schubert). 4.10, News for Young People. 4.20, Programme for Children. 4.50, Talk on Sociology. 5.0, Literary Review. 5.15, See Prague. 5.25, German Transmission: News and Recital of Songs by Silesian Composers. 6.25, Harpsichord Recital. 6.40, See Prague. 8.0, Programme of Sailors' Songs. 8.20, Evening and Night—Concert by the Station Orchestra, conducted by Bakala. Soloists: A. Korcek (Songs) and E. Walter (Recitations). 9.0, See Prague. 9.15, Light Music on Gramophone Records.

BRUSSELS (No. 1) I.N.R.; 509 metres; 15 kW.—12 Noon, Gramophone Concert of Light Music. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Pierre Leemans: Pablo—Paso flamenco (Rossi); Japanese Suite (Yoshitomo); Serenade, The Stolen Kiss (Dearly-Leslie); Suppé Potpourri (Michaelov); Gavotte for Cello (Popper); Liebst, glaub' an mich! Schön ist die Welt (Lehár); Waltz, Dolly (Langlois); In der kleinen Bar, from Schön ist die Welt (Lehár). 5.0, Concert by the Symphony Orchestra, conducted by Jean Kumps; Symphony in E Flat (Mozart); Overture, Figaro (Mozart). 5.30, Programme for Children. 6.0, Talk: The Life of a Child. 6.15, Gramophone Concert, Chanson du pecheur (Fauré); Ich hab' im Traum geweinet (Schumann); Clair de lune (Fauré); Scherzo in E Minor (Mendelssohn); Allegro appassionato (Saint-Saëns). 6.30, Concert by the Little Station Orchestra, conducted by P. Leemans: Overture, A Night in May (Rimsky-Korsakov); Le colibri (Chau-son); Elgye, Le lac d'amour (La Gye); Spanish Caprice (Grandos); Sicilienne, for Flute (Gaubert); Grotesque Dance (Schmitt); La jota aragonesa (Saint-Saëns). 7.15, Talk for Workers. 7.30, Sports Review. 8.0, Concert by the

Little Station Orchestra, conducted by Pierre Leemans: Finlandia (Sibelius); Prelude to La damoiselle élue (Debussy); Suite for Violin (Pergolesi-Stravinsky); Adagio for Clarinet and String Quintet (Wagner); Bourrée fantasque (Chabrier). 8.45, Talk by M. Collard. 9.0, Concert by the Symphony Orchestra, conducted by Jean Kumps: Overture, Der Freischütz (Weber); Allegro from the Italian Symphony (Mendelssohn); Interlude for Viola da Gamba (Mendelssohn); Overture, Le Carnaval romain (Berlioz). 9.0, Le Journal Parlé. 10.10, Gramophone concert. Part I: Old and Modern Dance Music. Part II: Three Symphonic Sketches, La Mer (Debussy).

BRUSSELS (No. 2)

N.I.R.; 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Concert by the Little Station Orchestra, conducted by P. Leemans: Waltz, Dorfischwalben aus Oesterreich (Jos. Strauss); Two Eastern Dances (Heyke); Potpourri, Zoo singt Holland (Sluyster); Negro Song (Clutsam); Bolero for Pianoforte (Chopin); Waltz, Les Patineurs (Waldteufel). 1.0 p.m., Le Journal Parlé. 1.10, Sacred Music, on Gramophone Records: Die Ehre Gottes in der Natur (Beethoven); Ad nos ad salutarem (Liszt); Tantum ergo (de Vittoria); I call upon thee, Jesus (Bach); The Lord is King (Brünnig). 1.30, Gramophone Records: Iberia (Albéniz); Ballet Music from Namouna (Lalo); Norwegian Rhapsody (Lalo). 5.0, Concert by the Radio Orchestra, conducted by Franz André: Potpourri, Hallo 1930 (Borchert); Overture, Morning, Noon and Night (Suppé); Waltz, Dolores (Waldteufel); Waltz, Künstlerleben (Joh. Strauss); Heinzelmännchens Waschparade (Noack). 5.45, Programme for Children. 6.30, Catholic Programme for Children. 7.15, Talk. 7.30, Programme for Women. 8.0, Concert relayed from the Institut de Notre Dame aux Epines, Ecceio: Prelude and Fugue in C Minor (Bach); Piece (Vondel); Allegro from the Sonata in C, Op. 2, No. 2 (Bach); Nieuwe Lente (Meulemans); Etude in C, Op. 10, No. 7 (Chopin); Magnificat (Verhoeven); Bede (Van Schellema); Godeleue (Tiel); Près de la source (Moret); Five Melodies (Gezelle-Mortelmans). 9.15, Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, Der Freischütz (Weber); Suite enfantine (Pierlé); Béghine in Chiesa (Signorini); Romanian Dance No. 3 from the Sonata (Negru); Jewish March (Jora); Scenes Napolitaines (Massenet). 9.55, Evening Prayer. 10.0, Le Journal Parlé. 10.10, Sound Film Music on Gramophone Records. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Light Music and Romanian Music by the Dinico Orchestra. 5.0, News and Time Signal. 5.25, Light Music (cont'd.). 6.0, Talk: Romanian Poetry. 6.40, Manon Lescaut—Opera (Puccini), on Gramophone Records. In the intervals, News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 840 metres from 6.30 p.m. till Close Down.—6.0 p.m., Guitar Recital. 6.30, Talk. 7.5, Programme from Vienna. 8.0, News Bulletin. 9.15 (approx.), Czányi Concert from the Hotel Dumapalota. 10.15, Dance Music from the Hotel Dumapalota. CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1.153 metres; 7.5 kW.—11.0 a.m., Time Signal and Chimes from the Town Hall. 1.2, Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. 1.0 to 2.0, Interval. 2.0, Pianoforte Recital by Esther Wagnig: Nocturne in F Sharp, Op. 15, No. 2 (Chopin); Novelette in E (Schumann); Aufschwung (Schumann); Waltz, Frühlingstimmen (Joh. Strauss-Grünfeld). 2.20, Concert by the Teddy Petersen Orchestra, relayed from the Willex Restaurant. 4.0, Programme for Boys. 4.40, Exchange and Fish Market Prices. 4.50, Talk: Herrings and the Herring Fishery. 5.20, English Lesson. 5.50, Weather. 6.0, News. 6.15, Time Signal. 6.16, Talk: The Protestant Religion in Germany. 6.45, Danish Lesson. 7.10, Twenty-fourth Concert from the State Broadcasting Building; The Radio Symphony Orchestra, conducted by Elich Kleiber; Soloists: Marguerite Pernas (Songs); Overture, Figaro (Mozart); Aria from The Hugenots (Meyerbeer); Symphony in E Minor, No. 5, Op. 95, from From the New World (Dvořák); Overture, Polka and Fugue from Schwanda, the Piper (Weinberger); Waltz, Tales from the Vienna Woods (Joh. Strauss); Waltz from Der Rosenkavalier (R. Strauss). 9.15, News. 9.30, Readings. 9.50, Dance Music by the Otto Lington Band, relayed from the Illz Restaurant. 11.30 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—6.0 to 7.0 p.m., Programme in English by the I.B.C.: C. Danvers Walker, B. McNabb and F. Lamping announcing. 6.0, Light Orchestral Concert for Brighton listeners: Waltz, The Blue Danube (Joh.

MARCH 23rd

THURSDAY

continued

Strauss); The Wedding of the Rose (Jessel); Bells across the Meadow (Kettelbey); In Pierrette's Garden (Brookes); Serenata (Moszkovsky); Devotion (Kettelbey); Columbine (Garland); Moonlight on the Alster (Fetras); 6.50, Concert for Home listeners: The Future Mrs. Awkins (Chevalier); Just a Dancin' Sweetheart (Tobias); My Old Dutch (Chevalier); My Old Irish Mother (O'Donnell); Lily (Sarony); Lily of Laguna (Stuart); Poor Kid (Gilbert); Little Dolly Daydream (Stuart); 7.0, Programme in French. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0, Dance Music: For the Love of Mike; Come and have a Cuddle on the Common; This is the Day of Days; On a Cold and Frosty Morning; Honeydew Lane; Speedboat Bill; Just once for all Time; The Pagan Serenade; Hold my Hand; Roll on Mississippi, roll on; I've got a Feeling; The Lights of Paris; Selection, Miracle Melodies; The same as we used to do; Blaze Away. 11.0, Orchestral Concert: First Waltz Potpourri (Robrecht); Dancing Doll (Poldini); The Rose-Beetle goes a-wooing (Armandoia); Demande et réponse (Coleridge-Taylor); On wings of Song (Mendelssohn); Siciliana Serenata (Schmatstich); Poeme (Fibich). 11.30, Song Recital: Orchestra: What's Next? (arr. Finck); Songs: (a) 'Hoain' (Richards), (b) The Village Blacksmith (Weiss), (c) I'm a Roamer (Mendelssohn), (d) Leamin' (Sterndale Bennett), (e) The Windmill (Nelson), (f) The Company Sergeant-Major (Sanderson). 12 Midnight, Variety Programme: Orchestra: Old Times (arr. Griffiths); Harmonica Duet: Polly (Zamcenik); Sketch, Corporal Hoskins; Song: Cooking Breakfast for the one I Love; Steel guitar Solo: Dear old Pal of Mine (Robe); Song: When a Woman Loves a Man. 12.30 a.m. (Friday), Popular Songs: I'm Walking in the Sun; Lovin' you the Way I do; Overnight; More than you know; They'll all be there but me; Back to Gay Paree; You'll be mine in Apple Blossom Time; We're Uncomfortable. 1.0, Organ Recital: The Match Parade (Wehle); Home (Steeden); The White Dove (Grey-Lehar); Trees (Rasbach); On Wings of Song (Mendelssohn); There's Nothing New in Love (Maclean); Roses of Picardy (Haydn Wood); The Butterfly Waltz (Raiton). 1.30, Popular Songs: Could I be Happy? (Donaldson); Got the Bench (Donaldson); If the World belonged to Me; You Didn't have to tell Me (Donaldson); Fanny the Fairy Queen (Hamilton); Please Don't Talk about Me; You forgot your Gloves (Hamilton); Walking my Baby back Home. 2.0, Light Music: Just hummin' Along; What makes you so Adorable?; The King was in the Counting House; Don't tell a Soul; When the Rest of the Crowd goes Home; Hoch Caroline; Hummin' to Myself; Sing Brothers; Long Ago; Night shall be Filled with Music; Marta; Looking on the Bright Side; Shadows on the Window; How are you? 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

259.3 metres; 17 kW; CASSEL, 245.9 metres; and TRIER, 259.3 metres.—2.30 p.m., See Stuttgart. 3.50, Economic Notes. 4.0, See Munich. 5.15, Economic Notes. 5.25, Discussion between Pastor René Wallau and Dr. Wilhelm Michel: Protestant Writings of Today. 5.50, Talk: State Subsidies for Repairing House Property. 6.15, Time, Programme Announcements, Weather and Economic Notes. 6.30 to 9.10, See Stuttgart. 9.10, Time, News, Weather and Sports Notes. 9.30 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres, and Kiel, 232.2 metres.—4.30 p.m., Talk: From the Pacific Ocean to Amazonas. 4.55, Heinrich Bredow Programme, on the Occasion of the Poet's Birthday: Würdigung (Janssen); Two Poems: (a) Gebet, (b) An den Schmerz; Two Songs (Lorenz): (a) Das Auge der Liebe, (b) Ilingahe; Der Flieder blüht; Huldigung (Jacobs-Pracht); Two Poems from Die Kette, a Cycle of the Months: (a) Februar, (b) März; Lied des Dichters (Germer); Ein reizender Abend; Two Songs (Erden): (a) Das Stelldichein, (b) Christel. 5.25, Review of Books on the English and French Revolutions. 5.55, Exchange. 6.0, Talk: The Woman as a Welfare Worker. 6.25, Weather. 6.30 (from Bremen), Beethoven Pianoforte Recital by Ella Thies: Seven Bagatelles, Op. 33 (Beethoven); Eleven New Bagatelles, Op. 119 (Beethoven). 7.0, The Other Kleist—Radio Sequence (Alfred Mühr). 8.0, See Munich. 8.40, Reading: Der Feld der Ehre (Walther G. Klucke). 9.0, Time, Weather, News, Sports and Police Notes. 9.20, Topical Talk. 9.30, Concert of

Dances by the Station Chamber-Orchestra, conducted by Gerhard Maass. In an interval at 10.20, Ice Report.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—12.5 p.m., Popular Music on Gramophone Records. In the interval at 12.20, News. 1.30 to 2.0, Interval. 2.0, Agricultural Prices and Exchange Rates. 2.30 (from Danzig), Talk: Chemistry in the Household. 3.0, Talk: Opportunities for the German Engineer Abroad. 3.30 (from Danzig), Concert by the Danzig Municipal Orchestra, conducted by Otto Selberg. Overture, The Siege of Corinth (Rossini); Barcarolle from The Seasons (Tchaikovsky); Valse triste from Kuolena (Tärnfelt-Sibelius); Swedish Wedding March (Södermann); Serenade (Moszkovsky); Prelude to Act Five of The Sunken Bell (Zöllner); Symphonic Poem, The Pied Piper of Hamelin (Geisler); Prelude and Serenade from The Snow Man (Korngold); Schallwellen-Walzer (Joh. Strauss); Potpourri, Round the World (Yoshitomo); Deutscher Reitermarsch (Krüger). 4.50, Medical Talk. 5.15, Agricultural Prices. 5.20, Ice Report. 5.30, Agricultural Talk. 6.0 (from Danzig), Recital of Old Dutch Peasant Songs and Contradances by Henry Prins (Violin) and Ella Mertius (Pianoforte). 6.30, English Lesson for Beginners. 6.55, Weather and News. 7.0, Dance Music by the Small Station Orchestra, conducted by Eugen Wilken, and the Emdur Runde Band. 8.30, News. 8.40, Talk, with Gramophone Illustrations: Haydn's Spieluhr. 9.15, Weather, News and Sports Notes.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—11.55 a.m. to 1.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.55, Orchestral Concert, conducted by J. Gerritsen. Per aspera ad astra (Urbach); Overture, The Black Domino (Auber); Waltz from Die ideale Gattin (Lehar); Selection from Benvenuto Cellini (Diaz); Extract from the Emperor Quartet (Haydn); Gramophone Records; Heil Europa (v. Blon); Hungarian Comedy Overture (Kéler-Béla); Pomona (Waldteufel); Sonnets (de Tave); Silver Cloud (Kettelbey); Saug und Klang aus dem Osten (Eberle); Selection from Boccaccio (Suppé). 1.40 till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 1.40, Lesson in Handicrafts. 2.40, Programme for Women. 3.10 to 3.40, Interval. 3.40, Bible Reading and Song and Organ Recital by Mlle. de Jager and M. Gorter. 4.40, Song Recital by M. Willem Snoeks (Tenor). 5.25, Handwork Lesson for Young People. 5.55, Talk. 6.25, Dress-making Lesson. 6.40, Press Review. 7.10, Police Notes. 7.25, Religious News. 7.40, Variety Music on Gramophone Records. 8.10, Talk: Leo Tolstoj. 8.40, Light Music on Gramophone Records. 8.55, Talk on Leo Tolstoj (contd.). 9.25, Concert by the Joseph Haydn Orchestra, relayed from Amsterdam. Conductor: D. H. P. Kiekens. Coronation March (Meyerbeer); Song (Haydn); Overture, Coci fan tutte (Mozart); Adagio (Beethoven); Two Airs from Rosa mundi (Schubert); Scandinavian Suite (Juel-Fredriksen); Wegwood Blue (Kettelbey); Morris Dance (German); March (Holzmann). In the interval at 10.0, News Bulletin. 10.40, Variety Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW. Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—11.40 a.m., Concert by the Wireless Orchestra conducted by Nico Treep; Soloist: Gino Balma (Tenor): March, Blaze Away (Holzmann); Overture, The Italian Girl in Algiers (Rossini); March of the Dwarfs (Moszkovsky); Waltz, Brune aux blonde (Waldteufel); Songs: (a) Elfengeflüster (Rhode), (b) The Happy Frog (Häuf), (c) Minuet (Boellmann), (d) Clair de lune (Kettelbey); Selection from Samson and Delilah (Saint-Saëns); Entry March of the Boyards (Halvorsen); Songs: Selection from La Fille de Madame Angot (Lecocq), Moute Christo (Kotlar); Two Pieces (Fetras): (a) Clog Dance, (b) Künstlerlaune; The Juggler (Rosey). 1.55 to 2.10 p.m., Interval. 2.10, Variety Music on Gramophone Records. 2.40, Dressmaking Lesson. 3.25, Gramophone Records (contd.). 3.40, Talk. 4.10, Pianoforte Recital by Willem Zonderland. 4.40, Programme for Children. 5.10, Concert by the Wireless Orchestra conducted by Nico Treep: Smoky mokes (Holzmann); Ballet russe (Luigini); Dream Waltz (Müllöcker); Melody (Burgess); The Oasis (Wisnar); Was Blumen träumen (Translatour); Serenade (Heykens); Selection from Countess Maritza (Kálmán). 6.10, Talk on Sport. 6.40, Concert by the Wireless Orchestra conducted by Nico Treep: Overture to a

Comedy (Keler-Bela); Selection from Das süsse Mädel (Reinhardt); Meditation from Thais (Massenet); March Treueschwur (Rust). 7.10, English Lesson. 7.40, Time Signal and News. 7.45, Gramophone Records of Light Music. 7.55, Concert by the Wireless Orchestra conducted by Pierre Monteux; Soloist: Charles Panzéra (Tenor): First item to be announced; Invocation and Hymn to the Sun from Les Indes Galantes (Rameau); Italian Serenade (Wolf); Les prières (Caplet); Gramophone Records of Variety Music. 9.40, Concert by Kovacs Lajos and his Orchestra, with Interlude by the Harmony Kings; relayed from the Tivoli, Utrecht. 10.40, News Bulletin. 10.50, Gramophone Records of Variety Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna. KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., Sports Notes. 6.15, Announcements and Gramophone Records. 6.25, Announcements for Boy Scouts. 6.30 to 9.35, See Warsaw. 9.35, Dance Music, relayed from the Café Monopol. Conductor: Sigismund Schatz. KIEL.—See Hamburg. KLAGENFURT.—See Vienna. KOSICE.—See Prague.

LAHTI

1,796 metres, 40 kW.; and HELSINKI, 368.1 metres.—6.5 p.m., Cello Recital. 6.30, Recitations. 6.50, Song Recital by Esteri Parviainen. 7.10, Gramophone Records of Popular Music. 7.45, News in Finnish and Swedish. 8.20, Concert from Copenhagen.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert conducted by Wolf: Overture to an Italian Comedy (Keler-Bela); Selection from Fra Diavolo (Auber); Selection from Coppélia (Delibes); Petite Suite de Concert (Coleridge-Taylor); Waltz, Doumaisen (Fucik); Selection from The Land of Smiles (Lehar); Westfalenmarsch (Blankenburg). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Exchange and Time Signal. 2.50, Programme for Children. 3.20, Notes on the Broadcasts for Schools. 3.35, Talk: Educational Leaders of To-day. 4.0, Concert from Munich. 5.20, French Lesson. 5.45, Weather, Time, Exchange, and Sports Notes. 6.0, Talk: Crises in the history of Art. 6.20, Talk: The German Catholic Women's Movement. 6.30, Review of World Economics 1932. 6.55, First General News. 7.0, The World on Gramophone Records—On an Estancia in Argentina. 7.30, Gramophone Concert of Popular Music. 8.20, See Berlin (Witzleben). 9.25, News and Sports Notes. 9.45, Songs and Poems. 9.50, Serenade conducted by Wolf. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319 metres.—11.0 a.m., Mozart Opera Music on Gramophone Records. 12.15 p.m., Concert of Waltzes and Marches on Gramophone Records. Exchange Quotations after the Concert. 1.0, Film Review. 1.30, Talk for the Unemployed. 2.0, Reading: Affchen Schnutti (Grete Köster). 2.35, Exchange and Market Prices. 3.0, Concert by the Leipzig Symphony Orchestra, conducted by Willy Steffen: Comedy Overture (Reznicek); Italian Sketches (Beilshmidt); Festival Overture (Meyer-Ambros); Nepomuk Suite, Op. 49 (Moellendorf); Carnival in Paris, Op. 9 (Svendsen); Parade March (Richard Strauss); Serenade for Strings (Handke). 4.30, Weather and Time. 4.50, Exchange Quotations. 5.0, Talk on First Aid in Car Accidents. 5.15, Notes for Tappayers. 5.30, Spanish Lesson. 5.50, Programme Announcements. 6.0, Talk: Social Insurance. 6.30, Rudolf Jeremias Kreutz reads from his own Works. 7.5, See Vienna. 8.45, Topical Review. 9.5, News. 9.20 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 7 kW.—5.30 p.m., Italian Lesson. 6.0, Talk on Economics. 6.30, Light Music on Gramophone Records. 7.0, Missa Solennis (Foerster)—Oratorio for Choir and Orchestra, relayed from a Church. 9.0, Time, News, and Light Music.

LWOW

381 metres; 16 kW.—6.15 p.m., Miscellaneous Items. 6.30, See Warsaw. 7.5, See Vienna. 8.0, See Warsaw. 8.15, See Vienna. 8.45, See Warsaw. 10.30 (approx.), Close Down.

MADRID

ARANJUEZ (EAQ); 30.43 metres; 20 kW.—10.30 till Close Down, Programme arranged by the Spanish-American Radio Society. Details to be announced. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Programme for Children, and Request Gramophone Records. 8.15, News Bulletin and Political Review. 8.30 to 9.0, Interval. 9.0, Linguaphone English Lesson. 9.30, Chimes, Time, and Political Review. 9.45 (approx.), Confessions before the Microphone, by M. Sanchez de Palacios, with Maria Badia, Estrella Rivera, Arregui, Marcen, and Moreno Torroba, followed by Band Concert relayed from the Hotel Nacional. 11.45, News. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm. MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—5.30 p.m., German Transmission—Discussion: Can Wireless replace the Newspaper? 6.0, See Prague. 8.0, Orchestral Concert, conducted by J. Plichta. 9.0, See Prague. 9.15, Light Music on Gramophone Records. 10.0 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—4.30 p.m., Radio Scenes with Music. 6.30, Concert, relayed from the Conservatoire. 8.0, Review of the Week and Answers to Correspondents in French. MOTALA.—See Stockholm. MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—4.0 p.m., Concert, conducted by Erich Kloss. Overture, Die Matrosen (Plotow); Pictures from an Exhibition (Mussorgsky); Fantasia, Ein Denkmal für Franz Liszt (Urbach); Lullaby (Moszkovsky); Ballet Music from Ritter Pasman (Joh. Strauss); Rustle of Spring (Sinding); Waltz from the Serenade (Volkmann); Heroischer Marsch (Schubert). 5.15, Talk on Apprentices. 5.35, Agricultural Talk. 5.55, Time, Weather and Agricultural Report. 6.5, Talk: A Voyage on a Sailing Ship. 6.25, Concert by a Police Band, conducted by Max Windisch. March, Mit Eichenlaub und Schwertern (v. Blon); Overture on a Thuringian Folk Song (Lassen); Military Marches (Kaiser); Potpourri of Soldier Songs, 1914-18. (Reeg); Bavarian Tattoo. 7.35, La Boite à Joux, Suite for Pianoforte (Debussy), by Karl Weiter, with Verse by P. P. Althaus. 8.0, Symphony in C Sharp Minor, Op. 36a. (Pfitzner), by the Munich Philharmonic Orchestra, conducted by the Composer, relayed from the Tonhalle. 8.40, Talk: Casting Horoscopes. 9.0, Soprano and Tenor Duets by Lucie Hartmann and André Kreuchauf. Selig wir from Acis und Galatea (Händel); Two Duets (Schubert): (a) Nur wer die Sehnsucht kennt, (b) Licht und Liebe; Two Duets (Schumann): (a) Er und sie, (b) Die tausend Gräze. 9.20, Time, Weather, News and Sports Notes.

NAPLES.—See Rome. NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—4.0 p.m., Concert by the Station Orchestra, conducted by Hugo Kramm: Overture, Queen for a Day (Adam); Selection from Cavalleria Rusticana (Mascagni); La lettre de Nanon (Gillet); Solveig's Song (Grieg); Norwegian Dance (Grieg); Spring Song (Mendelssohn); A Sunny Day in the Fjord (Reiderson); Waltz, Rendez-vous (Waldteufel); March (Mascagni). 5.0, German Lesson. 5.30, Divine Service, relayed from Trondheim (495.8 metres). 6.0, Announcements, Weather, and News. 6.30, Concert of Light Music. 7.0, Time Signal. 7.1, Talk on Poultry Keeping. 7.30, Sacred Concert, relayed from the Bragenes Church, Drammen; Mlle. Gunvor Mjelva (Soprano) and Mr. Conrad Barden (Organ). 8.40, Weather and News. 9.0, Topical Talk. 9.15, Talk. 9.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—7.0 p.m., Dopolavoro Notes, Agricultural Report and Giornale Radio. 7.20, Popular Music on Gramophone Records. In an interval at 7.30, Time Signal and Announcements. 7.45, Concert of Operetta Music: Selection from (a) La Fille de Madame Angot (Lecocq), (b) Frasquita (Lehar). 9.30, E Concabella perdetta la sua pace—Comedy in One Act (Franco Caraci). 10.0, Concert of Operetta Music (contd.); Extracts from (a) Ave Maria (Bettinelli), (b) The Bayadere (Kálmán). 9.55, News Bulletin.

PARIS

EIFFEL TOWER; Call FLE; 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Le Journal Parlé,

MARCH 23rd

THURSDAY

continued

7.20, Weather Report. 7.30, Gramophone Concert: Selection from Martha (Piotov): The Chocolate Soldier (O. Strauss); The Merry Widow (Lehar); Le grand Mogol (Audran); The Czarevitch (Lehar); White Horse Inn (Stolz-Benatzky); La Vie Parisienne (Offenbach); La Pêrèche (Offenbach); La Fille de Madame Angot (Lecocq); Parade de la mère l'Oie (Bréan); and Coup de roulis (Messager); Humorous Monologues (Marsauche): (a) Une visite instructive, (b) En dernière heure; Kasbek (Camph); Schatzwalzer (Joh. Strauss); The Wedding of the Winds (Hall); Baedo (Caro); Waltz, Paulette (Cartes); Terra Hispana (Santis); Viennese Waltz Potpourri (Robrecht). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN; 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Programme for Children. 7.30, Talk in Esperanto. 7.40, Popular Music on Gramophone Records. 8.0, Agricultural Talk. 8.15, Interval. 8.30, Nos vingt ans—Play in Four Acts (Edmond Gairaud). 10.30, News.

PARIS

RADIO PARIS; Call CFR; 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd). 7.45, Gramophone Records: Interlude from Act I of Pelléas et Mélisande (Debussy); Sarabande (Ducasse). 8.0, News and Weather. 12 Noon, Protestant Address. 12.30 p.m., Orchestral Concert: Album for the Young (Schumann); Histoires (Ibert); Music for Guignol (Marie). 1.5, Violin Recital by Denise Levi. 1.30, Exchange. 1.35, Orchestral Concert (cont'd.): Selection from Robert the Pirate (Romberg); The Man I Love, from Tip-Toes (Gershwin); Air from Frederica (Lehar); Selection from Phi-Phi (Christine). 2.0, Exchange. 3.45, Exchange and Market Prices. 5.45, Agricultural Notes. 6.0, Religious Address. 7.0, Radio Dialogue. 7.20, Orchestral Concert: Russian Dance (Moszkovsky); Chanson exotique (Ladmirault); Fragments poétiques (Godard). 7.45, Commercial Prices, News and Review of the German Press. 8.0, Manon—Opera in Five Acts (Massenet), on Gramophone Records. In the intervals at 8.30, News, Weather and Sports Notes, at 8.40, Review, by Dominique Bonnaud, and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW.—Relayed by W8XX on 48.86 metres and 26.27 metres—3.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Blue Ridge Buddies. 9.57, David Lawrence Dispatch. 10.0, Programme to be announced. 10.15 to 11.15, New York Relay. 10.15, The Adventures of Dr. Donlittle. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Our Daily Food—George Rector's Cooking School. 11.15, Time Signal. 11.16, Weather Report. 11.17, Tenberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45, To-day's News, by Lowell Thomas, from New York. 12.0 midnight, Pepsodent Amos 'n' Andy, from New York. 12.15 a.m. (Friday), Programme to be announced. 12.30, The Fireflies. 12.45, The Townsend Murder Mystery. 1.0 to 3.30, New York Relay. 1.0, Captain Diamond's Adventures. 1.30, Time Signal and Rio-Tin-Tin Thrillers. 1.45, Thurston, the Magician. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra, with Lady Esther. 3.0, Carson Robinson's Pioneers. 3.15, Vic and Sade. 3.30, The 1933 Income Tax—by Robert L. Wickline. 3.45, Prof. McAllan, Sara and Sassafras, from New York. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News Flashes. 4.20, Bertha Schmid (Soprano). 4.30, Josef Lievigne (concert Pianist), from New York. 5.0, Smith Ballou and his Orchestra. 5.15, KDKA Artist Bulletin. 5.17, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Brno. 4.10, Talk on Industry. 4.20, See Brno. 4.50, Gramophone Records of Variety Music. 5.5, Agricultural Talk. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Book Review, Agricultural Notes, and Talk on Fire Insurance. 6.0, Chimes. 6.2, News. 6.10, English Conversation: From Prague to Chicago. 6.25, Economic Notes. 6.40, Mr. Josifek gets married—a Sketch. 7.30, Clarinet Recital by Vladimir Rihá: Concert Piece, Op. 229 (Kahivoda); A Movement from the Concerto for Clarinet (Trneck). 8.0, Time Signal. 8.2, Orchestral Concert: Polovstian Dances from Prince Igor (Borodin); Norwegian Dances Nos. 1 and 2 (Grieg); Spanish Dances Nos. 1 and 4 (Moszkovsky); Slav Dances Nos. 4 and 5 (Dvorák); Italian Waltz (Joh. Strauss); Japanese, Russian, Spanish, and Czech Dances (Provanik). 9.0, Time Signal. 9.2, News, Daily Review, and Sports Notes. 9.15, Popular Music on Gramophone Records. 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.: LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.0 p.m. (from Geneva), Sports Talk. 5.20, Esperanto Lesson. 5.35 (from Lausanne), Italian Lesson. 6.10 (from Geneva), Parsifal—Opera (Wagner), relayed from the Geneva Theatre. 8.10 (approx.) (in an interval), News Bulletin and Weather Forecast. 11.0 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Concert by the Station Quartet, followed by Arias and Popular Music on Gramophone Records.

RJUKAN.—See Oslo.

ROME

Call IRO, 441 metres; 50 kW.—Relayed by Naples, 319 metres, and 2RO, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30 a.m., Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 p.m., Humorous Talk. 12.5 to 1.15 p.m., Concert from Turin. In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30 to 5.15, Orchestral Concert: Overture, Le donne curiose (Usiglio); Rikordo (Orla); Gondoletta (Ricciardi); Pianoforte Solo, Prelude on the White Keys (Modena); Selection from Conchita (Zandoni); Dances from Il Re David (Castellano-Tedesco); Melody (Escobar). 6.0 (Naples), Shipping and Sports Notes. 6.10, Agricultural and Popolavoro Notes. 6.20, Giornale Radio. 7.0, Time and Announcements. 7.2, Talk. 7.15, Light Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 7.45, Symphony Concert, conducted by Riccardo Santarelli: Leonora Overture No. 3 (Beethoven); Talk on Literature and Art; Symphonic Poem, Le Ronel d'Onuphale (Saint-Saëns); Dance from Daria (Mufé); Allegretto and Scherzo from the Sixth Symphony (Tchaikovsky); Siegfried Idyll and Ride of the Valkyries (Wagner). Announcements in the interval. 9.55, News. SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 379.5 metres; 50 kW.—Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—12 Noon, Southern Jubilee Quartet. 12.15 a.m. (Friday), Stock Reports. 12.30, Gold Medal Band. 12.45 to 3.0, New York Relay. 12.45, The Goldbergs—Comedy Sketch. 1.0, Fleischmann Hour. 2.0, Captain Henry's Show Boat. 3.0, Lucky Strike Hour, followed by Programme Resumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 459 metres; 60 kW.: BASEL, 244.1 metres, and BERNE, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Basle), Orchestral Concert, conducted by Otto Wallrodt. 12.35 p.m., Weather and Exchange. 12.40 to 2.30, Interval. 2.30 (from Zurich), Talk for Women: Nursing as a Career. 3.0 (from Zurich), Concert of Light Music by the Radio Orchestra. 4.0 (from Zurich), Popular Music on Gramophone Records. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from Basle), Talk on the Opening of the Swiss Sample Fair in 1933. 6.0, Time, Weather and Traffic Report. 6.15 (from Basle), Elementary Italian Lesson. 7.0 (from Basle), Concert by the Spanish Lute Quartet, Los Aguilar. 7.45 (from Basle), Variety Music on Gramophone Records. 8.0, News and Weather. 8.10 (from Basle), Introduction to the following Relay. 8.25, Part Relay of Parsifal (Wagner), relayed from the Grand Theatre, Geneva. 11.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW.—Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.5 p.m., Studio Service. 4.30, Programme for Children. 4.45, Light Music. 5.45, Elementary English Lesson relayed from Jönköping (201.3 metres). 6.30, Talk, relayed from Malmö (231 metres). 7.0, String Quartet in F Sharp Minor (Schumann). 7.15, Weather and News. 7.30, A Play (Albert Viksten). 8.0, Popular Music on Gramophone Records. 9.0, Orchestral Concert. Soloist: Bronislaw Mittmann (Violin); Concerto in D Op. 77 for Violin and Orchestra (Brahms); Prélude à l'après-midi d'un Faune (Debussy); Overture, Donna Diana (Reznicek). 9.45, Weather and News. 10.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Popular Concert on Gramophone Records. 12.45 p.m., News Bulletin. 1.0, Time Signal. 1.1, Market Prices. 1.5, Jazz Music, conducted by M. Roskam. 2.0, Programme for Children. 3.0 to 4.15, Interval. 4.15, Elocution Lesson in French. 4.30, Programme for Children, relayed from Bordeaux Lafayette (304 metres). 6.0, Talk in German: French Civilisation. 6.15, Talk for Women in French: Domestic Schools in France and Abroad. 6.30, Orchestral Concert, conducted by Maurice de Villers. March from The Prophet (Meyerbeer); Overture, Peter Schmitt (Weber); Selection from Aida (Verdi); Pianoforte Solo; Orchestral Suite, On the Volga (Vladimir Dyck); Bourrée fantasque (Chabrier). 7.30, Time Signal. 7.31, News. 7.45, Song Recital by M. Hérent (Baritone), on Gramophone Records. 8.20, Lottery Results and Announcements. 8.30, Concert, arranged by the Cercle Musical Messin, relayed from Metz. Soloists: Mlle. Elisabeth Kollmaroff (Songs), Mme. Antoinette Antonowitch (Songs), and M. Marcel Payen (Cello); Overture, Semiramis (Rossini); Three Songs: (a) O del mio dolce ardor (Gluck), (b) Air from Kostehei the Immortal (Rinsky-Korsakov), (c) Melody (Paul); The Bee's Song for Mixed Six-Part Choir (de la Tombelle); Four Duets: (a) Doubt (Glinka), (b) Young Girls (Dargomijsky), (c) Evening (Stepowod), (d) Spring (Tekehriz); Concert Piece for Cello and Orchestra (Heberlein); French Rondo for a Women's Two Part Choir (Pierré); Three Songs: (a) Air from Figaro (Mozart), (b) C'est l'Extase from Ariettes oubliées (Debussy), (c) Je sais bien que tu partiras! (Aziza Moussa); Italian Caprice (Tchaikovsky); Duets: (a) Gipsy Song in the Style of the Hungarian Dances (Brahms), (b) My Song (Glazunov), (c) Song (Dargomyjsky); Mixed Choir and Orchestra: March from Tannhäuser (Wagner). In the interval: Legal Talk.

STUTTGART

MUHLACKER, 360.5 metres, 60 kW.: and FREIBURG, 570 metres.—12.30 p.m., Folk Songs on Gramophone Records. 1.0, Programme arranged by the Post Office. 1.30, Spanish Lesson. 2.0, Elementary English Lesson. 2.30, Programme for Young People. 3.30 to 4.0 Interval. 4.0, Concert by the Stuttgart Philharmonic Orchestra, conducted by Gustav Gählich; Soloist: Günther Homann (Pianoforte); Festliche Suite, Op. 42 for Orchestra (Klaas); Pianoforte Concerto in D (Mozart). 5.15, Time, Weather, and Agricultural Notes. 5.25, Talk: A Dowry for the Daughter and Capital to establish a Business for the Son. 5.50, Talk for the Hundred and Seventieth Anniversary of the Birth of Jean Paul Richter. 6.15, Time and News. 6.30 (from Mannheim), Concert of German and Italian Opera Music by the Mannheim Philharmonic Orchestra; Conductor: Rudolf Borovka; Overture, Idomeneo (Mozart); Selection from The Magic Flute (Mozart); Prelude to the Third Act and Bridal Chorus from Lohengrin (Wagner); Selection from (a) Die toten Augen (d'Albert), (b) Norma (Bellini), (c) Il Trovatore (Verdi), (d) André Chénier (Giordano). 7.45, The Note Book of the Graces—Songs and Poems from old Almanacs; Hermine Behn (Songs) and Ludwig Donath (Recitations). 8.45, Pianoforte Sonata in F Minor, Op. 5 (Brahms), by Walter Rehberg. 9.10, Time, News, Weather, and Programme Announcements.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Jazz Music. 6.30, Programme for Children. 7.0, Popular Melodies. 7.15, News, Racing Results, and Market Prices. 7.25, Local News. 7.30, Opérette Music: Selection from La Fille de Madame Angot (Lecocq); Song from Die Fledermaus (Joh. Strauss); Selection from The Dollar Princess (Fall). 7.45, Opera Music: Song from L'Attaque du Moulin (Brucan); Two Songs from Werther (Massenet); Song from Les Brigands (Offenbach); Song from Tosca (Puccini). 8.0, Military Music. 8.15, Sound Film Music. 8.30, Accordion Solos. 8.45, Extract from Thais—Opera (Massenet). 9.45, Instrumental Music: Overture (Leggett); Mazurka in B Minor (Chopin); Fireworks (Stravinsky); Turkish March (Mozart); Selection from El amor brujo (Fall); Liebesleid (Kreisler). 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Solos. 11.15, Opérette Music: Selection from Robert the Pirate (Romberg), and Véronique (Messager). 11.30 to 12 Midnight, Programme in English by the I.B.C. 11.30, The I.B.C. Half Hour: You've got me in the Palm of your Hand; Just a little Home for the Old Folk; Sheltered by the Stars; Fit as a Fiddle; Sweethearts for ever; Three's a Crowd; If you would learn to live; Yes Mr. Brown. 11.57, I.B.C. Goodnight Melody. 12 Midnight, Light Music and Announcements. 12.5 a.m. (Friday), Argentine Music. 12.15, Accordion Solos. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—4.10 to 5.0, See Turin. 6.0, Light Music on Gramophone Records. 6.20 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW.—Relayed by Milan 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—4.10 to 5.0 p.m., Orchestral Concert: Overture, Giovanna d'Arco (Verdi); Andalusian Romance (Saraste); In campagna (De Micheli); Serenata fiorentina (Culotta); Pavane (Guccini); Scherzo, Le Falene (Escobar). 5.35, Giornale Radio, Agricultural and Popolavoro Notes. 6.0, Gramophone Records of Variety Music. 6.20, Giornale Radio. 6.30, Time, Announcements, Tourist Report and Gramophone Records (cont'd). 7.0, Giornale Radio, Weather and Variety Music on Gramophone Records. 8.0, Variety Programme. 9.0, Talk. 9.15, Orchestral Concert. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in French. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW.—Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Linz, 218.1 metres.—2.20 p.m., Pianoforte Recital of Contemporary Music: Little Sonata in A Minor (Walter Bright); Ländler, Waltz and Finale from Op. 29 (Kornath); Caprices mignons on a Children's Song (Erbanstschitz); Humoresque Op. 15 (Wladiczerov); Pianoforte Piece (Salmhofer). 2.45, Recital of Children's Songs by Lily Claus; Lullaby for Bonzo (Pahlen); Three Songs (Heller); (a) Jahreskind, (b) Wenn ich sein Lachen höre, (c) Kindes Erwachen; Two Songs (Wetely); (a) Wenn ich über dich zur Nacht (Schmidt); two songs (Yokl); (a) Was man von Tieren lernen kann; Sonnenruhe; Two Songs (Leinecke); (a) Storch, Storch, Storch, Steiner, (b) Dance Song; Two songs (Keldorfer); (a) Lauch fänkeler, (b) Mauerl, pieb; Folk songs (arr. Cerné); (a) Bäuerlein, tik, tik, tik, (b) Mein Hansel, willst du tanzen. 3.10, Talk on Cross-Country Running. 3.20, Talk: Richard Wagner in Italy. 3.45, Report on Austrian Affairs in Esperanto. 4.0, Gramophone Concert. 5.0, Talk: Karl Marx and Women. 5.25, Talk: Seasonable Tourist Propaganda. 5.45, Theatre Talk. 5.50, Talk: What Everyone should know about Traffic Laws. 6.15, Time, Weather and Programme Announcements. 6.25, Recital of Upper Austrian Spinning Songs. 7.5, Ninth Concert of the Gesellschaft der Musikfreunde; The Vienna Symphony Orchestra, the Choir of the Gesellschaft der Musikfreunde and Soloists, relayed from the Musikvereinsaal; The Ninth Symphony in D minor (Bruckner); Te Deum (Bruckner). In an interval at 8.5 (approx.), News, Weather and Announcements. 8.45, Snow Report. 9.0, Cabaret Concert relayed from the Oase Restaurant.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Popular Music on Gramophone Records. 11.30, Weather Forecast. 11.35, Concert for Schools by the Philharmonic Orchestra, conducted by J. Oziminski. Soloists: Mme. Kmiä (Violin) and Mme. Leska (Songs). Introductory Talk by S. Natanson. Overture, The Magic Flute (Mozart); Scherzo from the Eroica Symphony (Beethoven); Turkish March from The Ruins of Athens (Beethoven); Songs: Three Ecossaises (Beethoven); Violin Solos: (a) Minuet (Beethoven), (b) Rondino (Beethoven), (c) Abendlied (Schumann), (d) Ave Maria (Schubert), (e) Moment Musical (Schubert); Songs: (a) Die Frelle (Schubert), (b) Ständchen (Schubert), (c) Der Stern (Schumann), (d) Der Soldat (Schumann); Carnaval des animaux (Saint-Saëns). 1.0 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Light Music on Gramophone Records. 2.35, Talk: Balconies and Summer Houses. 2.50, Popular Music on Gramophone Records. 3.25, Intermediate French Lesson. 3.40, Talk, relayed from Cracow (312.8 metres). 4.0, Song Recital by Mme. Corné. In the interval, Announcements. 4.40, Topical Talk. 4.55, Programme Announcements. 5.0, Educational Talk. 5.20, Sports Notes. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Report. 6.30, Radio Journal. 6.45, Introductory Talk to the following Transmission. 7.5, See Vienna. 8.0, Sports Notes. 8.5, Programme Announcements. 8.15, Relay from Vienna (cont'd.). 8.45, Reading from Pygmalion (Shaw). 9.30, Dance Music. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music.

WILNO

563 metres; 16 kW.—5.45 p.m., Miscellaneous Items. 6.0, Reading. 6.10, The Letter Box. 6.30, See Warsaw. 10.0, Relay of Another Station. 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

FRIDAY

MARCH THE TWENTY-FOURTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL The Grand National: A Running Commentary from Aintree, by R. C. Lyle and W. Hobbin. Light classical concert.

LONDON REGIONAL A Coleridge-Taylor recital. "Three Soldiers," a play by L. du Garde Peach. Programme of contemporary music.

MIDLAND REGIONAL Musical comedy programme.

NORTH REGIONAL Programme of musical comedy selections.

WEST REGIONAL "The Lady of Belmont," a sequel to "The Merchant of Venice," by St. J. G. Ervine.

SCOTTISH REGIONAL Concert by the winners of the Festival for the Unemployed.

BELFAST Belfast Philharmonic Society's concert.

ABROAD

BARI 7.35 p.m. Concert of Opera music.

BRUSSELS (No. 2) 8 p.m. Gala concert by the Symphony Orchestra, conducted by A. Meulemans.

BUCHAREST 7 p.m. The Philharmonic Orchestra, relayed from the Roumanian Athenæum.

PALERMO PRAGUE 7.45 p.m. Opera: "The Pearl Fishers," by Bizet.

RADIO-PARIS 7.5 p.m. Concert from the Smetana Hall, conducted by A. Zemlinsky.

ROME STRASBOURG WARSAW 8.45 p.m. Symphony concert, conducted by E. Bigot.

3 p.m. Song recital by Lotte Lehmann.

8.30 p.m. Symphony concert from Hagondange.

7.15 p.m. Symphony concert by the Philharmonic Orchestra.

ATHLONE
412 metres; 60 kW.; and **CORK**, 224.4 metres.—1.30 to 2.0 p.m., Time, Weather, Stock Report, and Popular Music on Gramophone Records. 2.45 to 3.15, Running Commentary on the Grand National. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gardening Talk. 7.45, Talk: Wet Fly and General Fishing Topics. 8.0, Pianoforte and Violin Duets by E. O' C. Miley and L. Thompson. 8.30, Soprano Solos by Marie Hipwell. 8.50, Liam Andrews (Millennium Pipes). 9.5, Variety Half Hour by T. Madden and Company. 9.35, Orchestral Music. 9.45, Baritone Solos by Cecil O' Shaughnessy. 10.0, Orchestral Music. 10.30, Time, News, Weather, and Close Down.

BARCELONA
RADIO-BARCELONA, Call **EAJ1**, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Dance Music, relayed from the Ritz Hotel. 7.30 (in an interval), Exchange Quotations. 8.0, Light Music on Gramophone Records and News. 9.0, Chimes from the Cathedral, Weather Forecast, Messages to Seamen, Exchange Quotations, and Market Prices. 9.10, Concert by the Station Orchestra. 10.0, Vicente Diez de Tejada reads from his own works. 10.15, Orchestral Concert, relayed from the Café Español. 11.0 (in an interval), News Bulletin. 12 Midnight (approx.), Close Down.

BARI
270 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Talk, and Dopolavoro Announcements. 7.20, Giornale Radio and News Bulletin. 7.30, Time Signal and Announcements. 7.35 (approx.), Concert of Opera Music: Overture, Le Maschere (Mascagni); Soprano Solo from I pittori fiamminghi (Smaraglia); Tenor Aria from The Barber of Seville (Rossini); Selection from Act 1 of La cena delle beffe (Giordano); Soprano Aria from Loreley (Catalani); Tenor Aria from Mignon (Thomas); Selection from La Gioconda (Ponchielli); Pastoral Overture (Krieger); Soprano Song from The Pearl Fishers (Bizet); Tenor Aria from L'Elisir d'amore (Donizetti); Barcarolle from Silvano (Mascagni); Soprano Solo: Song from Iris (Mascagni); Tenor Solo from L'Arleciana (Cilea); Selection from Luomo che ride (Pedrollo). In the interval: Talk. 9.30, Concert, relayed from the Grand Hotel, Moderno. 9.55, News.

BASLE—See **Schweizerischer Landessender**.
BELGRADE
430.4 metres; 2.8 kW.—4.0 p.m., Talk. 5.55, Time and Programme Announcements. 6.0, Hugo Wolf Song Recital: Gebet; Neue Liebe; Er ist's; Verborgeneheit; Ellenried; Der Genesene an die Hoffnung; Der Gärtner. 6.40, Talk for Sokols. 7.15, See **Warsaw**. 9.0 (approx.), News.

BERLIN
KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News. 1.0, Gramophone Concert from **Berlin (Witzleben)**. 2.0, Talk on Robert Schumann. 2.30, Weather and Exchange. 2.45, Reading (Matthias Claudius). 3.0, Educational Report. 3.30, See **Leipzig**. 4.10, Topical Talk. 4.30, Talk: The Right of Pasture. 5.0, Pianoforte Recital by Martha Erbs-Küntzel: Five Pieces (Reger): (a) Prelude for the Left Hand, (b) Moment musical, Op. 44, No. 5, (c) Phantastische Träumerei, Op. 24, No. 3, (d) Piece from Träume am Kamin, Op. 143, No. 2, (e) Two Waltzes, Op. 22; Intermezzo, Op. 117, No. 2 (Brahms); Rhapsody, Op. 119, No. 4 (Brahms). 5.30, Health Talk. 5.55, Weather for Farmers and Announcements. 6.0, Talk on Bamberg. 6.30, A Poem. 6.35, Political Press Review. 7.0, See **Breslau**. 8.0, Die Erweckung des Lazarus—Oratorio for Soloists, Choir and Orchestra (Schubert). 9.15, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, See **Frankfurt**. 11.0 (approx.), Close Down.

BERLIN
WITZLEBEN, 419.5 metres; 1.5 kW.—3.30 p.m., See **Leipzig**. 4.30, Talk: The World at the Turning Point? 4.50, The Musical Magazine—Extracts from New Musical Publications, with Commentary. 5.40, Sociological Review. 5.55, The Witzleben Station informs its Listeners. . . . 6.0, Topical Talk. 6.10, Talk: Life in a Beehive. 6.55, Announcement. 7.0, Concert by the Station Orchestra, conducted by Edwin Lindner: Overture, The Barber of Seville (Rossini); Selection from A Midsummer Night's Dream (Mendelssohn); Scherzo, Masken im Karneval (Scherber). 8.0, In an Old Curiosity Shop—Radio Report from Stettin, on Gramophone Records. 8.15, Pianoforte Concerto in B Flat, Op. 83 (Brahms), by Conrad Hansan and the Berlin Station Orchestra, conducted by Eugen Jochum. 9.0, Weather, News and Sports Notes. 9.15, Orchestral Concert from Kempinski and Co.'s Restaurant. In the interval at 10.0 (approx.), Radio Report on the Police Sports in the Sportpalast (on Gramophone Records). 11.0 (approx.), Close Down.

BERNE—See **Schweizerischer Landessender**.
BEROMUNSTER—See **Schweizerischer Landessender**.
BODEN—See **Stockholm**.
BODO—See **Oslo**.

BORDEAUX-LAFAYETTE
304 metres; 13 kW.—7.0 p.m., News. 7.40, School Notes. 7.55, Lottery Results. 8.0, Spanish Lesson. 8.15, News and Weather. 8.30, Symphony Concert: Overture, Rosamund (Schubert); A Night on the Bare Mountain (Mussorgsky); Gramophone Records (Donizetti): (a) Air from Lucia di Lammermoor, (b) The Daughter of the Regiment; Readings from (a) Vrilles de la Vigne (Colette), (b) Une soirée perdue (de Musset); Children's Corner (Debussy); Gramophone Records: (a) Bell Song from Lakmé (Delibes), (b) Aria from Manon (Massenet); Divertissement on Russian Songs (Raband-Rudd).

BRATISLAVA
279 metres; 14 kW.—5.40 p.m., Gramophone Records of Light Music. 5.45, Slovak Spelling Lesson. 6.0, See **Prague**. 6.25, See **Moravská-Ostrava**. 7.0, See **Prague**. 9.15 (approx.), Close Down.

BREMEN—See **Hamburg**.

BRESLAU
325 metres; 60 kW.; and **GLEIWITZ**, 253 metres.—12.5 p.m., Weather for Farmers. 12.10, Hungarian Music on Gramophone Records. 12.45, Time, Weather, News, and Exchange Quotations. 1.5, Gramophone Concert. The London Symphony Orchestra, conducted by A. Coates. (a) The Cuckoo and the Nightingale (Handel), (b) Concerto for Organ and Orchestra; Fritz Kreisler and Efrim Zimbalist: Largo from the Concerto in D Minor for Two Violins (Bach); Wanda Landowsky (Harpichord); Melody (Couperin); The Elman String Quartet: Finale from the Quartet in E Flat (v. Dittersdorf); John Amadio (Flute) and Orchestra: Andante from the Flute Concerto in C (Mozart); Wilhelm Backhaus (Pianoforte); Waltz in E Flat (Chopin); Pablo Casals (Cello); Adagio in A (Bocherini); The London Symphony Orchestra, conducted by Leo Blech: Saltarello from the Italian Symphony (Mendelssohn). 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Reading for Young People. 3.10, Concert by the Station Orchestra, conducted by Franz Marszalek. Soloist: Bruno Jagielski (Tenor). Symphonic Prologue to King Oedipus (Max v. Schillings); Selection from The Miracle (Humperdinck); Selection from Das Christelfeiu (Pfitzner). 4.30, Agricultural Prices. 4.35 (approx.), Talk: German Colonisation Problems. 4.55, Talk: The Writings of Oskar Baum. 5.25, Programme to be announced. 6.0, Talk: The Educational Problem in the Polish Corridor. 6.30, Weather Forecast and Meat Market Prices. 6.35 (approx.), Concert by the Philadelphia Symphony Orchestra, conducted by Leopold Stokosky, on Gramophone Records. Entr'acte from Khovanstchina (Mussorg-

sky); Bacchanale from Samson and Delilah (Saint-Saëns); March from Thésée (Lully); Oriental Dance (Glazunov); Corpus Christi Festival (Albeniz); Slav March (Tchaikovsky). 7.0, King Sporek—Radio Play (Freidrich Griese). 8.0, News. 8.10, Request Concert by the Station Orchestra, conducted by Franz Marszalek. 9.10, Time, Weather, News, Sports Notes and Programme Announcements. 9.25, Political Periodical Review. 9.50, Orchestral Concert from **Berlin (Witzleben)**. 11.0 (approx.), Close Down.

BRNO
342 metres; 35 kW.—3.10, Concert by the Station Orchestra, conducted by B. Bakala. 3.55, Theatre Notes. 4.5, Concert by the Moravian String Quintet. 5.5, Talk on Art. 5.15, Talk for Workers. 5.25, German Transmission: News, Sports, Notes, and Talk. 6.0, See **Prague**. 6.25, Gramophone Records of Popular Music. 6.40, Readings. 7.0, See **Prague**. 9.15 (approx.), Close Down.

BRUSSELS (No. 1)
I.N.R., 509 metres; 15 kW.—12 Noon, Concert by the Little Station Orchestra, conducted by P. Leemans: Marche priantière (Filippucci); An den Frühling (Grieg); Ballet Music from Hamlet (Thomas); Sous les tilleuls (Massenet); Spring (Verdi); Au printemps de la vie (Mouton); Spring Song (Mendelssohn); Siegmund greets the Spring Night, from The Valkyries (Wagner); Spring Waltz (Waldeufel). 1.0 p.m., Le Journal Parlé. 1.10, Extracts from Lucia di Lammermoor—Opera (Donizetti), on Gramophone Records. 2.0, Educational Programme. 5.0, Concert by the Radio Orchestra, conducted by Franz André: Overture, Les Mousquetaires au Couvent (Verney); Conte pastoral and Conte amusant (Godard); Romance for Violin (d'Ambrosio); Rustic Revels (Fletcher); Simple avenu (Thomé); Vienneese Operetta Potpourri (Hruby); Selection from Le petit duc (Lecocq). 6.0, Financial Talk. 6.15, Gramophone Records of Light Music. 6.30, Concert by the Little Station Orchestra, conducted by P. Leemans: Overture, Le tour de moulinet (Hubans); Pantins et poupées (De Tayer); Mazurka for Violin (Wieniawsky); Mademoiselle Sourire (Lachaume); Petite Suite for Pianoforte (Donliez); Donauwelleu (Ivanovici). 7.15, Wireless Talk. 7.30, Literary Review. 8.0, Military Concert, with Commentary. 8.45, Talk by M. Briehard: Our Marvellous Cruise round the World. 9.0, Concert by the Radio Orchestra, conducted by Franz André: Soloist: Christiane Berlo (Soprano); Overture, Orpheus in the Underworld (Offenbach); Ballet égyptien (Luigni); Soprano Aria from Quentin Durward (Gevaert); Farandole (Dubois); Soprano Solos: (a) Depuis un an (Massenet), (b) Air de la Violette (Van Oost); Czardas (Michiels); Tonwollen (Mandrest); Walzer-Trümpe (Robrecht). 10.0, Le Journal Parlé. 10.10, Descriptive Music:

Dornröschens Brautfahrt (Rhode); In a Clock Store (Orth); The Old Musical Box (Humphries); The Moth (Mandt); Cupid's Parade (Rivelli); Hochzeitszug in Liliput (Translateur); In der Spielschule (Gutzeit); The Gnomes (Eilenberg); March of the Black Dolls (Ratlake); Am Erlenbach (Dreyer); In a Bird Shop (Lake); A Hunt in the Black Forest (Voelker); The Cockchafer's Tea Party (Noack); The Clock and the Dresden Figures (Kettelbey); Chinese Street Serenade (Siede); March of the Tin Soldiers (Jessel). 11.0 (approx.), Close Down.

BRUSSELS (No. 2)
N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Gramophone Concert: Introduction, Artevelde (Gevaert); Overture, The Huguenots (Meyerbeer); Waltz from Mirrella (Gounod); Selection from Samson and Delilah (Saint-Saëns); Air from The Pearl of Brazil (David); Selection from Faust (Gounod); Two Airs from Marouf (Raband); Selection from Lakmé (Delibes); Selection from La cocarde de Mimi Pinson (Goublier). 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Small Station Orchestra, conducted by Paul Leemans: Berliner Luft (Lincke); Melody (Rubinstein); Violin Solo: Serenade (Lalo); La demoiselle du printemps (Goublier); Opera Potpourri (Schreiner); Cello Solo: Berceuse (Renard); Waltz Suite (Gilson); March, Pompadour (Fall). 2.0, Educational Programme. 5.0, Gramophone Concert: March from Sigurd Jorsalfar (Grieg); Romance, Op. 26 (Svendsen); Rustle of Spring (Sinding); Ich liebe dich (Grieg); Grottesque March (Sinding); Symphonic Dances (Grieg); In the Hall of the Mountain King, from the Peer Gynt Suite (Grieg). 5.45, Pallieter's Programme. 6.30, Vocal and Orchestral Concert of Flemish Music. 7.15, Talk by Marcel de Ridder. 7.30, Wireless Notes. 8.0, Gala Concert by the Symphony Orchestra, conducted by A. Meulemans: Soloist: Mlle. Briffaux (Songs); Programme of Music by J. van Hoof, with Commentary by J. Horemans. 9.0, Humorous Talk. 9.5, Gala Concert (contd.): Wagner Programme in Honour of the Fiftieth Anniversary of his Death; Bacchanale from Tannhäuser; Elisabeth's Aria from Tannhäuser; Overture, The Mastersingers; Prelude to Tristan and Isolde; The Death of Isolde, from Tristan und Isolde; Kaiser-Marsch. 10.0, Le Journal Parlé. 10.10, Gramophone Concert of Light Music.

BUCHAREST
394 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra: March (Menichetti); Waltz from Casanova (Lincke); Musical Jokes (Ashton); Ballet Music from La Juive (Halévy). 5.0, News. 5.10, Talk. 5.25, Concert (contd.): Romanian Potpourri (Welsch); Selection from Don Giovanni (Mozart). 6.0, Talk: Romanian Novels. 6.40, Light Music on Gramophone Records. 7.0, Concert by the Philharmonic Orchestra, relayed from the Roumanian Athenæum; Conductor: M. I. Perlea; Symphony in B Minor (Schubert); Symphony No. 2 in C Minor for Orchestra, Choir, and Soloists (Mahler). 9.0, News.

BUDAPEST
550 metres; 18.5 kW. Programme also relayed on 840 metres from 6.0 p.m. (approx.) till Close Down.—4.0 p.m., Operetta Concert: Overture to an Operetta (Ziehrer); Waltz (Kerker); Selection from The Greek Slave (Sidney Jones); Selection from The Third Act of Der liebe Augustin (Fall); Overture, The Carnival Fairy (Kálmán); Waltz from Eva (Lehár); Potpourri (Szabados); Hungarian March (Vineze). 5.30, The Letter Box. 6.0, Reading. 6.30, Relay from the Royal Hungarian Opera House. News in the intervals. After the relay, Cigány Music from the Café Spolarich. 10.0, Talk in English: The World Jamboree 1933.

GASSEL—See **Frankfurt**.

COPENHAGEN
281 metres; 0.75 kW.; and **KALUNDBORG**, 1,153 metres; 7.5 kW.—11.0 a.m., Time and Chimes from the Town Hall. 11.5, String Ensemble Concert, conducted by Harald Andersen, relayed from the Bellevue Strandhotel. 12.15 p.m., Talk for Schools: Music from 1750-1800. 12.45 to 2.0, Interval. 2.0, Concert by the Radio Orchestra, conducted by Lanny Grundahl; Soloist: Ebba Bjarnhof (Songs); Overture, Little Christie (Hartmann); Selection from Gretna Green (Günrad); Intermezzo from Tiefland (d'Albert); Selection from The Daughter of the Regiment (Donizetti); Rheinlegendchen (Mahler); Bacchanale from Samson and Delilah (Saint-Saëns); Danish Songs; Overture, Le Carnaval de Venise (Thomas); Dance from the Gipsy Suite (Coleridge-Taylor); Babillage (Bossi); Musette from Christian II (Sibelius); Selection from Faust (Gounod); Czardas from Der Geist des Wogewolten (Grossmann). 4.0, Programme for Children. 4.40, Exchange and Fish Market Prices. 4.50, Talk on Danish Literature—Heiberg's Elverhøj. 5.20, German Lesson. 5.50, Weather Forecast. 6.0, News. 6.15, Time Signal. 6.30, Talk. 7.0, Chimes from the Town Hall. 7.5, Programme by Per Knutzen. 7.0, A Bankruptcy—Comedy in Four Acts (Björnsterne-Björnson). 9.10, News. 9.25, Orchestral Concert, conducted by Emil Rée-

MARCH 24th

FRIDAY

continued

sen: Suite of Old English Music (Rabaud); Suite from Pulcinella (Stravinsky). 10.0, Dance Music, relayed from the National Scala. In the interval at 11.0, Time and Chimes from the Town Hall. 11.30 (approx.), Close Down.

GORK.—See Athens.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FEWAMP

225.9 metres; 10 kW.—6.0 to 7.0 p.m., Programme in English by the I.B.C. C. Danvers-Walker, B. McNabb, and F. Lamping. Announcements. 6.0, Concert for Torquay Listeners: Selection from Wild Violets (Stolz). Song: The White Horse Inn, from White Horse Inn (Benatsky); A Bachelor's Gayer, from The Maid of the Mountains (Fraser, Simpson); Selection from The Cat and the Fiddle (Kern); I give my Heart, from The Dubarry (Müllbäcker-Mackebert); Selection from The Desert Song (Kromberg); Selection from Fredericka (Lehár). 6.30, Organ Recital for Weymouth Listeners: Sylvan Scenes (Fletcher); The Sacred Hour (Kettelbey); Glow Worm Idyll (Lincke); If you were the only girl in the world; In a Japanese Garden (Wiggs); Il Bacio (Arlitti); Popular Melodies. 7.0, Programme in French. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0, Light Music: Got a Date with an Angel; I'm happy when I'm hiking; Down Sunnyside Lane; Guilty; Lang on the Stars in Indiana; The Haunted House; Live, Love, and Laugh; Belle of Bathona; The Pied Piper of Hamelin; I'd Rather be a Beggar with you; Say little Prayer for Me; June Time is Love Time; A Selection of Miracle Melodies; Just Imagine; When it's Sunset on the Nile. 11.0, Orchestra Concert: Dance of the Hours from La Gioconda (Ponchielli); Christmas Tree Waltz (Kobikov); Moment musical (Schubert); Liebestraum (Liszt); Overture, Hansel and Gretel (Humperdinck); Le carnaval des animaux (Saint-Saëns); Orientale (Chui); Chant sans paroles (Tchaikovsky). 11.30, Sea Chanties: At Santa Barbara (Kennedy Russell); A rovin' (Terry); The Drunken Sailor (Terry); Rio Grande (Harris); Four Jolly Sailormen (German); Shenandoah (Terry); Selection, Britolodia (Humphries). 12 Midnight, Variety Music: Waltz, The Blue Danube (Joh. Strauss); The Hiker's Song; The Rosary (Nevin); The Old Inns of England; Favourite Tunes of the Moment; Tesoro (Becucci). 12.30 a.m. (Saturday), Vocal Duets and Mandoline Solos: Mandolin Solo: Czardas (Monti); Duets: (a) In an Old World Garden (Pepper); (b) I ain't gonna tell (Straelan); (c) When you've gone (Werner); (d) Looking for Love (McHugh); Mandoline Solo: Mandolinata; Duets: (a) She can't make up her mind (Castling); (b) Now I'm in Love (Shapiro). 1.0, Light Music: Let's all sing like the Birdies Sing; Pu-leeze Mr. Hummingway; You'll always be the same Sweetheart; Till To-morrow; Let's all Dance the Polka; The Japanese Sandman; Marching Along Together; Young and Healthy; Butterflies in the rain; Standing at the Corner; A Little Street where old Friends Meet; Wheezy Anna; A Boy and Girl were dancing; I'll never have to dream again. 2.0, Popular Songs: The Thrill is gone; The Dancing Lesson; Sweet and Lovely; Blue Moon in the Sky; My Sweet Tooth says I Wanna; You're blase; I don't know Why; To-day I feel so happy. 2.30, Hawaiian Band: Bye, bye, Blues; Somewhere in old Wyoming; Old New England Melody; My Bluebird was caught in the Rain; Nobody cares if I'm Blue; Go Home and Tell your Mother; O Donna Clara; With my Guitar and You. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

259.3 metres; 17 kW.; CASSEL, 245.9 metres; and TRIER, 259.3 metres.—6.15 p.m., Time, Announcements. Weather and Economic Notes. 6.30, Literary and Musical Programme. 7.30, Concert by the Station Orchestra, conducted by Reinhold Merten: Solists: Erieh Kraack (Viola), Justus Goltfus (Flute), and Erieh Itor Kahn (Pianoforte); Overture, Rubezahl (Weber); Andante tranquillo and Allegro from Undine, Op. 167 for Flute and Pianoforte (Reinecke); Witches' Ride and Gingerbread Waltz from Hansel and Gretel (Humperdinck); Märchenbilder, Op. 113—four pieces for Viola and Pianoforte (Schumann); Overture, To the Story of the Lovely Melusina (Mendelssohn). 8.30, A Discussion on Gustav Freytag, by his son, Gustav W. Freytag and Dr. Rudolf Hoffmann. 9.0, Time, News, Weather and Sports Notes. 9.30, Concert by the Station Orchestra: Soloist: Franz Fasshender (Cello); Overture, The Bartered Bride (Smetana); Adagio, Op. 68, No. 5, Forest Calm (Dvorak); Suite, No. 1, in F, Op. 43 (Tchaikovsky); Variations on a Rocoeco Theme, Op. 33 (Tchaikovsky); Old Dance Music. 11.0 (approx.), Close Down.

FREDEKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romands.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayd by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres, and Kiel, 332.2 metres.—4.55 p.m., Orchestral and Choral Concert, conducted by Klara Sasse-Losemann (Soprano). 5.50, Exchange and Market Prices. 6.0, Talk: German Race Origins. 6.25, Weather. 6.30 (from Bremen), Concerto in D for Flute (Mozart). 7.0, Der Strom—Drama in Three Acts (Max Halle). 8.25, Recital of German Folk Songs by the Choir of St. Michaelis. 9.15, Time, Weather, News Sports and Police Notes. 9.35, Topical Talk. 9.45, Cabaret Music on Gramophone Records. In an interval at 10.20, Ice Report.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—12.5 p.m., Light Music on Gramophone Records. In an interval at 12.20, News. 1.30 (from Danzig), Exchange and Market Prices. 2.0, Agricultural Prices and Exchange Rates. 2.30, Programme for Children. 3.0, Talk for Women. 3.30, See Leipzig. 4.30, Book Review. 4.50, Talk on Forestry. 5.15, Agricultural Prices. 5.20, Ice Report. 5.30, Recital of Italian Arias and Russian Songs by Serge Gargarin; Verigin tutto amor (Durante); Selve amiehe (Caldara); Lasciatemi morire (Monteverde); Annanni del pensiero (Händel); Memories of Love (Glinka); Russian Folk Song (Mussorgsky); On the Hills of Georgia (Rimsky-Korsakov); The Statue in Tsarskoe Selo (Chui); All things pass (Rachmaninow). 6.0 (from Danzig), French Lesson. 6.30, Talk on the Author, Ernst Wiechert. 7.0, Weather and News. 7.5, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky. Soloist, Eise Becker-Stoller (Pianoforte); The Doves' Wedding, from The Birds (Brahms); Concerto in A for Pianoforte and Orchestra (Mozart); Three Symphonic Sketches, La Mer (Debussy); Prelude to Der Rubin (d'Albert). 8.20 (from Danzig), Unfamiliar Works of Friedrich Hebbel—A Literary Radio Sequence. 9.20, Weather and News.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.55 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Sextet. 1.40 p.m., Light Music on Gramophone Records. 2.40, Organ Recital by G. Venderbos; Dorische Toccata (Bach); Intermezzo from the Sixth Symphony (Widor); Symphonic Piece (Tournemire); Finale from the First Symphony (Vierne); Cantabile (Nieland); Pastorale (Nieland); Sonata da Chiesa (Andriessen); Toccata (Andriessen). 3.40, Song and Pianoforte Recital by Mme. E. Jaspers Vos and Mme. J. de Mul (Pianoforte); Pianoforte Solos: (a) Hungarian Song, Op. 27 (Dupont); (b) Polonaise, Op. 26, No. 1 (Chopin); Songs: (a) Aria from Der Tode Jesu (Graum); (b) Aria from Julius Cæsar (Händel); (c) Song from Les Beatiudes (Frank); Pianoforte Solos: (a) Dornröschen (Bendel); (b) Ballad, Op. 23, No. 1 (Chopin); Songs: (a) Aria from A Masked Ball (Verdi); (b) Aria from La Bohème (Puccini); (c) Aria from Madame Butterfly (Puccini). 4.40, Gardening Talk. 5.10, Organ Recital by A. Dreissen. 6.10, Talk: The Agricultural Crisis. 6.40, Light Music on Gramophone Records. 6.50, Talk. 7.10, Police Notes. 7.25, Concert by the K.R.O. Orchestra, conducted by Johan Gerritsen; Soloist, Rosa Spier (Harp); Freiheitsjubel (Blankenburg); Rakoczy Overture (Keler-Béla); Strandidyll (Fetras); By the Blue Hawaiian Waters (Kettelbey); Fantasia (Dubois). 8.5, Dramatic Programme. 8.25, News Bulletin. 8.30, Concert by the K.R.O. Orchestra, conducted by Johan Gerritsen; Selection from Die Königskinder (Humperdinck); Selection from The Mastersingers (Wagner); Selection from Die toten Augen (d'Albert). 9.10, Harp Solos by Rosa Spier: Autumn (Thomas); Schubert Fantasia (Truicke). 9.30, Orchestral Concert (cont'd.); Overture, Frau Lima (Lincke); Notenregen (Urbach). 9.55, Dramatic Programme. 10.25, Orchestral Concert (cont'd.); Marienwalzer (Bayer); March, Schönfeld (Ziehler). 10.40, News Bulletin. 10.45, Relay from the Hotel Hollandais. The Hague. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1875 metres; 8.5 kW.—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.41, Concert by the Wireless Orchestra, conducted by Nieu Treep. In the intervals, Variety Music on Gramophone Records. 1.40 p.m., Recitations. 2.10, Concert (cont'd.). 2.40, Light Music on Gramophone Records. 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Concert by the Little V.A.R.A. Orchestra, conducted by F. Duchant; La Marsellaise (de l'Isle-Rennes); Selection from The Vagabond King (Friml);

Meditation (Gounod); Gavotte (Gossec); Scenes champêtres (Mouton); Selection from Gri-Gri (Lincke). 4.30, Programme for Children. 5.10, Organ Recital by Johan Jong. 5.55, Concert by De Notenkrakers, conducted by D. Wiins; Was die Donau erzählt (Morena); Russian Rhapsody (Michaels); Baci al Buio (de Micheli); Hungarian Dance (Brahms); Twilight (Bianco); Stecky (Lebert); Sonja (Partos); Mariska (Lehár). 6.40, Talk: The U.S.S.R. 7.0, Concert by De Flierefluuters, conducted by F. Tiggers; Soloist: J. Lammen (Bass). 7.40 to 10.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 7.40, Religious Address. 8.10, Viola Recital by C. Kint. In the interval at 8.40, Talk. 9.40, News Bulletin. 9.55, Religious Address. 10.25, Gramophone Records. 10.40, V.A.R.A. Programme: Light Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., A Musical Analysis of Birds' Songs. 6.15, Announcements and Gramophone Records. 6.25, Sports Notes. 6.30 to 10.0, See Warsaw. 10.0, Answers to Correspondents in French.

KAUNAS

1,935 metres; 7 kW.—6.0 p.m., Time Signal, Weather Forecast and News Bulletin. 6.30, Concert. 7.10, Talk on Vegetarianism. 7.30, Variety Programme. 7.50, Talk: The Jews in Lithuania. 8.10, Concert. 8.40, Sports Notes. 8.50, Concert of Light Music. 9.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 40 kW.; and HELSINKI, 368.1 metres.—6.5 p.m., Symphony Concert, relayed from the University, Helsinki. Soloist, Kaila Mittelz (Violin), Symphony No. 9 (Matskovsky); Concerto for Violin (Brahms); Okon Fuoko (Madetoja). 7.45, News in Finnish and Swedish, and Close Down.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert, conducted by Eysoldt; Friedensglocken-Marsch (Urbach); Overture, Vivat Academia (Zimmer); Selection from Czar and Carpenter (Lortzing); Der sterbende Schwan (Spies); Suite, Le Réveil des Fleurs (Drigo); Canzonetta and Minuet (Bocherini); Overture to an Opera (Lincke); Selection from Die Kaiserin (Falb). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Exchange and Time Signal. 2.50, Programme for Children. 3.20, Jack and John, Ltd.—A Modern Fairy Play for Children (Josef Otto, Music by Hans Ebert). 4.0, Concert, conducted by Eysoldt; Overture, Die Abreise (d'Albert); Andante from the Sonata in F Minor (Brahms); Fantasia, From the Old World and the New (Dvorak); Bauern-Suite (Ailbont); Liebes-Romanze (Schmalstieg); Minuet (Sternberg); Selection from Der Tenor der Herzogin (Künneke). 5.20, English Lesson. 5.40, Weather, Time, Exchange, and Sports Notes. 5.50, Talk: Travelling in the South. 6.10, Talk on Social Politics. 6.30, Books on Industry and Society. 6.55, First General News. 7.0, Concert of German Opera Music, conducted by Wolf; Melody and March from Die Folkinger (Kretschmer); Overture, Euryanthe (Weber); Selection from Undine (Lortzing); Helmsman's Song and Sailors' Chorus from The Flying Dutchman (Wagner); Selection from Hansel and Gretel (Humperdinck). 7.45, Ruhrland—Concert by Ruhr Miners' Choirs and Soloists. 9.5, News and Sports Notes. Talk on the Industry of the Ruhr, in an interval. 9.20, Cantata for Mixed Choir, Baritone and Orchestra to Text by Stefan George (Wilhelm Maier); The Station Chamber Orchestra and Choir, conducted by Zimmermann; Soloist: Wocke (Baritone). 10.0, Serenade from Frankfurt. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and DRESDEN, 319 metres.—11.5 a.m., Orchestral Concert, by the Unemployed Musicians' Orchestra of Dresden, conducted by Kurt John. In an interval at 12 Noon, News, Weather and Time. 1.0 p.m., Art Review. 1.30, Labour Exchange Report. 2.15, Talk for Country Women. 2.35, Exchange and Market Prices. 3.0, Talk: Salamanders and other Reptiles. 3.30, Concert by the Orchestra of the Friedrich-Theater, Dessau, conducted by Gustav Mannebeck. Overture, The Taming of the Shrew (Goetz); Serenade, Op. 41 (Wunsch); Selection from The Jewels of the Madonna (Wolf-Ferrari); Waltz, Die Werber (Lanner); Selection from Die goldene Meisterin (Eysler). 4.30, Weather and Time. 4.50, Exchange Quotations. 5.0, A Conducted Tour of the Leipzig Art Industrial Museum.

5.25, Review of Books about Africa. 5.50, The Leipzig Station informs its Listeners. 6.0, Hans Hinkel discusses Hanns Jost. 6.30, Military Band Concert, conducted by Jahn. March from Kleist's Kätchen von Heilbronn (Hans Pfitzner); Festival Overture (Reinecke); March Potpourri, Die Wache zieht auf (Kochmann); Heroic Overture (Schmidt); Leb wohl, leb wohl, Kaserne (Bernhagen); Festliche Turnermusik for Trumpets and Kettledrums (Friedemann); Old Prussian March (Lebede); Offenburg March (Jahn); March, Sag' Kamerad zu mir (Rust). 8.0, News Bulletin. 8.5, Economic Notes. 8.40, Schlageter—Play (Hanns Jost), adapted for Radio by Henrik Herse. 9.15, News Bulletin. 9.30 (approx.), The Teachers and Pupils of Mozart—Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Soloist: Hans Grisch (Pianoforte). Military Divertimento (Leopold Mozart); Concerto in A Flat for Pianoforte and Orchestra, Op. 13 (J. N. Hummel); Concerto facile for Pianoforte and String Orchestra (Freystädter). 10.30 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 7 kW.—5.30 p.m., Reading. 6.0, French Lesson. 6.30, Talk on Hygiene. 7.0, See Warsaw. 9.0, Time, News, and Popular Music on Gramophone Records.

LWOW

381 metres; 16 kW.—6.0 p.m., Reading. 6.15, Miscellaneous Items. 6.30, See Warsaw. 10.0 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 8.30 p.m., Concert of Light Music. 9.0, Relay from Toulouse (PTT) (56 metres), Esther Music by Moreau, followed by Le Marriage Forcé (Molière), Music by Lully. News after the Programme.

MADRID

ARANJUEZ (EAQ); 30.43 metres; 20 kW.—10.30, Concert of Variety Music. 10.45, Radio Chronicle. 11.0, Concert (cont'd.). 11.35, Answers to Correspondence. 11.40, Spanish-American Talk. 11.45, Light Music. 12.0 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EA47, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Programme of Musical Novelties and Variety Items by Ramon Gomez de la Serna. 8.15, News and Political Review. 8.30 to 9.30, Interval. 9.30, Chimes, Time Signal, and Political Review. 9.45 (approx.), An Interview with the Actor Alfonso Tudela, followed by Trio Concert, relayed from the Aeolian Hall; Trio in C Minor, Op. 166 (Mendelssohn); Sonata in D for Violin and Pianoforte (Turina); Trio in D Minor, Op. 32 (Arensky). 11.45, News Bulletin and Programme Announcements for Listeners Abroad. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—5.15 p.m., See Prague. 6.25, Concert of Folk Music by a Peasant Band. 7.0, See Prague. 9.15 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—4.30 p.m., Popular Music on Gramophone Records. 5.30, Concert of Music by Ippolitov-Ivanov, relayed from the Conservatoire. 8.0, Talk in English: How the Soviet Republic supports Agriculture.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—4.0 p.m., Orchestral Concert, conducted by Richard Planer. Procession and March (Weinwurm); Overture, Stiffelio (Verdi); Waltz from Elfenzauber (Planer); The Volga Boatman (Kubaa); Konradin Kreuzer Fantasia (Bohno); Viennese Song Potpourri, Halloho, halloho, hier Wien (Morena). 5.15 (from Nürnberg), Talk. 5.35, Talk: Communications between Bavaria and Austria. 5.55, Time, Weather and Agricultural Report. 6.5, Review of Foreign Affairs. 6.25, Programme by a Verse Speaking Choir. 6.45 (from Nürnberg), Orchestral Concert, conducted by Lothar Kraus. Overture, Der Erlenhügel (Kuhla-Häntsch); Waltz from Countess Maritza (Kálnah); Potpourri, Aus Webers Zauberwald (Urbach); Ballet des parfums (Popy); March, Treneschwur (Kistler). 7.5, Talk: Weather and Aviation. 8.15, Das Herzwunder—Musical Miracle Play in One Act (Friedrich Hölzel). 9.20, Time, Weather, News, Sports Notes and Announcements.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—4.15 p.m., Popular Music on Gramophone Records. 5.0, French Lesson. 5.20, Talk: A Visit to a Windmill in Kambo. 6.0, Announcements. Weather and News. 6.30, English Lesson. 7.0, Time Signal. 7.1, Symphony Concert by the Philharmonic Orchestra, conducted by Odd Grønner Hegge. Soloists, Johan Simonsen (Violin). Symphony in B Flat, Op. 15, No. 2 (Svendsen); Violin Concerto in D Minor, Op. 47 (Sibelius); Fantastic Sketches, Op. 37 (Halvorsen). 8.30, Foreign Agricultural Report. 8.40, Weather, News, and Topical Talk. 9.15, Reading. 9.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—7.0 p.m., Dopolavoro Notes, Tourist Talk, Agricultural Report, Report of the Royal Geographical Society, and Giornale Radio. 7.20, Variety Music. 7.30 (in an interval), Time Signal and Announcements. 7.45, The Pearl Fishers—Opera in Three Acts (Bizet). In the interval: Talk and Announcements. 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Le Journal Parlé. 7.20, Weather Report. 7.30, Concert by the Radio Orchestra, conducted by Edouard Flament: Tragic Overture (Brahms); Variations sur une bourrée (Flament); Selection from Lohengrin (Wagner); Waltz, Wine, Woman, and Song (Joh. Strauss). 8.15, News Bulletin. 8.30, Musical and Literary Programme for Young People. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Sponsored Talk. 7.10, Gramophone Concert of Popular Music. 8.0, Talk on Music. 8.15, Interval. 8.30, Orchestral Concert: Excerpts from Operettas (Delibes): (a) Les deux veilles gardes, (b) L'Ecosais de Chatou. 10.30, News.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records: Reflets dans l'eau (Debussy); Allegro appassionato (Saint-Saëns); Melody (Schubert); Guitare (Moszkowsky). 8.0, Press Review and Weather. 12 Noon, Hebrew Talk. 12.30 p.m., Concert by the Kretzly Orchestra; Soloists, M. Rechet (Flute) and Roger Bouhne (Cello): First Suite from Les Indes galantes (Rameau); Flute Solo, Minuet from Orpheus (Gluck); Serenade (Haydn); Adagio from The Moonlight Sonata (Beethoven); Overture, Preciosa (Weber); Romance (Schumann); Andante and Scherzo from the Second Trio (Mendelssohn); 'Cello Solo, Russian Songs (Lalo); Le rouet d'Omphale (Saint-Saëns); Excerpts from the Peer Gynt Suite (Grieg). 2.0, Exchange and News. 3.45, Exchange and Market Prices. 4.30, Elementary English Lesson. 6.10, Agricultural Talk. 6.30, Concert by the Kretzly Orchestra: Three Dances (German); Venetia (Pascal); Jeux folâtres (Dyck). 6.50, Notes on Insurance. 7.0, Talk. 7.20, Concert by the Kretzly Orchestra (contd.); Eternal printemps (Popy); Gondoliers' Song (Mezzacapo); Serenade (Filippucci); La cinquante (Marie); Pasquinade (Razigade); French March (Ganne). 8.0, Readings. 8.30, News and Weather. 8.40, Medical Talk. 8.45, Symphony Concert conducted by Eugene Bigot; Soloist, Robert Kretzly (Violin): Overture, The Thieving Magpie (Rossini); Concerto in A for Violin and Orchestra (Mozart); Feuilles, from Images (Aubert); Viennese Rhapsody (Schmitt); Symphony in C (Dukas). In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—4.0 p.m., Music Appreciation Hour—Walter Damrosch Conducting, from New York. 9.0, Talk by Dr. Emily Jones. 9.10, Business News. 9.15, S.A.I. Musicale (Carnegie Tech Chapter). 9.30, Weather Report. 9.32, Market Reports. 9.45, Johnny Muskrat. 9.50, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Muskingum College Music Clubs. 10.15, Programme to be announced. 10.30 to 11.15, New York Relay. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Our Daily Food—George Reuter and Judge Gordon. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaherry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45 to 3.30 a.m. (Saturday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Music is my Hobby. 12.30,

MARCH 24th

FRIDAY

continued

Five Star Theatre—Charlie Chan. 1.0, Nestle's Programme. 1.30, Time Signal and Adventures in Health. 1.45, Howard Thurston, the Magician. 2.0, The First Nighter. 2.30, Armour Programme. 3.0, Dorothy Fields and Jimmy McHugh. 3.15, Vic and Sade. 3.30, Bridge School of the Air, by E. Hall Downes. 3.45, Concert Orchestra, from New York. 4.0, Time Signal. 4.1, Teaherry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News Flashes. 4.20, Cora Williams Hines (Contralto). 4.30, Smith Ballew and his orchestra. 4.58, KDKA Artist Bulletin. 5.0, Cotton Club Orchestra, from New York. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.10 p.m., See Brno. 3.55, Talk: Building Problems. 4.5, See Brno. 5.5, Agricultural Talk. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Educational Talk. 6.0, Chimes. 6.2, News. 6.10, Reading. 6.25, See Moravská-Ostrava. 7.0, Introductory Talk to the following Transmission. 7.5, Concert by the Czech Philharmonic Orchestra, conducted by Alexander Zemlinsky, relayed from the Smetana Concert Hall. Soloist, Maria Müller (Songs). 8.0 (in the interval), Time Signal. 9.0, Time, News, Announcements, and Sports Notes. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW: **LAUSANNE**, 680 metres; and **GENEVA**, 760 metres.—5.0 p.m. (from Geneva), Reading. 5.15 (from Geneva), Interview with Young People. 5.30 (from Lausanne), Educational Talk. 6.0, (from Geneva), Weather Forecast, News Bulletin and Announcements. 6.30 (from Lausanne), Lesson for Printers. 7.0 (from Lausanne), Medical Talk. 7.30 (from Lausanne), Recital of Slav Songs and Balalaika Music. 8.10, See Schweizerischer Landessender. 8.30 (from Lausanne), Mon tailleur—Comedy in One Act (A. Capus). 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva), Talk: The Work of the League of Nations. 9.30 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, by the Fireside.

RJUKAN.—See Oslo.

ROME

Call IRO, 441 metres; 50 kW. Relayed by Naples, 319 metres, and PRO, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Orchestral Concert. In the interval at 12.30, Giornale Radio and Exchange. 3.0, Song Recital by Lotte Lehmann (Soprano) from the Royal Academy of Saint Cecilia. 6.0 (Naples), Shipping and Sports Notes. 6.10, Agricultural and Dopolavoro Notes. 6.20, Giornale Radio and Announcements. 7.5, Report of the International Institute of Agriculture in Italian, French, English, German and Spanish. 7.30, Talk on Sport, Sports Notes, and Tourist Report. 7.45, Overture, Olympia (Spon-tini). 8.0 (approx.), La vita m'offre un dono—Comedy in One Act (Vincenzo Bruno). 8.20, Concert of Henri Dupare Music: Soloist: Margherita Cossa (Soprano); Two Songs: (a) Chanson triste, (b) Phylidè; Nocturne, Aux étoiles; Two Songs: (a) La vie antérieure, (b) Invitation au voyage. 9.0 (approx.), Vocal and Instrumental Concert: Pianoforte Solos: (a) Second Scherzo (Bajardi), (b) Etude No. 3, Op. 10 (Chopin), (c) The Eleventh Hungarian Rhapsody (Liszt); Extract from L'Elisir d'amore (Donizetti). 9.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—7.30 p.m. to 12.0 Midnight, New York Relay. 7.30, Muted Strings. 7.45, Three Shades of Blue—Male Trio. 8.0, Sonata Recital. 8.15, Famous Loves—Dramatic Programme. 12.0 Midnight, New Kenmore Hotel Orchestra. 12.15 a.m. (Saturday), Stock Reports. 12.30, Gold Medal Band. 12.45, The Goldbergs—Comedy Sketch from New York. 1.0, Cities' Service Concert from New York. 1.30, WGY Farm Programme. 2.0, Best Foods Programme from New York. 2.30, Pond's Programme and Programme Resumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE**, 244.1 metres; and **BERNE**, 245.9 metres.—11.28 a.m., Time Signal from the

Neuchâtel Observatory. 11.30, Weather and News. 11.40, Concert of Light Music by the Radio Orchestra. 12.25 p.m., Weather and Exchange. 12.45 to 2.30, Interval. 2.30 (from Berne), Music by Roy Fox's Orchestra on Gramophone Records. 3.0 (from Berne), Italian and Spanish Folk Songs on Gramophone Records. 3.30 (from Berne), Programme for Children. 4.0 (from Berne), Popular Music on Gramophone Records. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from Berne), Readings. 6.0, Time, Weather, Market Prices, Tourist Talk, and Sports Notes. 6.15 (from Berne), Talk: Photography in Criminology, Law and Medicine. 6.45 (from Berne), Concert of Music by Plotow, conducted by Carl Friedemann. 7.20 (from Berne), Es paré Schuch and was dri ghoré Dialect Comedy (Peter Bratschi). 8.10, Concert of Waltzes by the Radio Orchestra. 8.30, Weather and News. 8.40 (from Berne), Concert of Music in Old Style by the Radio Orchestra: Duets by Liesel Böning-Hugues (Soprano) and Gertrud Meisner (Contralto). 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.5 p.m., Programme for Children. 4.25, Song Recital. 4.45, Gramophone Records of Light Music. 5.45, Talk, relayed from Göteborg. 6.30, Variety Programme. 7.15, Weather and News. 7.30, Old Dance Music. 9.0, Modern Dance Music. 9.45 (in the interval), Weather and News. 11.15 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert Faust (Berlioz). 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Orchestral Concert, conducted by Maurice de Villers: Overture, A Fête at Aranjuez (Demersmann); Hungarian Rhapsody No. 2 (Liszt); Selection from La Yumina (Bastide); Airs (Albeniz): (a) Prelude, (b) Tango, (c) Malagena; Spanish Dances (Moszkowsky). 2.0 to 4.45, Interval. 4.45, Literary Talk in French. 5.0, Orchestral Concert of Jazz Music, conducted by Roskam. 6.0, Trio Concert, relayed from Lille (265.4 metres). 7.0, Topical Talk in German. 7.15, Talk in French: The Employer's Responsibility for Accidents at Work. 7.30, Time and News. 7.45, Gramophone Concert: Overture, Oberon (Weber); Till Eulenspiegel's Merry Pranks (R. Strauss); Caprice italien (Tchaikovsky). 8.20, Lottery Results. 8.30, Symphony Concert by the Espérance Musical Society, relayed from Hagondange: Conductor, Emile Schmitt: Overture, Le roi de Lahore (Massenet); The Unfinished Symphony (Schubert); La plainte du clocher (Balay); Selection from Tannhäuser (Wagner); Waltz from Frau Luna (Lincke); Overture, The Nuremberg Doll (Adam); Spa-Abade (Straussen); Selection from The Girl in the Taxi (Gilbert); Les chevaux légers (Parès). In the intervals, Talk on the Espérance Musical Society, and Talk on the Factories at Hagondange. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres, 60 kW.; and **FREIBURG**, 570 metres.—12.30 p.m., Concert from Langenberg. 1.0, Concert arranged by the Post Office. 1.30, Advanced English Lesson. 2.0 to 3.30, Interval. 3.30 (from Freiburg), Talk on Helene von Heldburg. 4.0, Orchestral Concert, relayed from Pforzheim: Overture, Fran Meisterin (Suppé); Ballet Music from Faust (Gounod); Herzwunden (Grieg); Letzter Frühling (Grieg); Selection from Der Rosenkavalier (R. Strauss); Rhapsody No. 1 (Liszt); Suite No. 1 from L'Arlesienne (Bizet); Waltz, Künstlerleben (Joh. Strauss). 5.15, Time, Weather, and Agricultural Notes. 5.25, Talk: Schools on the Heuberg. 5.50, Medical Talk. 6.15 (from Freiburg), Talk: Walks for Sunday. 6.25, Time and News. 6.30, Old and New Neapolitan Songs by Hermann Lingor (Tenor) and Leo Bantz (Lute and Guitar): Part One: Seventeenth Century Songs to the Lute (Parisotti): (a) Povero core, (b) Begli occhi Lucenti, (c) Amor dormigione. Part Two: Songs to the Guitar: (a) Sicilliana (di Capua), (b) Nutata a' mmare (di Capua), (c) Chitarata (di Capua), (d) Napule bello (Gregorio). 7.0, Can Henry Pay—A Radio Play (Martin Dey). 8.0, Concert from Frankfurt. 8.30, Reading. 9.0, Time, News, Weather, Snow Report, Programme Announcements, and Sports Notes. 9.30, Programme from Frankfurt. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—6.0 p.m., News Bulletin. 6.15, Popular Songs. 6.30, Accordion Solos. 6.45, Tourist Talk. 7.0, Military Music. 7.15, News, Racing Results and Market Prices. 7.25, Local News. 7.30, Opera Music. Songs from Il Trovatore (Verdi), Manon (Massenet), and Carmen (Bizet). 7.45, Sym-

phony Music. 8.15, Arias from Opera. Othello (Verdi), The Magic Flute (Mozart), and The Prophet (Meyerbeer). 8.30, Viennese Music. 9.0, Songs. 9.15, Concert of Hunting Music. Mass of St. Hubert (Samburn); Hunting Choruses. 10.0, Light Music. 10.15, North African News. 10.30, Sound Film Music. 10.45, Argentine Music. 11.0, Humorous Scenes. 11.15, Bal Musette. 11.30 to 12 Midnight, Programme in English by the I.B.C. The I.B.C. Half Hour; Other Days; Little Dolly Daydreams; My old Dutch; Old time Memories; Ma Curly Headed Baby; Lily of Laguna; The Future Mrs. Awkins; Vienna Blood. 11.57, I.B.C. Good-night Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Saturday), Balalaika Music and Russian Songs. 12.16, Dance Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kW.—3.0 p.m., See Rome. 5.35 to 6.0, See Turin. 6.0, Light Music on Gramophone Records. 6.20 to 6.35, See Turin. 6.35, Light Music from the Café Dante. 7.0 (approx.) till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—3.0 p.m., See Rome. Giornale Radio in the interval. 5.35, Giornale Radio, Agricultural and Dopolavoro Notes. 6.0, Gramophone Records of Light Music. 6.20, Giornale Radio. 6.30, Time, Announcements, Report of the Royal Geographical Society and Gramophone Records (contd.). 7.0, Giornale Radio, Weather, and Gramophone Records (contd.). 7.30, Talk on Sport, followed by Gramophone Records of Variety Music. 8.0, Symphony Concert conducted by Otto Klemperer. Talk in the interval. 10.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in German. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—3.45 p.m., Concert by the New Vienna String Quartet. Soloists: Maria Reining (Soprano) and Olga Novakovic (Pianoforte): Five Pianoforte Pieces, Op. 39 (Krenek); Three Pieces from The Twenty-four Melodies (Kauder); Three Pieces from The Six Grecian Rhapsodies (Petrek); String Quartet in B Flat Minor (Reidinger); Six Love Songs (Beli); (a) Du denk ich ankehler, (b) O blühende Heide, (c) Sinkt nun der Frühlingstrau, (d) Eine Melodie, (e) Denn unsre Liebe hat, (f) Es hechten Berg und Fäler. 5.0, Tourist Report. 5.15, Report on Workers' Athletics for 1933. 5.30, Sports Notes. 5.40, Programme to be announced. 5.55, Professional Experiences—by Dr. Paul Sebesta. 6.20, Time, Weather, and Programme Announcements. 6.30, See Leipzig. 8.0, Franz Schmidt Concert by the Vienna Symphony Orchestra, conducted by Oswald Kabasta: Symphony in E; Ciaconne in C sharp. 9.10, News, Weather, and Announcements. 9.25, Traffic Report. 9.36, Jazz Music by the Heinz Branca Band, relayed from the Café Palmhof. Vocal Retains by Walter Branca.

WARSAW

1,411 metres; 120 kW.—10.57 a.m., Time Signal and Bingle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Popular Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Aviation Report and Anti-Gas Drill. 2.30, Maritime and Colonial Affairs. 2.35, Review of Periodicals. 2.50, Light Music on Gramophone Records. 3.20, Educational Talk. 3.40, Talk on Choreography, relayed from Poznan (335 metres). 4.0, Military Band Concert, conducted by S. Radziejowski. In the interval: Announcements. 4.55, Programme Announcements. 5.0, Literary Talk: Young Polish Authors. 5.20, Talk on Current Events. 5.25, Dance Music and Light Music. 6.0, Miscellaneous Items. 6.20, Polish and Foreign Agricultural Report, relayed from Wilno (563 metres). 6.30, Reading. 6.45, Radio Journal. 7.0, Talk on Music. 7.15, Symphony Concert by the Warsaw Philharmonic Orchestra, conducted by G. Górgescu. Soloist: C. Szenassy (Violin). Rhapsody No. 2 (Enescu); Symphonic Poem, La procession nocturne (Rabaud); Violin Concerto in D (Paganini); Fantastic Symphony (Berlioz); Variations on a Theme by Haydn for Violin and Pianoforte (Wieniawski). In the interval: Literary Talk: The Detective Story. 9.40, Sports Notes. 9.45, Radio Journal. 9.55, Aviation Weather Report and Police Notes.

WILNO

563 metres; 16 kW.—5.55 p.m., Miscellaneous Items. 6.0, Reading. 6.10, Miscellaneous Announcements. 6.20, Agricultural Press Review. 6.30 to 6.45, Reading.

ZURICH.—See Schweizerischer Landessender.

SATURDAY

MARCH THE TWENTY-FIFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Music Hall Vandeville programme. Scandinavia Military Band music.
- LONDON REGIONAL** Children's concert from the Town Hall, Birmingham. A relay from the Empire Theatre, York.
- MIDLAND REGIONAL** Plebiscite Orchestral programme, from the Town Hall, Birmingham.
- NORTH REGIONAL** Running commentary on the Rugby League semi-final. Relay from the Empire Theatre, York.
- WEST REGIONAL** Orchestral concert from the National Museum of Wales.
- SCOTTISH REGIONAL** Eye-witness account of the International Hockey Match: Scotland v. England, at Peebles.
- BELFAST** Syncopated Pianists and Nigger Melodies.

ABROAD

- BERO-MUNSTER** 7 p.m. Opera: "Figaro" (Mozart), from Zurich.
- BRUSSELS (No. 1)** 8 p.m. Wagner concert, from the Conservatoire, Verviers.
- COPENHAGEN** 7.2 p.m. Handel concert.
- PALERMO** 7.45 p.m. Operetta: "Der Tanz ins Glück" (Stolz).
- PRAGUE** 7.30 p.m. Opera: "The Imp of Zvikov," by Novak.
- STRASBOURG** 5 p.m. Pasdeloup Symphony Concert from Paris.
- TOULOUSE** 9 p.m. Extract from "The Tales of Hoffmann" (Offenbach).
- TURIN** 7.30 p.m. Operetta: "Rompicollo."
- WARSAW** 8.30 p.m. Programme in honour of the Greek National Festival.

BRATISLAVA

279 metres; 14 kW.—3.10 p.m., Concert of Light Music by the Station Orchestra, conducted by J. Odchazel: Part I—French Music; Part II—Italian Music. 4.10, See Prague. 4.20, Variations and Fugue on a Theme by Händel, Op 24 (Brahms). 4.45, Talk. 5.0, Popular Concert by the Station Orchestra, conducted by Nagl. 5.45, Talk for Housewives. 6.0, See Prague. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 60 kW.; and GLEIWITZ, 253 metres.—12.5 p.m., Weather for Farmers. 12.10, Popular Music on Gramophone Records. In the interval at 12.45, Time, Weather, News, and Exchange Quotations. 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Weekly Film Review. 3.0, Talk: The Siebengebirge Country. 3.30, Concert from Hamburg. 4.30, Book Review. 4.50, Reading. 5.10, Talk on Silesia. 5.35, Topical Talk. 6.0, Gramophone Concert: Hungarian Dance No. 1 (Brahms); Gavotte from Idomeneo (Mozart); Turkish March from The Ruins of Athens (Beethoven); L'Apprenti sorcier (Dukas). 6.30, Weather for Farmers. 6.35, Reading. 7.0, See Langenberg. 8.50, Time, Weather, News, Sports Notes, and Programme Announcements. 9.20, Dance Music relayed from Berlin (Witzleben). 11.0 (approx.), Close Down.

BRNO

342 metres; 35 kW.—5.25 p.m., German Transmission: News and Review of Gramophone Records. 6.0, See Prague. 7.25, Military Band Concert. 8.10, Talk: The Brno Dialect and its History. 8.20, Dance Music. 9.0, See Prague. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Concert, conducted by André Felleman, relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Concert by the Little Station Orchestra, conducted by P. Leemans: Overture, The Barber of Seville (Rossini); Serenade, Granada (Albéniz); Pianoforte Solo, Castilla (Albéniz); Selection from La Traviata (Verdi); Spanish Dance for Violin (Wiggy); Potpourri, Les airs de St. Granier (Salabert). 5.0, Concert by the Radio Orchestra, conducted by Charles Walpot: March, Sambre et Meuse (Planquette); Overture, The Merry Wives of Windsor (Nicolai); Moss Rose (Bosc); Selection from La Bohème (Puccini-Gaugin); Extase (Ganne); In a Chinese Temple Garden (Ketelbey); Girl (Poot); Le haut-

bois soupire (Gervasio); Suite orientale (Popy). 6.0, Talk: Modelling at Home. 6.15, Gramophone Records: Romance, La nuit (Rubinstein-Corné); Si vous l'avez compris (Denza); The Sacred Hour (Ketelbey); March of the Caucasian Chief (Ivanov). 6.30, Concert by the Small Station Orchestra, conducted by P. Leemans; Italian March (Rousseau); Overture (Raimann); Lament (Liadov); Bacchante (Glazunov); Selection from The Flying Dutchman (Wagner); Esquise No. 2 (Aubert); Tes yeux (Bonincontro); Selection from Sunny (Kern). 7.15, Talk: Party Politics in Europe—Poland, Hungary, and the Balkans. 7.30, Review of International Affairs. 8.0, Concert, conducted by Albert Dupuis, relayed from the Conservatoire, Verviers; Soloists: Mme. Bonavia (Soprano), R. Lapelletrie (Tenor), and M. Fromenty (Bass). Part I.—Wagner Programme: Prelude to Parsifal; Bass Solo: Wotan's Farewell from The Valkyries; Soprano Solos: (a) Elisabeth's Aria from Tannhäuser, (b) Träume; Tenor Solo: Lohengrin's Narrative from Lohengrin; Overture, The Mastersingers. 9.10, Readings from the Works of Paul Vanderborght. 9.25, Concert. Part II.—Extracts from The Damnation of Faust—Opera (Berlioz). 10.50, Le Journal Parlé. 11.0, Gramophone Dance Music.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Concert by the Little Station Orchestra, conducted by P. Leemans: Overture, A Life for the Tsar (Glinka); Symphonic Poem, Provence (Fourdrain); Serenade (Godart); Selection from The Tales of Hoffmann (Offenbach); Andante for Violin from the Spanish Symphony (Lalo); Two Italian Songs (Volpatti); Waltz, Es führt kein anderer Weg zur Seligkeit (Heymann); Selection from H.M.S. Pinafore (Sullivan). 1.0 p.m., Le Journal Parlé. 1.10, Concert, conducted by André Felleman, relayed from the Grand Hotel, Antwerp. 5.0, Concert by Mickey's Club Jazz Attraction, conducted by Ludo Langlois. 6.0, Jewish Music on Gramophone Records: Die fröhliche Nacht in Palestina; Fantasia on Hebrew Songs; Zion (Phillipson); Two Dances (Kornienko-Zamulenko): (a) Stambul, (b) Kavkaz. 6.15, Talk: Alexander the Great. 6.30, Sonata Recital by Franz Wiggy (Violin) and Paul Collier (Pianoforte); Sonata in E (Bach); Sonata in F (Mozart); Sonata (Debussy). 7.15, Talk: Youth Hostels in Belgium and Abroad. 7.30, Agricultural and Gardening Talk. 8.0, Concert of Sound Film Music by the Radio Orchestra, conducted by Charles Walpot. 9.0, Music Hall Programme, with the Collaboration of Henri Marchand (Humorist). 10.0, Le Journal Parlé. 10.10, Gramophone Records: In the Steppes of Central Asia (Borodin); Overture, Tannhäuser (Wagner). 10.30, Concert, conducted by Paul Moreaux, relayed from the Memline Hall, Antwerp. 12 Midnight (approx.), Close Down.

ATHLONE

413 metres; 60 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time, Weather, Stock Report, and Variety Music on Gramophone Records. 6.15, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Talk on Allotments. 7.45, Gaelic Talk. 8.0, Illustrated Lecture Recital by Grace O'Brien: The Influence of Songs on Pianoforte Music. 8.30, The Station Orchestra. 8.45, Recital of MacDowell's Songs by E. McKenna (Soprano), with Orchestral accompaniment. 9.0, Gaelic Songs. 9.15, The Station Orchestra. 9.30, Piccolo Solos by Mollie Flynn. 9.45, Dance Music from the Civil Service Social Club. 10.30, Time, News, Weather, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Programme for Children. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations and Catalan Grammar Lesson. 8.0, Light Music on Gramophone Records, followed by News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 9.5, Concert by the Station Orchestra: March (Fueki); Waltz, Etincelles (Waldteufel); Minuet (Haydn); Overture from Poet and Peasant (Suppé). 9.30, A Musical Comedy, relayed from Madrid (EAJ7). 11.0 (in an interval), News Bulletin.

BARI

270 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Talk, and Dopolarvoro Announcements. 7.20, Giornale Radio, Sports Notes, and News Bulletin. 7.30, Time Signal and Announcements. 7.35 (approx.), Concert of Operetta Music and Songs. In the interval: Art Notes. 9.30, Popular Music on Gramophone Records. 9.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.8 kW.—5.55 p.m., Time and Programme Announcements. 6.0, Wireless Talk. 6.30, Gramophone Records. 6.50, Introductory Talk to the following Relay. 7.0, Relay of an Opera from the National Theatre, Zagreb (307 metres). In an interval at 8.30 (approx.), News. 10.0, Light Music from the Ratnicki Dom Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.45 p.m., News. 1.0, Gramophone Concert from Berlin (Witzleben). 2.0, Handwork for Children. 2.30, Weather and Exchange Quotations. 2.45, Reading. 3.0, Talk on the Dramatist Paul Gork. 3.30, See Hamburg. 4.10, Weekly Review. 5.0, Brahms Song Recital by Elisabeth Höngen (Contralto): Nicht mehr zu dir zu gehen; Wenn du mir zuweilen lächelst; Unbewegte laue Luft; Liebe und Frühling (I); Spanish Song; Auf dem Schiffe; Meine Lieder; Schwermut; Wehe, so willst du mich wieder. 5.30, Talk: The Famous German Chemist, Justus Liebig. 5.55, Weather for Farmers and Announcements. 6.0, Talk: Religion and Life. 6.30, A Poem. 6.35, String Quartet in E Minor (Verdi). 7.5, See Berlin (Witzleben). 8.50, Weather, News and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—3.0 p.m., Wind Instrument Concert, conducted by Carl Woitschach. Helene-marsch (Lühbert); Overture, Light Cavalry (Suppé); Waltz, Morgenblätter (Joh. Strauss); Tee bei Matkifers (Noack); Selection from La Traviata (Verdi); March, Spring Greetings (Barlow); Overture, Der Waffenschmied (Lortzing); Serenade, Liebesglocken (Woitschach); Potpourri, Rheinischer Saug (Hannemann); Waltz, Flott durchs Leben (Translatour); Selection from Gasparone (Müllcker); March, Durch dick und dünn (Thiele); March, Frohe Jugend (Woitschach). 5.0, What the Public Likes—A Discussion on Films by the Producer, the Author, the Film Star, and the Filmgoer. 6.30, Humorous Sketches by Peter Purzelbaum. 5.45, The Witzleben Station informs its Listeners. . . . 5.50, Topical Talk. 6.0, Scenes from Mozart's Life—Operetta in One Act (Lortzing), with Melodies from Mozart's Compositions. 7.0, Announcement. 7.5, Radio Revels by the Carl Woitschach Wind Instrument Orchestral, the Dietrich Schrammel Quartet and Soloists. 8.50, Topical Talk. 9.10, Weather, News, and Sports Notes. 9.30 (approx.), Dance Music relayed from the Eden Pavilion. 11.0 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.40, Sports Notes. 7.45, Talk: Electricity and Hygiene. 8.0, News, Exchange, Market Prices and Lottery Results. 8.5, English Lesson. 8.20, News and Weather. 8.30, Gramophone Concert of Light Music. 9.0, Main gauche—Comedy in Three Acts (Pierre Véter).

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Light Music and Romanian Music by the Sibbano Orchestra. 5.0, News and Time Signal. 5.10, Talk. 5.25, Light Music (contd.). 6.0, Talk: The History of the Romanian Theatre. 6.40, Light Music on Gramophone Records. 7.0, Choral and Orchestral Concert, relayed from the Romanian Athenaeum. 9.0, News

BUDAPEST

550 metres; 18.5 kW. Also relayed of 840 metres from 5.15 to 11.0 p.m.—4.0 p.m., Trio Concert: Meditation (Bach-Gonod); Hume und Schmetterling (Jaray); Ritorna (Carosio); English Waltz (Hüller); Spanish Serenade (Micheli); Mon coeur (Patky). 4.30, Recitations. 5.15, Recital of Old Hungarian Songs by Szidi Elek, with Cigany Band Accompaniment. 6.15, Programme by Jenő Heltai. 6.45, Orchestral Concert: Melody (Tchaikovsky); Frühlingsblumen (Urbach); Vision (Losonczi); Hungarian Dances (Smareglia); Andalusian Romance (Sarasate); Tango lirico (Stephanides). 7.45, Johann Strauss Concert, by the Budapest Concert Orchestra, conducted by Hans Knappertsbusch: Overture, Die Fledermaus; Kusswaller; Künstlerleben; Acceleration; Waltz; Freut Euch des Lebens; Küsserwaller; Polka Tritsch-Tratsch; Rosen from the South; Wine, Woman and Song; Tales from the Vienna Woods; Polka. 9.45, Cigány Music relayed from the Café Jenő. 11.0 (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—11.0 a.m. to 1.0 p.m., Concert from the Wivex Restaurant. 1.30, Gramophone Concert: Sigrid Onegin: Du bist die Ruh' (Schubert); Koloman von Páský: Aria from Don Giovanni (Mozart); Elizabeth Rethberg, Beniamino Gigli and Ezio Pinza: Trio from I Lombardi (Verdi); Yehudi Menuhin: Allegro (Piaoco); Willi Forst: Song from The Prince of Arcady (Stolz); Jenny Howard: We're all together again (Newell); Henry Hall: Leave the Pretty Girls Alone (Robinson); The Singing Sophomores: Oloos (Moret and Kahn). 2.0, Reading for Schools. 2.30, Concert by the Radio Orchestra, conducted by Emil Reesen: Entry March of the Boyards (Halvorsen); Second Peer Gynt Suite (Grieg); Fantasia of Danish Songs (arr. Reesen); Two Pieces from Maskerade (Kull Nielsen); Overture, Norma (Bellini); Waltz, Pomona (Waldteufel); Saeterjensens Søndag—arranged for Strings (Ole Bull-Svendsen); Selection from Madame Butterfly (Puccini); Doll Dance (Turina); March, Quand Madelon (Bousquet and Robert). 3.40, Exchange and Market Prices. 4.50, Talk: The Work of the Fire Brigade. 5.20, French Lesson. 5.50, Weather Report. 6.0, News Bulletin. 6.15, Time Signal. 6.30, Talk on the History of Music—Handel. 7.0, Town Hall Chimes. 7.2, Handel Concert, demonstrating the Talk on the History of Music. The Radio Orchestra, conducted by Lanny Gröndahl. Soloists: Paul Methling (Song) and Henry Munck (Oboe). Overture to Hercules; Concerto in G Minor for Oboe and Strings; Recitative and Aria from The Messiah; Aria from the Dettingen Te Deum; Chaconne for Harpsichord. 7.40, Concert of Modern Music by Louis Preil's Instrumental Ensemble: Tennis March (Ange Nielsen); Selection from The Flower of Hawaii (Abramham); Ueber die Heide (Lilling); Pianoforte Novelty (Steele). 8.0, Variety Programme. 9.0, Pianoforte Solos by Viktor Fischer. 9.15, Concert by the Louis Preil's Instrumental Ensemble. 9.50, News. 10.5, Song Recital. 10.25, Dance Music by the Louis Preil Radio Band. 10.50, Reading. 11.5, Dance Music by the Louis Preil Band. 11.30 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

225.9 metres; 10 kW.—6.0 to 7.0 p.m., Programme in English by the I.B.C., C. Danvers Walker, B. McNabb, and F. Laming announcing. 6.0, Orchestral Concert for Folkstone Listeners: Over the Waves (Rosas); Sous les toits de Paris (Moret); Gold and Silver (Lehar); In the Night (Tale); Gipsy Moon (Borgauy); Vienna, Vienna (Foss); Last Night I dreamed of you (Calmán); When the Lilac blooms again (Gottler). 6.30, Concert for Isle of Thanet Listeners: Old-time Memories: Songs: (a) Captain Ginjaub, (b) When Father papared the Parlour, (c) The Galloping Major, (d) The Man who broke the Bank at Monte Carlo, (e) Two lovely Black Eyes; The Good Companions. 7.0, Programme in French. 11.0 till Close Down, Programme in English by the I.B.C. 11.0, International Broadcasting Club Concert: Tipperary (Judge Williams); Always in my Heart; Please handle with Care; Strange Interlude; Wheezy Anna; I can't believe it's true; Night after Night; The Policeman's Holiday (Ewing). 12 Midnight, Variety Concert: Crystal Gazing; It's a Great Big Shame; O Zuyder Zee; The Schoolmaster; The Laughing Lover; Moon-

MARCH 25th

SATURDAY

continued

shine; 'Arf a Pint of Ale. 12.30 a.m. (Sunday), Concert of Popular Songs: Body and Soul (Green); If I had a Talking Picture of you (de Sylva); Sometimes I'm happy (Youmans); I'm a Dreamer (de Sylva); The Desert Song (Romberg); Nobody but you (Edwards); One alone (Romberg); Your Mother and Mine (Edwards). 1.0, Organ Duets: Because (d'Hardelot); Down South (Myddleton); A Perfect Day (Jacobs-Bond); Marigold (Mayerl); The Whistler and his Dog (Pryor); I'll sing thee Songs of Araby (Clay); Clockwork (Mayerl); Drink to me only with thine Eyes (Calcott). 1.30, Piano-forte Recital of Popular Songs: Magic Notes (Steiniger); Exactly like you (Fields); I like to do things for you (Yellen); My Lover (Yellen); More than you know (Youmans); Swingin' in a Hammock (Seymour); On the Sunny Side of the Street (McHugh); Piano-forte Duet: When the Circus comes to Town (De Rance). 2.0, Dance Music: Somebody stole my Gal; So ashamed; Here's hoping; Southern Serenade; Strange Interlude; Me minus you; I guess I'll have to change my Plan; Same old Moon; How are you? Leave a little for me; Let's all dance the Polka; How do you do, Mr. Brown? The King's Navee; Love is the Sweetest Thing. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.), Close Down.

FLensburg.—See Hamburg.
Florence.—See Turin.

FRANKFURT

259.3 metres; 17 kW.; CASSEL, 245.9 metres; and TRIER, 259.3 metres.—2.30 p.m., Programme for Children. 3.30 to 3.55, Interval. 3.55, Economic Notes. 4.0, Orchestral Concert: March, Aus eigener Kraft (Rupprecht); Waltz, A Summer's Evening (Waldeleufel); Jubel-Ouverture (Chr. Bach); Procession to the Minster (Wagner); Potpourri, Soldatska (Seidenglanz); Baden-viller Marsch (Fürst); March, Heil der Zukunft (Franzen). 5.15, Economic Notes. 5.25, Topical Talk. 5.50, Talk: The Regulation of the Prices of hand-made Goods. 6.15, Time, Announcements, Weather, and Economic Notes. 6.30, Talk by Paul Alverdes. 6.45, Anecdotes of Holstein Sailors. 7.5, Orchestral Concert of Operetta Music. 9.15, Time, News, Weather and Sports Notes. 9.45, Dance Music, relayed from Berlin (Witzleben). 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.
Freiburg.—See Stuttgart.
Geneva.—See Radio-Suisse Romande.
Genoa.—See Turin.
Gleiwitz.—See Breslau.
Goteborg.—See Stockholm.
Graz.—See Vienna.
Hamar.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 269.8 metres; Flensburg, 227.4 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—3.30 p.m., Concert by the Hamburg Philharmonic Orchestra, conducted by José Eiben-schütz: Overture, Flotte Bursche (Suppé); Rondo all' Ungarese (Haydn); Valse Caprice (Wunderstein); Selection from A Masked Ball (Verdi); Potpourri from The Girl in a Taxi (Gilbert); Waltz, Gross Wien (Joh. Strauss). 4.30, Talk: The Ruhr Invasion of Ten Years Ago. 4.55 (from Kiel), Soprano, Tenor and Bass Song Recital, with Recitations. 6.0 (from Flensburg), The Working of a Modern Lending Library—Radio Report. 6.25, Weather Forecast. 6.30, Concert by the Station Male Voice Quartet, Gerhard Maass (Piano-forte) and Gerhard Gregor (Piano-forte and Accordion). Austrian Cocktail (Kaper); Africa (Hlinak); Der Heiratshandel (Hlinak); Caprice for Accordion, Lachendes Mädchen (Delille); Variations on an Old Theme (Sompek); Gallop, for Accordion, Shh—not so loud! (Barrett); Choral Pieces (Hlinak): (a) Der Mühlgang, (b) Das Gespenst; Florette (Heintzschel). 7.5, Variety Programme from Berlin (Witzleben). In an interval: News. 9.0, Time, Weather, News, Sports and Police Notes. 9.10, Topical Talk. 9.30, Dance Music from Berlin (Witzleben). 10.20 (in an interval), Ice Report.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—12.5 p.m., Gramophone Concert: Rheinländer Potpourri (Kernbach); Mädel kommt mit mir den Rhein entlang (Ostermann); Drum ruf ich dir, zieh an den Rhein (Ostermann); Einmal am Rhein (Ostermann); Karno-vadsklänge (Hannemann); Cologne Folk Song, Rotseh mer je (Ostermann); Woröm hält der Pitter dem Heins verzählt (Raymond); Wenn im sonnigen Herbst (Humperdinck); Was ist Wein? Sonnenschein (Walter); Du blonde Lindenwirtin am Rhein (Krausz); Grüss mir die stolzen Burgen am Rhein (Raymond); Beim Lindenwirt in der Drosselgasse (Krone); Rheinische Lieder, schöne Frauen beim Wein (Ostermann); Mädel ich bin dir so gut. (Eiders); Rheinischer Sang (Hannemann); Es liegt eine Krone im grünen Rhein (Hill); Denn nur der Heim mit seiner Frühlichkeit ist schuld daran (Ostermann);

Grüss mir das blonde Kind am Rhein (Heiser). In the interval at 12.20, News. 1.30, Programme arranged by the Post Office, with Gramophone Records. 2.0, Agricultural Prices and Exchange Rates. 2.30 (from Danzig), Handwork for Children. 3.0, See Berlin (Witzleben). In the interval at 3.50 (approx.) (from Danzig), Talk on Films. 5.45, Talk. Why should the Experienced Salesman attend a Trade School? 6.10, Organ Recital by Gerhart Bronstetter, relayed from the Neurosgärtner Küche; Prelude and Fugue in E (Lübeck); Variations on the Choral, Jesu, meine Freude (Walther); Fantasia and Fugue in C Minor (Bach); Sonata for Oboe and Organ, Op. 38 (Schindler). 7.0, Weather and News. 7.10, A Sporting Programme: Professor Thienemann and Egon von Kapherr tell Anecdotes of the Chase; Music by the Station Choir and an Unemployed Orchestra, conducted by Georg Woellner. 9.10, Weather and News. 9.20 (approx.), Dance Music from Berlin (Witzleben).

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—11.55 a.m., till Close Down, Programme of the Catholic Radio Society. 11.55, Concert by the Con Brio Trio. 1.40 p.m., Programme for Young People. 2.10, Programme for Children. 3.40, Light Music on Gramophone Records. 3.50, Concert by the Jolly Boys. 4.10, Concert by the K.R.O. Orchestra, conducted by M.v. 't Woud: Sons of the Brave (Bidgood); Overture, The Daughter of the Regiment (Donizetti); Walzerblut (Fetras); Second Slav Rhapsody (Friedemann); Valse des blondes (Ganne); In the Harbour of Port Said (Armandola). 4.55, Esperanto News. 5.10, Concert by the Jolly Boys. 5.30, Orchestral Concert (contd.): Germanentritt (Blankenburg); Overture, Si j'étais roi (Adam); Berlin wie es weint und lacht (Conradi); Unter dem Siegesbanner (Blon). 6.0, Press Review. 6.20, Orchestral Concert (contd.): Reminiscences of Cairo (Armandola); Melody (Christ); Ronde d'amour (Chamulaud); Ballet Music from Natha (Delibes); Hoch Heidecksberg (Herzer). 6.50, Talk on Physics. 7.10, Police Notes. 7.25, Sports Talk. 7.40, Concert by De Geuzenmuziek Orchestra: Marche Joraine (Ganne); Overture, Das goldene Kreuz (Brüll); Waltz, Gold and Silver (Lehár); In der Spinnstube (Ellenberg); Japonnaiserie (Wittmann); Ballet Suite (Popy); Overture, Antigone (Rousseau); Waltz, Künstlerleben (Joh. Strauss); Selection from Les Cloches de Corneville (Planquette); Entry March of the Gladiators (Fueik-Wittmann). 9.10, Concert by the K.R.O. Boys, conducted by P. Lustenhouwer. Soloist: J. Mossel (Songs). 9.40, Recitations. 10.0, Concert (contd.). 10.40, News Bulletin. 10.45, Light Music on Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—Programme of the Workers' Radio Society (V.A.R.A.). 11.40 a.m., Concert by De Notenkrakers, conducted by D. Wins; Wien bleibt Wien (Schrannle); Selection from Casanova (Lincke); Russian Lullaby (Krein); Memories of Bitolj (Karastnoy-anov); March (Kockert); Schöne Ninon (Kálmán); Backisch parade (Lincke); Gramophone Records; Die Walzer der Welt (Robrecht); Il bacio (de Micheli); Serenade (Moszkowsky); Dort, wo die Walder grün (Brodsky); Congojas (Bianco); Gramophone Records; Liebestänze (Gungl); Das Glück ist trenlos (Doelle); Harlequin (Erwin); Pagan Love Song (arr. Kapur); Es war schön Lieblich (Grothe); Prima, prima (Holzmann). 1.40 p.m. to 1.55, Interval. 1.55, Light Music on Gramophone Records. 2.30, Wireless Technical Talk. 2.50, Concert by the V.A.R.A. Mandoline Orchestra, conducted by J. B. Kok: Barataria March (Sullivan); Parfum de roses (Teller); Oriental Intermezzo (Döring); Vorrei morire (Tosti); Gramophone Records; Natascha (Margulies-Holmes); Serenade (Widor); Waltz (Popy); Frühling-kinder (Blankenburg). 3.30, Illustrated Talk on Music. 4.10, Talk. 4.30, Concert by De Plierefflueters, conducted by H. de Groot. Soloist: A. de Booy (Songs). 5.20, Literary Talk. 5.40, Popular Concert by De Notenkrakers, conducted by D. Wins. 5.40, Song Recital by K. Pruis. 6.25, Talk. 6.40, Organ Recital by M. Steyn; Kashmiri Love Song (Woodford-Finden); Gipsy Song (Baldi); Mooi Volendam (de Groot); I'll do my best to make you happy (Noble). 6.55, Song Recital (contd.). 7.10, Organ Recital (contd.): Peter (Nelson); Jonny (Holländer); Donna Vatra (Köpping); Marta (Simons). 7.25, Talk. 7.40, Variety Programme. 10.10, Programme by the V.A.R.A. Dramatic Ensemble, A. de Booy (Songs) and J. Jong (Organ). In the intervals: Light Music on Gramophone Records. 10.40, News Bulletin. 10.55, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., Announcements and Gramophone Records. 6.10, Talk: The Yellowstone Park, New York. 6.30 to 10.35, See Warsaw. 10.35, Popular Music on Gramophone Records.

KAUNAS

1,935 metres; 7 kW.—6.0 p.m., Time Signal, Weather Forecast and News Bulletin. 6.30, Concert. 7.10, Talk on Social Etiquette. 7.30, Dance Music. 8.30, Sports Bulletin. 8.40, Popular Concert. 9.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres, 40 kW.; and HELSINKI, 368.1 metres.—5.10 p.m., Sports Talk. 5.35, Piano-forte Recital by Ilmari Hannikainen. 6.0, Talk. 6.20, Song Recital by Yrjö Ikonen. 6.45, Dramatic Programme. 7.15, Orchestral Selection from Faust (Gounod). 7.45, News in Finnish and Swedish and Close Down.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert, conducted by Wolf: Die Freundschaftsflage (Blon); Overture, The Wedding of the Winds (Ball); Overture, Semirami (Rossini); Suite, In Zeichen des Kokoko (Albort); Selection from Le Tribut de Zamora (Gounod); Spanish Dances (Moszkowsky); Potpourri, Eine Sängerfahrt nach Wien (Silyng); Two Songs from Der liebe Augustin (Fall). In the interval at 1.0 p.m., News. 1.35, Week-End Concert on Gramophone Records. 2.30, Market Prices and Time. 2.50, Programme for Children. 3.10, Review of Books on the History of Art. 3.30, English Reading. 4.0, Concert from the Reichshof, Elberfeld: The Harmonie Zither Society, conducted by Robert Wolf; Soloists: Eibert Grape (Piano-forte), Carl Eugen Körner (Violin), and Heinz Joachim Körner (Piano-forte); Piano-forte Solos: (a) Papillons, Op. 2 (Schumann); (b) Walzer und Ländler (Schubert); Zither Music: (a) Lebenslust-Ouverture (Hautstein); (b) Paraphrase on Es liegt eine Krone im tiefen Rhein (Ludwig); (c) Ständchen (Kollmutter); Sonata in E Minor for Violin and Piano-forte (Respighi). 5.15, Talk on Agriculture. 5.55, Weather, Time, Exchange, and Sports Notes. 5.45, Talk on Folk Songs. 6.5, Talk for Women. 6.25, Reading of Unpublished Poems—The Works of Anneliese Dieffenbach and Hanns Otto Münsterer. 6.35, Talk on Economics. 6.55, First General News. 7.0, Variety Programme. 9.5, News and Sports Notes. 9.30, Serenade, conducted by Wolf. 11.0, Gramophone Dance Music. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

389.6 metres; 120 kW.; and Dresden, 319 metres.—11.5 a.m., Rhetish Humour on Gramophone Records. 12 Noon, News, Weather and Time. 12.15 p.m., Operetta Potpourri on Gramophone Records; Selection from Der arme Jonathan (Müllcker); Potpourri; Fortissimo (Kálmán); Selections from Schön ist die Welt (Lehár); Der liebe Augustin (Fall); Gasparone (Müllcker); Das Lied der Liebe (Joh. Strauss); and Liselott (Künneke); Exchange Quotations after the Concert. 1.0, Wireless Hints. 1.10, Wireless News. 1.30, Programme for Children. 2.15, Chess Lesson. 2.45, Exchange Quotations. 3.0, Talk on Music. 3.30, See Berlin (Witzleben). 5.0, Legal Talk. 5.30, German Lesson for Germans. 5.50, A Modern Dictionary. 6.0, Discoveries of Pre-historic Remains in Central Germany; Radio Report from the Palaeontological Museum, Halle. 6.30, Mandoline Concert conducted by Karl Otto; March: Einigkeit (Blankenburg); Waltz (Sartori); Mazurka (Brunetti); March: Welten stürmer (Blankenburg). 7.0, See Langenberg. 9.5, News Bulletin. 9.30 (approx.), Dance Music Relay. 11.0 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 25 kW.—4.30 p.m., Light Music on Gramophone Records. 7.0, An Opera, relayed from Zagreb (307 metres). 9.30, Time, News, and Light Music on Gramophone Records.

LWOW

381 metres; 16 kW.—5.55 p.m., Talk. 6.10, Miscellaneous Items. 6.30, See Warsaw. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Request Gramophone Records. 7.30, Radio Gazette for Lyons and the South-East. 8.30, Les plus beaux yeux du monde (Jean Sarmant)—relayed from the Salle Molière. News after the Programme.

MADRID

ARANJUEZ, EAQ, 30.43 metres; 20 kW.—6.0 to 8.0 p.m., Programme for Listeners in the Canary Islands, Guinea, and America. 6.0 p.m., Concert of Popular Music and Spanish Music. 7.15, Talk. 7.30, Light Music. 8.0 to 10.30, Interval. 10.30, Variety Concert. 10.45, Radio Chronicle. 11.0, Variety Concert (contd.). 11.35, Talk. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange, and Request Gramophone Records. 8.15, News Bulletin. 8.30 to 9.0, Interval. 9.0, Linguaphone English Lesson. 9.30, Chimes, Time, and Transmission of a Musical Comedy. 11.45, News. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—5.25 p.m., Impression-ismo in Songs; Recital by M. Zapletalova with Introductory Talk; Under the Snow (Novak); The Lakes (Novak); Desert Park (Kunc); The Swan (Kricka); Two Songs (Kvapil); On Shore (Stepan); The Green (Jirak). 6.0, See Prague. 9.15, A Radio Film. 10.30 (approx.), Close Down.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—4.25 p.m., The Sleeping Beauty—Ballet (Tchaikovsky), relayed from the Grand Theatre. 8.0, Talk in French: How the Soviet Republic Supports Agriculture.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—3.10 p.m., Orchestral Concert, conducted by Erich Kloss. In the interval, Recitations (Walter Bauer). 4.40, Programme for Young People. 5.25, Gregorian Chants by members of the Munich Cathedral Choir, conducted by Prof. Ludwig Berberich. 6.0, Wireless Notes. 6.15, Wireless Technical Talk. 6.30, Concert of Folk Music. 8.50, Variety Programme by Erika von Thellmann, Mariele Schmidt, Ludwig Schmidmeier and Ludwig Kusebe (Piano-forte Duets). 9.20, Time, Weather, News and Sports Notes. 9.45, Serenade. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 365.8 metres; Hamar, 574.7 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—3.15 p.m., Light Orchestral Concert relayed from the Continental Hotel. 4.15, Programme for Children. 5.15, Song and Hardanger Fiddle Recital of National Music. 5.45, Economic Talk. 6.0, Announcements, Weather and News. 6.30, Talk: The Importance of Good Teeth. 7.0, Time Signal. 7.1, Concert by the Station Orchestra, conducted by Hugo Kraumm. Extracts from (a) The Gipsy Baron (Joh. Strauss), (b) The Circus Princess (Kálmán); Dance Suite (Maufred). 8.20, Talk. 8.40, Weather, News and Topical Talk. 9.15, Popular Dance Music. 9.45, Dance Music on Gramophone Records. 11.0 (approx.) Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—7.0 p.m., Dopolavoro Notes, Tourist Talk, Agricultural Report, and Giornale Radio. 7.20, Sports Notes. 7.30, Time Signal and Announcements. 7.35, Light Music on Gramophone Records. 7.45, Der Tanz ins Glück (Stolz)—Operetta in Three Acts (Stolz). In the intervals: Book Review and Announcements. 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals). 5.45 p.m., Le Journal Parlé. 7.20, Weather Report. 7.30, Two Plays (Molière): (a) L'amour médecin, with Music by Lully, (b) La jalousie de Barbouillé. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.45 p.m., Journal Parlé. 7.0, Answers to Correspondents. 7.5, Gramophone Concert of Variety Music. 8.0, Talk: The Event of the Week. 8.5, Theatre Guide. 8.15, Interval. 8.30, Concert of Chamber Music by Louis Dumas. 9.0, Interval. 9.10, Dance Music by the Sonora Orchestra, conducted by Fred Hoffmann. 11.0, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

MARCH 25th

SATURDAY

continued

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kw.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather. 8.0, Concert, relayed from the Conservatoire. 11.30 to 12 Noon, Interval. 12 Noon, Concert by the Radio Orchestra: Suite Béarnaise (Becc); Suite, En Bretagne (Rhené-Baton); La Farandole (Dubois); Fantaisie sur des Airs limousins (Rouchaud); French Rondo (Boellmann); Suite, En Norvège (Cognard); A Fête in Seville (Baggers); Catalane (Busser); Song of the Volga Boatmen (arr. Doyen); Rêve douloureux (Akimenko); Bandouriste (Akimenko - Chapelier); Slav Dances (Dvorák); In Naples (Barimont); Javanese Song (de Séverac); Caravane orientale (Delmas); African Suite (Lacôme). In the intervals at 1.0 p.m., Exchange, News, and Weather, and at 1.30, Exchange. 2.0, Exchange. 3.0, Programme for Children. 3.45, Exchange and Market Prices. 3.50, Dance Music by the Radio Orchestra. 4.45 to 6.30, Interval. 6.30, Market Prices, Weather, and Agricultural Notes. 7.0, Talk on Science: Explosions. 7.20, Cookery Talk. 7.45, Market Prices and News. 8.0, Variety Programme. 8.30, News, Weather, and Sports Notes. 8.40, Review by Dorin. 8.45, Programme of Songs. In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA); 306 metres; 25 kw. Relayed by W2XK on 48.86 metres and 25.27 metres.—7.0 to 10.0 p.m., New York Relay. 7.0, p.m., Metropolitan Opera. 9.0, Dance Masters. 9.30, Concert Favourites. 10.0, Programme to be announced. 10.15, Hotel Sherman Orchestra, from New York. 10.30, Weather Report. 10.32, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie, from New York. 11.0, Programme to be announced. 11.15, Time Signal. 11.16, Temperature Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Weather Report. 11.30, Programme to be announced. 11.45, Izank Walton League. 11.59, Time Signal. 12.0 Midnight, KDKA Players. 12.30 a.m. (Sunday), Atkinson String Ensemble. 12.45 to 4.0, New York Relay. 12.45, Townsend Murder Mystery. 1.0, American Taxpayers' League. 1.15, The Boston Symphony Orchestra. 3.15, Saton Singers. 3.30, Cuckoos. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Messages to Methodist Missionaries. 5.20, Messages to Dwellers of the Far North. PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kw.—3.10 p.m., See Bratislava. 4.10, Talk on Industry. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Popular Music on Gramophone Records. 5.5, Agricultural Talk. 5.15, Talk for Workers. 5.25, News. 5.30, German Transmission: Poets Before the Microphone; Hans Watzlik reads from his own works. 6.0, Chimes. 6.2, News. 6.10, Medical Talk. 6.25, Programme by Dremán and Balling. 7.25 Introductory Talk to the following Transmission. 7.30, The Imp of Zvikov: Opera in One Act (Novak). In the interval at 8.0: Time Signal. 9.0, Time, News, Announcements and Sports Notes. 9.15, See Moravska-Ustrava. 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kw.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—5.0 p.m. (from Geneva), Scientific Talk. 5.30 (from Lausanne), Book Review. 6.0 (from Lausanne), Weather Forecast, News Bulletin and Announcements. 6.30 (from Lausanne), Talk on Films. 7.0 (from Geneva), Cocktail: Recital of Jazz Music on Two Pianos. 7.10 (from Geneva), French Songs, with a Commentary by M. Harry Marc. 7.25 (from Geneva), Introductory Talk to the following Transmission. 7.35 (from Geneva), Symphony Concert by the Station Orchestra, conducted by E. Ansermet. Soloist: E. Blanchet (Pianoforte); Symphony No. 6, The Pastoral (Beethoven); Concerto in E Flat (Liszt); Symphony for Wind Instruments (Stravinsky); Three Nocturnes (Debussy): (a) Nuages, (b) Fêtes, (c) Sirènes. 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva), Talk: The Work of the League of Nations. 9.20 (from Geneva), Dance Music by the Broadcasting Serenaders. 10.30 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kw.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Concert by the Station Quartet, followed by Choral Music

on Gramophone Records. After the Programme, Dance Music. 1.0 a.m. (Sunday), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1R0, 441 metres; 50 kw. Relayed by Naples, 519 metres, and 2R0, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30 a.m., Giornale Radio and Announcements. 11.30, Weather and Gramophone Records of Variety Music. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Orchestral Concert: Lena (Colotta); Senza cuore (Raimondo); Melody (Stower); Selection from Turandot (Puccini); Tell me why (Marini); Song (Friml); Selection from Frasquita (Lehar); Sona, chitarra (de Curtis); Melody (West); Gaiezza (Squazottini). In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Programme for Children. 4.0, Exchange, Announcements, Report of the Royal Geographical Society and Giornale Radio. 4.15, Reading. 4.30 to 5.15, Orchestral Concert: Castles in Spain (Sadum); Potpourri of Waltzes (Robrecht); Melody (Liadov); Pianoforte Solo, Caprice (de Bériot); Crinoline (del Meglio); L'onda del lago (Napoli); Pianoforte Solo, Caprice (Longo); Golf (Marcheroni). 6.0 (Naples), Shipping and Sports Notes. 6.10, Lesson in Morse. 6.20, Giornale Radio, Announcements and Light Music on Gramophone Records. 7.45, Relay from a Theatre. In the intervals, Review of New Books, Announcements and News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kw. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—12 Midnight, El Tango Romantico, from New York. 12.15 a.m. (Sunday), Stock Reports. 12.30, Lady Fingers (Pianists). 12.45 to 3.0, New York Relay. 12.45, The World To-day by James G. McDonald. 1.0, Viennese Programme. 1.30, The Economic World To-day. 2.0, Blue Danube. 2.30, Oldsmobile Programme—Olsen's Orchestra. 3.0, Musical Programme, followed by Programme Resumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kw.; BASLE, 244.1 metres, and BERNE, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Berne), Variety Music on Gramophone Records. 12 Noon (from Berne), Song Recital by Claire Adelmann. 12.10 p.m. (from Berne), Jazz Music by Jimmy Mack and his Boys. 12.40, Weather and Exchange. 12.45 (from Berne), The Listeners' Quarter of an Hour. 1.0 (from Berne), Book Review. 1.30 (from Berne), Pianoforte Recital of Etudes and Sonatas by Willy Girsberger, followed by Variety Music on Gramophone Records. 2.0 (from Berne), Talk on Athletic Training. 2.20 (from Berne), Marches (Frederick the Great) on Gramophone Records. 2.30 (from Berne), Talk: How to learn a Trade or Profession. 3.0 (from Berne), Folk Dance Music. 3.30 (from Berne), Medical Talk. 3.45, Legal Talk. 4.0, Weather. 4.5 to 5.30, Interval. 5.30 (from Basle), Programme for Young People. 6.0 (from Zürich), Chimes from the Zürich Churches. 6.10, Time, Weather and Market Prices. 6.15 (from Basle), Talk: Wireless Now and in the Past. 6.45 (from Zürich), Introductory Talk to the following Relay. 7.0 (from Zürich), Figaro—Opera in Four Acts (Mozart). In the interval at 8.20 (approx.), Weather and News. 10.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kw. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,354.4 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.5 p.m., Reading. 4.30, Programme for Children. 5.0, Musical Programme relayed from Malmö (231 metres). 5.45, Talk. 6.15, Weather and News. 6.30, Recital by Charles Berkel (Violin) and Algot Maquiniud (Pianoforte). 7.0, St. Joan: Play (George Bernard Shaw). 8.45, Weather and News. 9.0, Light Music. 10.0 (approx.), Close down.

STRASBOURG

345 metres; 11.5 kw.—11.30 a.m., Orchestral Concert, conducted by Maurice de Villers: Persian Dance (Guiraud); Overture, The Merry Wives of Windsor (Nielsen); Basque Rhapsody (Pierné); Selection from La Juive (Halévy); Orchestral Suite A Cruise in the Mediterranean (Jatowicz); Ballet Music from Patrie (Paladilhe). 12.45 p.m., News. 1.0, Time and Exchange. 1.5, Dance Music

on Gramophone Records. 2.0, Johann Strauss Concert on Gramophone Records: The Blue Danube; Wine, Woman and Song; Morgenblitter; Waltz, Künstlerleben; Tales from the Vienna Woods; Selection from Die Fledermaus; Frühlingsstimmen; Frühlingstraum; Roses from the South. 3.0 to 3.45, Interval. 3.45, Talk in French on Brahms. 4.0, Gramophone Concert of Light Music. 4.45, Legal Talk in German. 5.0, Pachelbel Symphony Concert, relayed from the Théâtre des Champs Elysées, Paris. 7.0, French Lesson. 7.15, Talk in German on Gardening. 7.30, Time Signal and News. 7.45, Lottery Results. 8.0, Orchestral Concert, conducted by Maurice de Villers: Soloist, Mme. Pelletier-Sattler (Pianoforte); Overture, Don Giovanni (Mozart); Concerto in E Flat for Pianoforte and Orchestra (Mozart); Scènes bretonnes, Op. 24 (Ropartz); Three Pieces for Pianoforte (Schmitt): (a) En revant, (b) Sur l'onde, (c) Tzigania; Orchestral Suite, Reflets d'Allemagne (Schmitt); Paysages Franciscainsyag (Pierné). 10.0, Concert, relayed from the Café Moli, Mulhouse; Conductor, Georges Jacquet; Soloist, Georges Ruffault (Cello); Overture, William Tell (Rossini); Valse des fleurs (Tchaikovsky); Cello Solos: (a) Intermezzo from Goyescas (Granados), (b) Die Quelle (Schumann); Ballet Music from Sylvia (Delibes); Selection from Les Saltimbanques (Ganne). 11.0, Quintet Concert, relayed from Radio-Colonia (Paris) (25.63 metres); Selection from Tutti in maschere (Poderotti); Mandolinata (Paladilhe) Helrew Song (Tomasi); Passepiéd (Borean); Selection from Faust (Gounod); Nadja Czardas (Michiels); Sketch (Aubert); Romance (Aubert); Selection from The Merry Widow (Lehar). 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres, 60 kw.; and FREIBURG, 570 metres.—12.30 p.m., Orchestral Concert, conducted by Gustav Görlich; Soloist: Fritz Lang (Tenor). 1.30, Time, News, Weather, and Programme Announcements. 1.45, Jodel and Zither Recital on Gramophone Records. 2.10, Recital of Old German Songs to the Lute by Hilde Koefer-Bluthardt (Soprano) and Leo Hantz (Lute). 2.30, See Frankfurt. 3.30, Mandoline and Guitar Concert: Frühlingserwachen (Bach); Symphonie Poem, Sonnenwende (Vorpahl); Prisca, from Die Najaden (Rupprecht); Spanish Dance (Ritter); March, Ungarisch Blut (Köhler). 4.0, Orchestral Concert, conducted by Erich Beck: Königsmarsch (Zanora); Overture Hamlet (Emil Bach); Russian Fantasia, Kamarinskaya (Glinka); Paradis-Walzer (Drescher); Prelude and Sicilienne from Cavalleria rusticana (Mascagni); Prelude, Chorus and Dance from Das Pensionat (Suppé); Slav March (Tchaikovsky). 4.50, Time and Sports Notes. 5.5, Technical Talk: Motor Oils. 5.30, Talk on Adolf Hitler. 6.0, Time, News, Weather, and Snow Report. 6.10, Swabian Folk Songs. 6.35, Pianoforte Recital by Lydia Hoffmann-Belrendt: Two Etudes from Op. 2 (Prokofiev); Two Etudes from Op. 109 (Weismann); Ten Concert Etudes, Op. 55 (Tsch). 7.5, See Frankfurt. 9.15, Time, News, Weather, Snow Report, and Programme Announcements. 9.30, Gramophone Records of Carnoso. 9.45, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kw.—6.0 p.m., News Bulletin. 6.15, Argentine Music. 6.30, Opéra-Comique Songs. 6.45, Symphonie Poem: Don Juan (R. Strauss). 7.0, Accordion Solos. 7.15, News, Racing Results. 7.25, Local News. 7.30, Military Music. 7.45, Opera Music: Prayer from William Tell (Rossini); Aria from The Tales of Hoffmann (Offenbach); Song from The Huguenots (Meyerbeer). 8.0, Orchestral Concert. 8.30, Operetta Music: Songs from Le Comte obligado (Moretti); La Périchole (Offenbach); and Les Cloches de Corneville (Planquette). 8.45, Argentine Music. 9.0, Extracts from The Tales of Hoffmann: Operetta (Offenbach); In the interval: Viennese Music. 10.0, Popular Songs. 10.15, North African News. 10.30, Concert for Listeners in Morocco. 11.0, Request Concert. 11.30 to 12 Midnight, Programme in English by the I.B.C. 11.30, I.B.C. Half Hour: Selection from The Maid of the Mountains (Fraser-Simpson); You will Remember Vienna; Song of the Dawn; Selection from Congress Dances (Heymann); Selection from the Merry Widow (Lehar); Song of the Vagabonds from The Vagabond King (Friml). 11.57, I.B.C. Goodnight Melody. 12 Midnight, Weather and Announcements. 12.5 a.m. (Sunday), Orchestral Music. 12.30 (approx.), Close Down.

TRIESTE

247.7 metres; 10 kw.—4.10 to 6.0 p.m., See Turin. 6.0, Light Music on Gramophone Records. 6.20 to 6.35, See Turin. 6.35, Concert of Music by Honegger. 7.0 (approx.) till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kw. Relayed by Milan, 21.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—4.10 to 5.0, Orchestral Concert, conducted by Igo Tansini. 5.35, Giornale Radio, Agricultural and Dopolavoro Notes. 6.0, Light Music on Gramophone Records. 6.20, Giornale Radio. 6.40, Time, Announcements, Tourist Report, and Gramophone Records (contd.). 7.0, Giornale Radio and Weather. 7.15, Talk: Events and Problems. 7.30, Rimpiccolo—Operetta. In the intervals: Review of New Books, and Announcements. After the Operetta: Giornale Radio and Dance Music from the Rajola, Florence. 10.30 (approx.), Close Down.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kw.—10.0 to 10.15 a.m., Religious Announcements in Different Languages. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kw. Relayed by Graz, 32.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 245.9 metres; and Salzburg, 218.5 metres.—4.40 p.m., Concert by the Vienna Symphony Orchestra conducted by Max Schönherr; Overture, Das verunschene Schloss (Müllacker); Waltz, Vier Kleeblättern (Jos. Strauss); Dances from Styria (Pachernecker); Selection from Der liebe Augustin (Fall); Waltz, Am Wörthersee (Koschat); Overture, Die Diva (Wenberger). 5.40, Concert by the Orlovon-Cossacks, conducted by Maxim Orlov; Folk Song, Moscow; Sacred Song; Folk Song, The Cuckoo; Marching Song, Black Hussars; Dolia; Plator March (Cossacks' Battle Song of 1812); Gipsy Romance, A Pair of Black Eyes; On the Road to St. Petersburg; Kasbek; Soldier's Song; Folk Song, Nukamu; Camping Song. 6.30, The Maxim. 6.35, Time, Weather, Sports Notes and Programme Announcements. 6.45, Talk: The East-Asiatic Conflict and the League of Nations. 7.15, Eine Ballnacht: Operetta in Three Acts (O. Straus). In an interval at 8.45 (approx.), News, Weather and Announcements. 9.30, Dance Music by the Frank Fox Jazz Band; Vocal Refrains by Emil Petroff.

WARSAW

1,411 metres; 120 kw.—10.57 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.10 p.m., Weather Forecast. 12.15, Programme for Schools, relayed from Lwów, (381 metres), 1.0, Talk on Military Affairs. 1.40 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Military Information. 2.35, Reading for Children relayed from Lwów. 3.0, Light Music on Gramophone Records. 3.20, Educational Talk. 3.40, Talk on Photography: Enlargements. 4.0, Programme for Invalids relayed from Lwów. 4.20, Announcements. 4.40, Topical Talk. 4.55, Programme Announcements. 5.0, Educational Talk. 5.20, Current Events. 5.25, Dance Music and Light Music. 6.0, Miscellaneous Items. 6.20, Talk on Gardening. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Concert by the Station Orchestra, conducted by S. Nawrot. Soloist: L. Urstein (Pianoforte). In the Harbour of Port Said (Armandola); Waltz (Eliot); Overture, Der Gasconner (Suppé); The Clock and the Dresden Figures (Ketybel); Pianoforte Solo: Piece (Lindsay-Thelmer); Exotic Suite (Monton); Waltz, Je t'aime (Waldteufel); Musical Box and Piano (Antiga); Pianoforte Solo: Die goldene Spieluhr (Krome); On the Banks of the Neva (Meyer-Helmund); Waltz Intermezzo, Ein Ballnachtstraum (Translatour); Mazurka (Wronski). In the interval, Sports Notes and Radio Journal. 8.30, Programme in honour of the Greek National Festival. 9.5, Chopin Pianoforte Recital by E. Horodyski. 9.40, Talk: Film Stars. 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music. In the interval at 10.30, News for Members of the Polish Polar Expedition.

WILNO

563 metres; 16 kw.—6.0 p.m., Reading. 6.10, Miscellaneous Announcements. 6.15, Talk. 6.30, See Warsaw. 7.0 Request Programme. 8.0, Light Orchestral Concert, relayed from Warsaw. 8.30, See Warsaw. 11.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landeseender.

THE DETECTOR OF *TO-MORROW*— AVAILABLE *TO-DAY!*



Type W.4. Half-wave Westector. Suitable for use as a radio-frequency or intermediate-frequency detector.

The use of the Westinghouse Metal Rectifier in modern A.C. Mains Receivers and Eliminators is quite familiar; and its long life and high efficiency has earned for it an outstanding position.

Now, however, after years of patient research and development, the Westinghouse Metal Rectifier is introduced to you in a new form—as a copper-oxide detector for the rectification of radio-frequency currents. No bigger than a grid-leak, the WESTECTOR is a great advance on previous straight line detectors, and is undoubtedly the detector of the future. It requires no anode or heater supply, and retains the inherent qualities of long life and high efficiency associated with the Metal Rectifier.

The Westinghouse

WESTECTOR

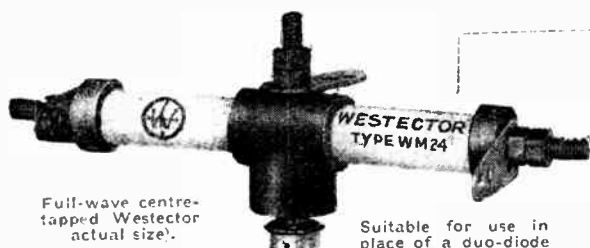
high-frequency metal detector

Manufactured in England by:—

THE WESTINGHOUSE BRAKE & SAXBY SIGNAL CO. Ltd.,
82, York Road, King's Cross, London, N.1.

TYPES AND RATINGS.

Model	Type	Length	Max. input volts	Max. Current output	Price
W. 4	Half-wave	1 1/2"	24v. peak	0.25 mA.	7 6
W. 6	Half-wave	1 1/2"	36v. peak	0.25 mA.	7 6
WM. 24	Centre-tap, full-wave	3"	24v. on each side of centre tap	0.5 mA.	10 -
WM. 26	Centre-tap, full-wave	3"	36v. on each side of centre tap	0.5 mA.	10 -



Full-wave centre-tapped Westector actual size.

Suitable for use in place of a duo-diode detector.

COUPON.

Please send me full particulars of, and circuits for use with, the new "Westector."

Name.....

Address.....

..... W.W.183

Radio's newest demand...

**ORMOND *Moving Coil*
LOUDSPEAKERS for
QUIESCENT PUSH-
PULL OUTPUT!**

Always keeping pace with Radio's latest development, Ormond now present their already famous Moving Coil Loudspeakers with specially adapted output transformer, for Quiescent Push-Pull Output. The recognised Ormond principle of

highest quality at lowest price has been fully maintained in these loudspeakers. The Ormond name is a guarantee that satisfaction is certain.

The ORMOND Permanent Magnet Moving Coil CHASSIS

Cat. No. R/475 C.T. (illustrated above).

In quality and efficiency this model is not inferior to loudspeakers of the most expensive types. An excellent response throughout the frequency range without over-emphasis at the upper end is immediately apparent, a full bass with a brilliance which is highly commendable. Supplied complete with special output transformer. Overall size: diameter 8", depth 4 1/2".

The ORMOND Permanent Magnet MOVING COIL CHASSIS

Cat. No. R 494 C.T.

Comparison proves it to be far above its price equals. Brilliant tonal quality is ensured by a perfectly balanced frequency response. Fitted with a pressed steel chassis and moulded cone, with large permanent magnet to give reliability with long life. Complete with special output transformer. Overall size: diameter 8", depth 5 1/4".



The ORMOND ENGINEERING Co., Ltd.
Ormond House, Rosebery Avenue,
London, E.C.1.

Telephone: Clerkenwell 5334-5-6 and 9341-5-6.
Telegrams: "Ormondengi, Isling."

FOR PUNCH POWER AND PURITY!!!

The Wireless World

4^D

THE PRACTICAL RADIO JOURNAL

with

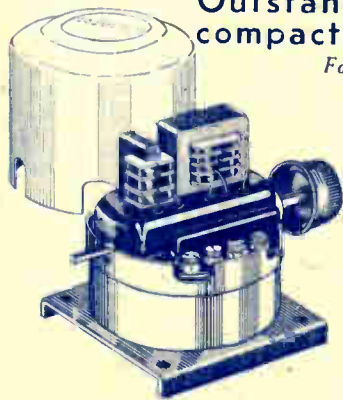
Complete Foreign Programmes

Friday, March 24th, 1933.

COLVERN FERROCART COILS

Outstanding selectivity compactness & efficiency

Following Types now available



Type F1, F2. Innut Band-pass filter. Constant selectivity, gangging unaffected by variation in aerial reaction, symmetrical resonance curve.

Type F3. Auto transformer intervalve coupling with reaction, gangging perfectly maintained on both wave ranges by transfer of tapping point in correct turns ratio, practically constant reaction.

Price: Types F1, F2, F3, mounted on sub-base, ganged wave change switches 50/- per set.

Made under licence from the Patentee—*Han. Vogt.*

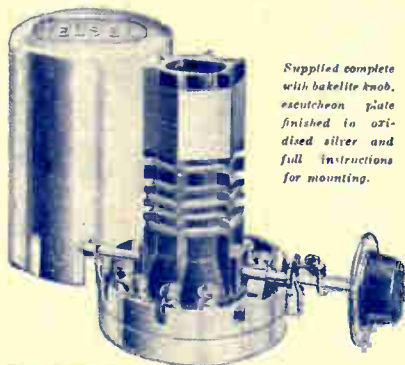
COLVERN LTD.,
ROMFORD, ESSEX.

London Wholesale Depot—
150, King's Cross Road, W.C.1

FKCo
POWER SUPPLY UNITS

Write for full details to
E. K. COLE, LTD.,
Dept. W.2., Ekco Works,
Southend-on-Sea.

TELSEN SCREENED TUNING COILS



Supplied complete with bakelite knob, escutcheon plate finished in oxidised silver and full instructions for mounting.

SUITABLE as aerial coils, or as anode coils, following a S.G. valve, giving selectivity comparable with a well-designed band-pass filter.

Single Screened Coil 8/6

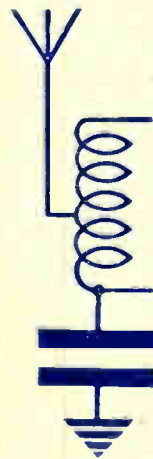
Twin Matched Coils 17/-

Triple Matched Coils 25/6

TELSEN
RADIO COMPONENTS

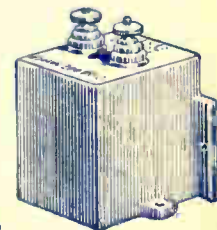
TELSEN RADIO COMPONENTS ARE 100% BRITISH

Announcement of the TELSEN ELECTRIC Co. Ltd., Aston, BIRMINGHAM



Use a
T.C.C.
ALL-BRITISH
CONDENSER

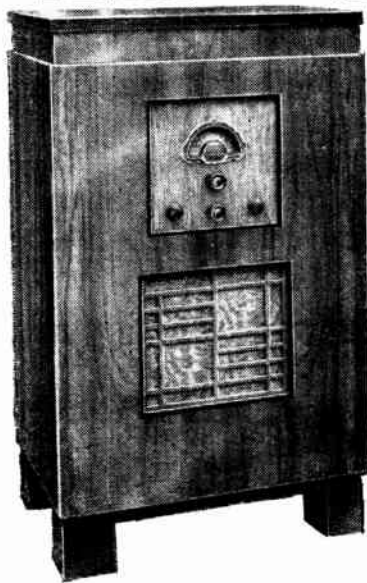
Here is illustrated a 4 mfd. type No. 61 T.C.C. Paper condenser. The type 61 is made in capacities from 3 to 10 mfd. Prices from 5/0 to 14/0.



THE TELEGRAPH CONDENSER Co., Ltd.
Wales Farm Road, N. Acton, W.3

2597

ATWATER KENT



Model 137 in a

CONSOLE CABINET

worthy of the Receiver

For those who prefer it, Model 137 can now be obtained housed in a beautiful cabinet of figured walnut.

Made in London by cabinet makers of the highest rank to the design of an eminent British Artist, the cabinet is in every way worthy of the phenomenal power, magnificent tone, extensive range and superlative selectivity (9 to 10 k.c.) of this model.

Atwater Kent Model 137 is a 7-Valve super-het covering 200 to 2,000 metres. It embodies such refinements as AUTOMATIC VOLUME CONTROL (which definitely eliminates fading) . . . Three-point Tone Switch . . . Large Mains Energised M.C Loud Speaker, etc., etc. At 32 Gns. it is really wonderful value.

Ask your Radio Dealer for a demonstration.
Illustrated literature gladly sent on request.

G. A. BRITAIN Lt^l., Showrooms, 5, Hanover Square, London, W.1

Telephone: Mayfair 3466, 7.

Telegrams: Atwakento, Wesdo, London.

Also Sole Distributors for Irish Free State.

Dublin Depot: 40, Dawson Street.

PRICES of MODEL 137:	
TABLE MODEL	25 Gns.
CONSOLE (as illustrated)	32 Gns.
RADIOGRAM	45 Gns.
RADIOGRAM with Automatic Record Changer	52 Gns.

These prices do not apply in I.F.S.

RICH & BUNDY

Mains Transformers & Chokes

For "The Wireless World"

A.C. MONODIAL SUPER

with Automatic Volume Control Valve

For 2.5 watts A.V.C. Power Chassis
MAINS TRANSFORMER MODEL "39A."

Primary 200/250v. 40/100 cycles (screened)
Secondaries: 350-0-350v. 100 m.a.;
4 v.c.t., 2.5 amps.; 4 v.c.t., 6 amps.;
4 v.c.t., 1 amp.; 4 v.c.t., 1 amp.

Price £2 7 6

SMOOTHING CHOKE MODEL "E104M."

10 Henries, 100 m.a. D.C. - Price £1 2 0

SMOOTHING CHOKE MODEL "E20."

20 Henries, 50 m.a. D.C. - Price £1 0 0

For 5 watts A.V.C. Power Chassis
MAINS TRANSFORMERS MODEL "44A."

Primary 200/250v. 40/100 Cycles (screened)
Secondaries: 400-0-400v. 100 m.a.;
4 v.c.t., 3.5 amps.; 4 v.c.t., 6 amps.;
4 v.c.t., 2 amps.; 4 v.c.t., 1 amp.

Price £3 5 0

SMOOTHING CHOKE MODEL "E104D."

15 Henries, at 100 m.a. D.C. - Price £1 2 0

Manufactured by:

RICH & BUNDY LTD.

Transformers Manufacturers,

NEW ROAD, PONDERS END, MIDDX.

Phone: Enfield 0777.

Sole Distributors in I.F.S.: Kelly and Shiel Ltd., 47, Fleet Street, Dublin C.4.

WHY PAY EXORBITANT PRICES FOR VALVES?



For many years we have made Radio Valves which we have supplied on contract to leading Set manufacturers. Now we are supplying the latest, improved types of these same tried and tested Valves direct to the public at "direct to the public" prices.

BRITISH 362 VALVES

Every 362 Valve is guaranteed to be the equal of any other valve (British or foreign) of similar characteristics, and is NON-MICROPHONIC. Any 362 Valve failing to give satisfaction within a period of 6 months from date of sale, will be replaced FREE (provided it has not been mishandled). Note:—A valve which gives good service for 6 months will give good service for years. Post your order direct to the makers. Prices:—

R.C., H.F., L.F.	POWER	SUPER-POWER	SCREENED-GRID
3'6	4'4	4'6	7'6

all in 2v., 4v. or 0v. Metallised 3d. extra.

If valves of a certain make have been specified for your Set, send the name and type with your order and we will send you 362 Valves of similar characteristics. Cash with order. Cheques and P.O.'s must be crossed and made payable to:—
The G.S. RADIO VALVE Co., Ltd., (D. of Z. 1), 415, Mark Street, Hackney, London, E.8

The Wireless World

PROGRAMMES from ABROAD

**BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH**

**TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS**

Metres.	Kc.	kW.	Station.	Tuning Positions.	Metres.	Kc.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)		453.2	662	0.25	Agen (France)	
1875	160	8.5	Hilversum (Holland)		450.3	666	2 1/2	Madona (Latvia)	
1796	167	40	Lahti (Finland)		447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Rjukan (0.15 kW.); Notodden (0.08 kW.); (Norway) (relays Oslo).	
1725	174	75	Radio Paris, C.F.R.						
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (S.-W. Stn. DJA on 31.38 m.)		441.2	680	50	Rome, IRO. (S.-W. Station, 2 RO on 25.4 m.)	
1554.4	193	30	Daventry National		435.4	689	55	Stockholm, S.A.S.A. (Sweden)	
1538	195	7	Ankara (Angora) (Turkey)		430.4	697	2.5	Belgrade (Yugoslavia)	
1481	202.5	100	Moscow, RV1 (Old Komintern) (Russia) ..		424.3	707	2	Madrid, EAJ7 (Union Radio). (After 7.0 p.m.)	
1446	207.5	13	Eiffel Tower, F.L. Paris		424.3	707	100	Moscow, Imini Stalina (Russia)	
1412	212.5	120	Warsaw 1 (Poland)		419.5	715	1.5	Berlin, No. 1, Witzleben (Germany)	
1380	217.5	100	Novosibirsk, RV6 (Russia)		416.4	720.5	5	Rabat (Morocco)	
1354.4	221.5	30	Motala (Sweden). (Relays Stockholm)		413	725	60	Athlone (Irish Free State)	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)		408.7	734	16	Katowitz (Poland)	
1275	235	0.5	Tunis-Kasbah (Tunisia)		403.8	743	25	Sottens (Radio Suisse Romande) (Switzerland)	
1230	244	0.6	Boden (Sweden). (Relays Stockholm)		398.9	752	25	Midland Regional	
1200	250	5	Stamboul (Turkey)		394.2	761	12	Bucharest (Roumania)	
1200	250	21	Reykjavik (Iceland)		389.6	770	120	Leipzig (Germany)	
1170	256	25	Tashkent, RV11 (Russia)		385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
1154	260	7.5	Kalundborg (Denmark). (Relays Copenhagen)		385.1	779	10	Stalino, RV26 (Russia)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)		381	788	16	Lwow (Lemberg) (Poland)	
1083	277	60	Oslo (Norway)		376.4	797	50	Scottish Regional (Falkirk)	
1071	280	35	Tiflis, RV7 (Russia)		372.2	806	1.5	Hamburg (Germany)	
1035	290	38	Kiev, RV9 (Russia)		370.1	810.5	0.8	Radio, L.L. Paris	
1000	300	100	Moscow (Russia)		368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Hel- sinki (10 kW.) (Finland) (relays Lahti); Kharkov, RV20 (10 kW.) (Russia).	
938	320	20	Kharkov, RV4 (Russia)		365.8	821	0.7	Fredrikstad (Norway). (Relays Oslo)	
857	350	100	Leningrad (Russia)		364.1	824	1	Bergen (Norway)	
840	357	18.5	Budapest (Hungary)		363.6	825	13	Algiers (Algeria)	
825	363.6	50	Sverdlovsk, RV5 (Russia)		360.6	832	60	Mühlacker (Stuttgart) (Germany)	
770	389	0.6	Ostersund (Sweden). (Relays Stockholm)		355.9	843	50	London Regional (Brookmans Park) ..	
760	395	1.3	Geneva (Switzerland). (Relays Sattens)		352.1	852	7	Graz (Austria). (Relays Vienna)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)		348.8	860	7.6	Barcelona, EAJ1 (Spain)	
690	434.6	1.5	Oulu (Uleaborg) (Finland)		348.8	860	10	Leningrad, RV70 (Russia)	
680	441.2	0.6	Lausanne (Switzerland). (Relays Sottens)		345.2	869	11.5	Strasbourg, PTT (France)	
574.7	522	0.7	Hamar (Norway). (Relays Oslo)		341.7	878	35	Brno (Brunn) (Czechoslovakia)	
574.7	522	7	Ljubljana (Yugoslavia)		338.2	887	15	Brussels II, Velthem (Belgium). (In Flemish)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (Relay Stn.)		335	896	5	Cadiz (Spain)	
568.1	528	2	Grenoble (France)		334.4	897	1.9	Poznan (Poland)	
566	530	0.25	Hanover (Germany). (Relays Hamburg)		331.5	905	50	Milan (Italy). (Relays Turin)	
563	533	16	Wilno (Poland). (Relay Station)		328.2	914	60	Poste Parisien (France)	
560	536	0.25	Augsburg (Germany). (Relays Munich)		325	923	60	Breslau (Germany)	
560	536	1.5	Kaiserslauten (Germany). (Relays Munich)		321.9	932	10	Göteborg (Sweden). (Relays Stockholm)	
558.6	537	1	Tampere (Finland). (Relays Helsinki)		318.8	941	0.25	Dresden (Germany). (Relays Leipzig)	
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)		318.8	941	1.5	Naples, INA (Italy). (Relays Rome) ..	
542	554	10	Smdsvall (Sweden). (Relays Stockholm)		315.8	950	1.6	Marseilles, PTT (France)	
537.6	558	3	Palermo (Italy)		312.8	959	1.7	Cracow (Poland)	
533	563	60	Munich (Germany)		312.8	959	10	Genoa, IGE (Italy). (Relays Turin) ..	
525	571	15	Riga (Latvia)		309.9	968	1	Cardiff	
517	580	15	Vienna (Rosenhügel) (Austria)		307	977	0.7	Radio Vitus (Paris). (S.-W. Stn. on 43.75 m.)	
509	589	15	Brussels No. 1, Velthem (Belgium). (In French)		307	977	0.75	Zagreb (Yugoslavia)	
500.8	599	20	Florence, IPI (Italy). (Relays Turin)		304	986	13	Bordeaux Lafayette, PTT (France) ..	
495.8	605	1.2	Trondheim (Norway)		301.5	995	50	North National (Manchester)	
488.6	614	120	Prague, No. 1 (Czechoslovakia)		298.8	1004	11	Tallinn (Esthonia)	
480	625	50	North Regional (Manchester)		296.1	1013	20	Huizen (Holland). (After 4.40 p.m.) ..	
472.4	635	60	Langenberg (Germany)					(Exchanges wavelengths with Hilversum every three months.)	
467	642	0.4	Aalesund (Norway)		293.5	1022	0.7	Limoges, PTT (France)	
465.8	644	1.5	Lyons la Doua, PTT (France)		293.5	1022	2.6	Kosice (Czechoslovakia)	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland).		291	1031	10	Vipuri (Viborg) (Finland). (Relays Helsinki)	
			San Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (relays Heilsberg); Klagenfurt (0.5 kW.) (Austria) (relays Vienna); Porsgrund (0.7 kW.) (relays Oslo); Tromsø (0.1 kW.) Bodo (0.5 kW.) (Norway); Upsala (0.15 kW.) (Sweden) (relays Stockholm).		288.3	1040	50	Scottish National (Falkirk)	
					288.3	1040	—	British Relays (Bournemouth, Plymouth)	
					286	1049	0.8	Montpellier (France)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Table with columns: Metres, Kc, kW, Station, Tuning Positions, Metres, Kc, kW, Station, Tuning Positions. Lists various international broadcasting stations and their technical specifications.

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent G.M.T.)

Table with columns: Metres, Kc, Call Sign, Station, Tuning Positions, Metres, Kc, Call Sign, Station, Tuning Positions. Lists principal short-wave stations with their call signs and transmission times.

FOREIGN SUNDAY PROGRAMMES

MARCH THE TWENTY-SIXTH

ATHLONE

725 kc/s, 60 kW.; and Cork, 224.4 metres.—
8.30 p.m., Time Signal. 8.31, Pianoforte
Recital by Henry Loretto. 9.0, Concert by
the Station Orchestra. 9.30, A Second Inter-
view: Play (Mitchell) by the Dublin Repertory
Company. 10.15, Soprano Solos by
Mime. A. Haffernan. 10.30, Jack MacGarvey:
Entertainer. 10.50, The Station Orchestra.
11.0, Time Signal; News; Weather Report
and Close Down.

BARCELONA

RADIO-BARCELONA, 860 kc/s, Call EAJ1,
348.8 metres; 8 kW.—10.0 a.m., Chimes from
the Cathedral and Weather Forecast. 10.15,
Concert by the Municipal Band relayed from
the Palacio de Bellas Artes. 1.0 p.m., Light
Music on Gramophone Records. 1.30 (in
an interval), Theatre Notes. 2.0, Film Re-
view; followed by Concert by the Station
Quartet. 3.0, Programme for Hospitals
and other Benevolent Institutions. 4.0 to
5.30, Interval. 5.30, Agricultural Talk in
Catalan; followed by Popular Music on
Gramophone Records. 6.0, Dance Music
relayed from the Ritz Hotel. 8.0, Concert
by the Station Orchestra. Soloist: Raymonde
Liort (Songs). Overture: The Merry Wives
of Windsor (Nicola); Aria from Mirella
(Gounod); Song from Carmen (Bizet);
Dance of the Merry Mascots (Ketybey);
Nocturne from A Midsummer Night's Dream
(Mendelssohn); Aria from The Barber of
Seville (Rossini); Air from Louise (Char-
pentier); Cradle Song (Moskovsky); Polon-
aise (Dvorak). 9.0, Extracts from an Opera
on Gramophone Records. 10.45, Chess Les-
son. 11.0 (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—9.30 a.m.,
Agricultural Notes. 10.5, Organ Recital from
the Church of San Domenico. 10.30, Bible
Reading. 12 Noon, Giornale Radio. 12.10
to 1.15 p.m., Gramophone Concert of Popu-
lar Music. In the intervals at 12.55,
Weather; and at 1.0, Time and Announce-
ments. 4.30 to 5.30, Gramophone Con-
cert of Variety Music. 7.0, Sports Notes
and Giornale Radio. 7.30, Time and An-
nouncements. 7.35 (approx.), Variety Con-
cert; Soloists: Anna Molteni (Soprano),
Luigi de Grandi (Violin), and Nicola delle
Foglie (Cello); Medieval Suite (Amadei);
Soprano Solo: Stornelli marini (Mascanigi);
Violin Solos: (a) Birge, La Vergine alla
culla (Casco), (b) Polonaise (Dvorak);
Soprano Solo from I Capuletti ed i Mon-
techi (Bellini); Selection from Mephi-
stophes (Boito); Prelude to I due Foscari
(Verdi); Soprano Solo: Capelli d'oro (Od-
done); Selection from Le Roi de Lahore
(Massenet); Four Lyrics for Soprano
(Respighi); Cello Solos: (a) Lamentation
(Cassado), (b) Scherzo (Calumbey); Soprano
Solo: La zingara (Donizetti); Rural Sketch,
Autumn (Roumanillo). Announcements in
the interval. 9.50, Dance Music from the
Grand Hotel Moderno. 9.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 183.5 kc/s, 1,635
metres; 60 kW.—10.30 a.m. to 1.0 p.m., See
Leipzig. In the interval at 11.55, Time Sig-
nal. 1.0, Talk for Parents: The Religious
Attitude of Children. 1.30, Animals in the
Spring Sunshine—Poems and Tales for
Children, with Music by Fritz Steineck. 2.0,
Hermann Claudius reads from his own
Poems. 2.30, Chamber Music for Cello; Suite
for Cello and Pianoforte, Op. 66 (Paul
Graener); Nachtstück, Op. 23 (Rezyek); Four
Pieces for Cello and Pianoforte, Op. 124
(Hugo Kaun); (a) Idyll, (b) Minnet, (c)
Waltz, (d) Intermezzo. 3.10, Talk: Art
Centres and Art Treasures of the German
Nation—Frederick the Great as a Collector.
3.30, Concert from Breslau. 4.15, Talk on
Winter Relief. 4.35, Talk: The East Mark
and Poznan. 5.0, Recital of Schumann and
Richard Strauss Songs by Emmi Leisner;
Four Songs (Schumann): (a) Schöne Wiege
meiner Leiden, (b) Der Nussbaum, (c)
Mondnacht, (d) Frühlingsnacht; Four
Songs (Richard Strauss): (a) Freundliche
Vision, (b) Ich trage meine Mimne, (c)
Wienlied, (d) Cicellie. 5.30, Talk: Pro-
blems of National Education. Concert by a
Soldiers' Choir with Readings. 7.0, La
Traviata—Opera in Three Acts (Verdi),
relayed from the State Opera House, Unter
den Linden. 9.20, Weather, News and Sports
Notes. 9.45, Weather Report for Shipping.
10.0, Dance Music from Berlin (Witzleben).
11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5
kW.—10.30 a.m., See Leipzig. 11.0, See
Breslau. 1.0 p.m., See Berlin (Königs Wuster-
hausen). 1.30, Fairy Tales for Children.
2.0, Orchestral Concert, conducted by Eugen
Sonntag. 3.0, Second Half of
the Hockey Match Germany v. France, from
the Preussensplatz, Tempelhof. 3.20,
Concert (cont'd.): Polonaise (Franz Kullak);
Two Pieces (Wilhelm Kienzl); (a) Harfners

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Salvation Army service from the Congress Hall, Clap-
ton. Orchestral concert from Eastbourne.
Sunday orchestral concert.

LONDON REGIONAL
MIDLAND REGIONAL Roman Catholic service from St. Chad's Cathedral,
Birmingham.

NORTH REGIONAL Service relayed from Selby Abbey.

WEST REGIONAL Service from St. Catherine's Church, Pontypriid.

SCOTTISH REGIONAL Service from St. Mary's Cathedral, Glasgow. Reid
orchestral concert.

ABROAD

BERLIN (Konigswusterhausen) 7 p.m. Opera: "La Traviata" (Verdi), from Unter
den Linden.

BERO-MUNSTER 7 p.m. Oratorio: "Die heilige Elisabeth" (J.
Haas), from Basle.

BORDEAUX-LAFAYETTE BRUSSELS (No. 2) 7.15 p.m. Operetta: "La Petit Duc" (Lecocq).

BUCHAREST BUDAPEST HEILSBURG 7 p.m. Symphony orchestra, conducted by J.
Kumps.

7 p.m. Opera: "Don Giovanni" (Mozart).
6.30 p.m. Operetta: "Endlich allein" (Lehar).

8.5 p.m. Oratorio: "Christopher Columbus" (K. F.
Noetel).

2.10 p.m. Concert conducted by Dr. W. Mengelberg,
relayed from Amsterdam.

HILVERSUM 7.55 p.m. Extract from "La Bohème," by Puccini.

HUIZEN PALERMO 7.45 p.m. Symphony concert, conducted by A. la R.
Parodi.

ROME 7.45 p.m. Operetta: "The Girl in the Taxi" (Gil-
bert).

STRASBOURG 2 p.m. Symphony concert from Paris. 3.30 p.m.
Sacred concert from Palais des Fêtes.

Abendgesang, (b) Ave in Kloster; Gondoliera
(Franz Ries); Flemish Dances (Jan Bloekx);
Two Pieces (Joh. Strauss); (a) Csardas from
Cagliostro, (b) Waltz, Windsorklänge; Overtu-
re, Lucullus (Meyer-Helmund). 4.30,
Talk: World Philosophy and Economics. 4.55,
Hermann Unger Song Recital by Tiny De-
buiser (Soprano), accompanied by the Com-
poser; Two Songs from Liebesklagen, Op.
42; (a) Nach meiner Lieb', (b) Recht wie ein
Leichnam; Two Songs from Mutterlieder;
(a) Gottvater selber, (b) Die Wolke wird
ihm Wiege; Two Songs from Altdeutscher
Liederkreis, Op. 11; (a) In meinem Rosen-
garten, (b) Mariä Wiegenlied. 5.10, Recita-
tions, Lyrics (Hans Voss). 5.20, Quintet in
A, Op. 114—the Trout (Schubert), for Piano-
forte, Violin, Viola, Cello, and Double Bass.
6.0, Topical Talk. 6.25, The Cozy Corner—by
Fried Kieling and Ulrich Franz Krolop. 6.50,
Sports Notes. 6.55, Announcements. 7.0, See
Vienna. 9.0, Weather, News, and Sports
Notes, followed by Dance Music from the
Europa Pavilion. 11.0 (approx.), Close
Down.

BERNE—See Schweizerischer Landessender.
BEROMUNSTER—See Schweizerischer
Landessender.

BODEN—See Stockholm.
BODO—See Oslo.

BORDEAUX-LAFAYETTE

(PTT) 986 kc/s, 304 metres; 13 kW.—7.0 a.m.,
Review of the Paris Morning Press, relayed
from Paris (Ecole Supérieure), 671 kc/s,
447.1 metres. 11.0, Concert, relayed from
Paris (Ecole Supérieure). 1.0 p.m., Relay
from Paris or Relay of a Local Festival.
1.30, Running Commentary on the Côte
Basque v. Côte d'Argent Rugby Match—
relayed from the Sports Ground. 4.30, Talk
on the History of Bordeaux. 5.30, Radio
Journal relayed from Paris (Ecole
Supérieure). 6.10, Sports Talk. 6.25, Talk
for Ex-Service Men. 6.40, Lottery Results.
6.45, Light Music on Gramophone Records.
7.15, La Petit Duc—Operetta (Lecocq),
relayed from the Grand Theatre.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—4.45 p.m.,
Sonata for Pianoforte in B Minor (Bella).
5.20, Reading. 5.35, Light Music on Gramo-
phone Records. 5.45, Programme to be an-
nounced. 8.0, See Prague. 7.0, Variety Con-
cert by the Station Orchestra, the Station
Jazz Band, the Station Military Band, the
Bratislava Schrammel Quartet and Members
of the National Theatre. Conductor, F.
Dyk. 9.0, See Prague. 9.20, Cigány Band

Concert, relayed from the Café Astoria. 10.0
(approx.), Close Down.

BREMEN—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 40 kW.—Relayed by
Gleiwitz, 1,184 kc/s, 253 metres.—10.0 a.m.
(from Gleiwitz), Demonstration of the
Upper Silesian Patriotic Societies of the
Reichspräsidentenplatz; Fanfare of Train-
pets by the Eleventh Cavalry Regiment;
Music by the Municipal Fire Brigade Orches-
tra and the Gleiwitz Choral Society; Address
by General von Goering of Vice-Chancellor
von Papen. 11.0, Concert by the Silesian
Patriotic Orchestra, conducted by Franz
Marszalek. 1.0 p.m., News Bulletin. 1.10,
Talk: Stamp Collecting. 2.15, Programme for
Children. 2.45, Concert by the Station
Orchestra, conducted by Bruno Janz;
Soloist, Hansgeorg Wierczok (Baritone).
4.45, Appeal for the Silesian Winter
Relief Fund. 4.55, Sports Review. 5.25,
Chamber Music: Quartet for Flute,
Violin, Viola, and Cello (J. Chr. Bach);
Flute Solo with String Quintet and Harpsi-
chord Accompaniment (Frederick the
Great); Quartet for Flute, Violin, Viola,
and Cello (Mozart). 5.55, Friedrich August
Ludwig von der Marwitz Programme, with
Introductory Talk. 6.25, Weather Forecast.
6.30, See Stuttgart. 7.30, See Munich. 9.0,
Time, Weather, News, Sports Notes, and
Programme Announcements. 9.30, Dance
Music from Berlin (Witzleben). 11.0 (ap-
prox.), Close Down.

BRNO

878 kc/s, 342 metres; 55 kW.—11.5 a.m.,
Military Band Concert, conducted by J.
Hanel. 12.30 to 12.45 p.m., Agricultural
Talk. 2.30, See Prague. 3.0, See Moravská
Ostrava. 4.30, Review of Gramophone
Records. 5.0, German Transmission: Ex-
tracts from Die drei Pintos—Opera in Three
Acts (Weber, arr. Mahler). 6.0, See Prague.
7.0, See Bratislava. 8.20, Symphony Con-
cert by the Station Orchestra, conducted
by B. Bakala; Symphony in A (A. Pils);
Symphony No. 5 in B (Schubert). 9.0, See
Prague. 9.20, See Bratislava. 10.0 (ap-
prox.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—9.0
a.m., Gramophone Concert. 10.0, Concert
by the Small Station Orchestra conducted
by P. Leemans; Soloists: Douliez (Piano-
forte) and Wigy (Violin). 11.0, Con-
cert by the Mickey's Club Jazz At-
traction. 12 Noon, Journal Parlé. 12.10 p.m.,
Concert conducted by André Fellemann
relayed from the Grand Hotel, Ant-

werp. 12.30, Recitations. 1.40, Concert
(cont'd.). 4.0, Concert by the Symphony
Orchestra conducted by J. Kumps: Selection
from Russian and Ludmilla (Giluka);
Zorahayda (Svendsen); Songs: Petite Suite
(Ducasse); Ballet Music from The Cid (Mas-
senet); In the interval, 4.30 (approx.),
Football Match Results. 5.0, Organ Recital
by Louis Joos relayed from the Carmelite
Church; Toccata in F (Bach); Melody
(Gullmant); Réverie (Borodin); Choral
(Handel). 5.30, Programme for Children.
6.0, Gramophone Records: Berceuse (Ros-
kain); Extract from La boîte à joujoux
(Debussy); L'Église paysanne (De Boeck).
6.15, Religious Address. 6.30, Wireless Re-
view and Talk on Music. 7.0, Concert by
the Radio Orchestra and the Radio Vocal
Quartet: Soloists: M. Durand (Tenor) and
M. Steurs (Accordion). 7.45, Faisons con-
struire; Sketch (Lauvill); 8.0, Concert
(cont'd.). 9.0, Journal Parlé. 9.10, Variety
Music on Gramophone Records. 10.0, Con-
cert by the Penguin Club. 11.0 (approx.),
Close Down.

BRUSSELS (No. 2)

N.I.R.; 887 kc/s., 338.2 metres; 15 kW.—
Programme in Flemish. 9.0 a.m., Concert
by the Small Station Orchestra, conducted
by P. Leemans. Soloist, M. Wigy (Violin).
10.0, Gramophone Concert of Classical
Music. 11.0, Concert, relayed from the
Grand Hotel, Antwerp. 12 Noon, Journal
Parlé. 12.10, Concert by Mickey's Club Jazz
Attraction, conducted by L. Langlois. 1.0
(approx.), Running Commentary on the
International Football Match, France v.
Belgium. 4.0, Concert of Light Music by
the Radio Orchestra, conducted by Charles
Walpot. In the interval at 4.15 (approx.),
Football Results. 5.0, Gramophone Records.
5.15, Recitations. 5.30, Concert by the Small
Station Orchestra, conducted by P. Leemans.
Soloist, M. Gilman (Flute). Overture, The
Grand Duchess of Gerolstein (Offenbach);
Legend No. 6 (Dvorak); Suite (Saint-Saëns);
Orientale for Flute (Gaubert); Scène
d'amour (Sibelius); Ballet Music from Romeo
and Juliet (Gounod). 6.15, Religious Ad-
dress. 6.30, Talk on Music. 7.0, Concert
by the Symphony Orchestra, conducted by J.
Kumps. In the interval at 7.45, Recitations.
9.0, Journal Parlé. 9.10, Gramophone Con-
cert of Light Music. 9.45, Concert by the
Max Alexys Orchestra, relayed from the
Ancienne Belgique. 11.0 (approx.), Close
Down.

BUCHAREST

761 kc/s., 394 metres; 12 kW.—9.0 a.m., Pro-
gramme for Workers. 9.30, Bible Reading.
9.45, Choral Concert of Sacred Music. 10.0,
Concert of Yugoslav Music by the Ionesco
Gains Orchestra. 11.0, Light Music on
Gramophone Records. In the interval at
11.45, News and Time Signal. 3.0 p.m., Pro-
gramme for Peasants. 4.0, Light Music and
Romanian Music by the Jean Marco Orches-
tra. 5.0, News and Time Signal. 5.15, Folk
Music (cont'd.). 6.0, Talk: Romanian Folk
Music. 6.20, Talks on Popular Education and
Agricultural Science. 7.0, Don Giovanni—
Opera in Three Acts (Mozart). In the inter-
vals, News.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW. Also relayed
on 840 metres from 6.0 to 11.0 p.m.—10.15
a.m., Protestant Service, followed by
Concert of Russian Music by the Opera House
Orchestra conducted by Otto Berg. 1.0 p.m.,
Gramophone Concert of Operatic and Popu-
lar Music. 2.0, Agricultural Talk. 2.45, Pro-
gramme for Schools, followed by Harpsi-
chord Recital. 4.0, Talk. 4.30, Dance Music
from the Café Ostende; Popular Songs by
D. Jani. 6.0, Humorous Talk. 6.30, Endlich
allein—Operetta (Lehar); after the
Operetta; Cigány Music from the Café
Baross. 10.15, Dance Music from the Royal
Restaurant.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s., 281 metres; 0.75 kW. Relayed by
Kalundborg, 260 kc/s., 1,153 metres.—11.30
a.m., Relay of a Young People's Gathering,
from the Nicolai Hus. Programme of Music
and Addresses. 12.50 p.m., Talk in English;
The Economic Side of Daily Life. 1.10, Talk
in German. 1.30, Talk in French. 1.55, Pro-
gramme for Children. 2.25, Orchestral Con-
cert, conducted by Lanny Gründahl, re-
layed from the Axelborg Studio. Soloists:
Otto Steenberg and Henry Skjaer
(Songs). 4.0, Divine Service from Chris-
tiansborg Castle. 5.20, Talk: The Peasant
in Twentieth Century Literature. 5.50,
Weather and News. 6.15, Time and
Sports Notes. 6.30, Talk: The Rational-
isation of Social Services. 7.0, Town Hall
Chimes. 7.1, Vocal and Orchestral Concert
of Music by Hoise and Lange-Müller. 8.10,
The Hansen Family—A Humorous Episode
(Jens Loeber). 8.25, Quintet in A for Piano-
forte, Violin, Viola, Cello, and Double Bass,
Op. 114 (Schubert). 9.10, News Bulletin. 9.20,
Saxophone Solos. 9.35, Reading (Carl Arc-
tander). 9.55, Dance Music from the Wivex

Restaurant. In the interval at 11.0, Town Hall Chimes. 11.30 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., Radio Gazette and News Bulletin, 11.30, Gramophone Concert of Variety Music, 4.0 to 8.0 p.m., Programme in English by the I.B.C., C. Dunvers-Walker, B. McNab, and F. Lamping announcing. (These times are subject to alteration.) 4.0, Programme for Children. 4.30, Children's Club Concert. 5.0, International Broadcasting Club Concert for Glasgow Listeners. Orchestra: Glasgow Highlanders (arr. Dyack); Pianoforte Solo: Hot Scotch; Message from Captain Leonard Plugge, President and Founder of the Club; Songs: (a) Comin' through the Rye, (b) Bella, the belle o' Dumoon; Accordion Solo: The Road to the Isles; Chorus: Ye Banks and Braes; The Bonnie Banks o' Loch Lomond; Scotland's Bride; Sketch: Doon the Clyde; Bagpipe Solo: Eightsome Reel; Songs: (a) Macleod's Galley (Kennedy-Fraser), (b) My ain Folk; Orchestra: Potpourri, The Thistle. 6.0, Celebrity Concert of Gramophone Records; Medley of Songs by Clarice Mayne; Paris stay the same, by Maurice Chevalier; Come Gipsy, by Countess Maritza, by Richard Tauber; Bluebeard, by Wish Wynne; Jolly good Company, by Jack and Claude Hulbert; We just couldn't say good-bye, by Annette Hanshaw; Layton and Johnson Medley. 6.30, Organ Recital: Waltz and Selection (arr. Stoddon); A Brown Bird singing (Haydn Wood); Song, In love (Friml); Schön Rosmarin (Kreiser); Love's Garden of Roses (Haydn Wood); Broken Dreams (Spitalny); Spirit of America (Zamecnik). 7.0, Parady Military Band Half-Hour: The Parade of the Tin Soldiers (Jesse); Electrical transcription of an American Broadcast: Prelude (Järnefelt); Electrical transcription of an American Broadcast: Valse des aouettes (Drigo); Electrical transcription of an American Broadcast: Old Panama (Alford). 7.30, Concert of Dance Music: Butterflies in the Rain; Jack in the Box; I'm sure of everything but you; Standing on the Corner; Drifting and Dreaming; A Boy and Girl were Dancing; Young and Healthy. 8.0, Popular Concert. 9.0 till Close Down, Programme in English by the I.B.C. (These times are subject to alteration.) 9.0, Concert of Gramophone Records, Mr. H. A. Leinoine announcing; Selection from The Maid of the Mountains; I may never pass your way again; Her Name is Mary; Mother Machree; Can't we meet again?; What more can I ask?; The Song of the Nightingale; Daddy. 9.20, Concert of Light Music: Overture, Die Fledermaus (Joh. Strauss); Play fiddle, play (Lawrence); Boy Soprano Solo: Who is Sylvia? (Schubert); Scarf Dance (Chaminade); Pianoforte Solo: Butterflies in the Rain (Reeves and Meyer); Tenor Solo: E lucevan le Stelle, from Tosca (Puccini); Selection from The Yeomen of the Guard (Sullivan). 10.0, Orchestral Music: Stephanie Gavotte (Ozibalka); Serenade (Hayknes); Dance of the Tea Balls (Schmidt-Bagen); Ideale (Tosti); Vienna, City of my Dreams (arr. Reeve); The Clock and the Dresden Figures (Kötteley); Wedding of the Winds (Hall). 10.30, Concert of Dance Music: Butterflies in the Rain; Standing on the Corner; Cheerful Little Earful; Play Fiddle play; To-night; Willow weep for me; Look what you've done; Selection from Chu Chin Chow. 11.0, Light Opera Music: Selection from Frederic (Lehar); Song, I give my Heart, from The Dumbarr (Millheer-Mackeben); Selection from Waltzes from Vienna (Griffiths); Song, The Dumbarr (Mackeben); You are my Heart's Delight, from The Land of Smiles (Lehar); Selection from The New Moon (Ronberg). 11.30, Military Marches: Escourt Nelson (Zeller); Distant Greeting (Loring); New Colonial March (Hall); The Thunderer (Sousa); Light of Foot (Lotann); El abanico (Javaloyes); Pomp and Circumstance (Elgar). 12 Midnight, International Broadcasting Club Concert for Glasgow Listeners. Orchestra: Glasgow Highlanders (arr. Dyack); Pianoforte Solo: Hot Scotch; Message from Captain Leonard Plugge, President and Founder of the Club; Songs: (a) Comin' through the Rye, (b) Bella, the belle o' Dumoon; Accordion Solo: The Road to the Isles; Chorus: Ye Banks and Braes; The Bonnie Banks o' Loch Lomond; Scotland's Bride; Sketch: Doon the Clyde; Bagpipe Solo: Eightsome Reel; Songs: (a) Macleod's Galley (Kennedy-Fraser), (b) My ain Folk; Orchestra: Potpourri, The Thistle. 1.0 a.m. (Money), Variety Music: She can't make up her mind; More than you know; The Dutch Wedding; The Fireman; Handsome Gigolo. 1.30, Songs: Crying for the Carolines (Warren); Gipsy Melody (Nicholls); My Heart is where the Mohawk flows (Carson); The Dance of the Raindrops (Reeves); Wasn't it nice? (Seymour); Say a little Prayer for me (Nicholls); When you wore a Gingham Gown (Gilbert); Crazy Pirouette (Frisk). 2.0, Light Music: I'll follow you; Isn't it Romantic?; A Million Dreams; Mimi; Please; Here's hoping; Here lies love; Always in my Heart; How do you do, Mr. Brown?; Wanderer; Leave a little for me; Let's all sing like the Birdies Sing; The old Man of the Mountains; Let's put out the Lights. 2.57, I.B.C.

MARCH 26th

SUNDAY

continued

Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 269 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 246.9 metres.—10.30 a.m. to 1.0 p.m., See Leipzig. 1.0, Songs by Brahms, Hugo Wolf and Richard Strauss on Gramophone Records. 1.30, Talks arranged by the Wiesbaden Board of Agriculture. 1.40, Rural Programme—Two Talks. 2.30, See Stuttgart. 3.30, Concert by the Municipal Orchestra, relayed from the Kurhaus, Wiesbaden: Overture, Romeo and Juliet (Tchaikovsky); Berceuse (Järnefelt); Prelude (Järnefelt); Symphonic Poem, Carnaval à Paris (Svendson); Prelude to Phèdre (Massenet); Selection from Der Trompeter von Säckingen (Nessler-Nikisch); Waltz from Poldubitz (Nedbal); Selection from The Land of Smiles (Lehar). 5.0, Talk on Art. 5.25, Popular Programme. 5.55, Talk: The Nibelungs in German Literature before Wagner. 6.20, Sports Notes. 6.30, See Stuttgart. 8.0, Concert of Viennese Folk Music. 9.0, Time, News, Weather and Sports Notes. 9.20, Songs from The Mastersingers (Wagner) on Gramophone Records. 9.45, See Munich. 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—10.30 a.m., See Leipzig. 11.0, Nature Study. 11.30, Wind Instrument Concert, conducted by Luck. In an interval at 11.55, Time and Weather. 1.0 p.m., Programme for Children, with Music by the Chamber Orchestra, conducted by Gerhard Maass. 1.55, Modern Fairy Tales—New Adventures of Münchhausen. 2.15, Concert by the Station String Quartet. Soloists: Gertrud Schmidt (Songs), and Gerhard Maass (Pianoforte). 3.0, Roggenbuck—Marionette Play in Four Acts (after the Saga of St. Jürgen vor Travemünde). 3.55, Brahms Pianoforte Recital by Herbert Heinemann. Waltz; Variations on a Theme by Paganini. 4.30 (from Kiel), Satyros—Play (Goethe); with Incidental Music, relayed from the University; Introductory Talk by Prof. Liepe. 5.30, Concert of Eighteenth Century German Opera Music, by the Station Orchestra, conducted by Adolf Secker. Soloists: Ernst Kroll-Lange, Gertrud Schnitzer, Herbert Groh, Erwin Bolt and Bernard Jakschitz. Two Arias and Duet from Pomona (Keiser); Trios, Chorus and Arias from Der Eritenkranz (Joh. Adam Hiller). 6.30, Talk on Wrestling. 6.40, Sports Report. 6.55, Weather Forecast. 7.0, Concert of Opera Music, by the Philharmonic Orchestra, conducted by Richard Richter. Soloists: Willy Frey and Mathieu Adlers Mayer (Songs); Overture, Fidelio (Beethoven); Aria from Martha (Flotow); Czardas from Der Geist des Wajewoden (Grossmann); Aria from Don Carlos (Verdi); Selection from Il Trovatore (Verdi); Overture, The Flying Dutchman (Wagner); Duets from: (a) The Force of Destiny (Verdi), (b) Othello (Verdi); Polish-e from Eugene Onegin (Tchaikovsky). 9.0, Time, Weather, News and Announcements. 9.10, Topical Talk. 9.20, Dance Music from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s; 453.2 metres.—10.30 a.m. to 1.0 p.m., See Leipzig. 1.0, Talk on Chess. 1.30, Talk for Young People. 2.0, The Garden of Paradise—Radio Play for Young People (Rudolf Simon). 2.40, Concert by the Königsberg Opera House Orchestra, conducted by Karl Hrubetz. Sports Notes in the intervals. 4.40, Talk: How Pizarro conquered Peru. 5.10, Programme in North German Dialect. 5.40, Pianoforte Recital: Arabesques on the Waltz, The Blue Danube (Schulz-Erler); Rhapsody espagnole (Liszt). 6.45, Sports Notes. 6.30, See Stuttgart. 7.30, Talk: Adventures in the Caucasus and Turkistan. 8.0, News Bulletin. 8.5, Christopher Columbus—Oratorio (Konrad Friedrich Noetel) by the Königsberg Opera House Orchestra, the Station Choir and Choir of the College of Music. 9.30, News and Sports Notes. 9.45 (approx.), Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

HILVERSUM

Announced HILVERSUM, 1,013 kc/s, 296.1 metres; 20 kW (7 kW up to 4.40 p.m.).—8.10 a.m.,

Religious Programme by the Christian Radio Society (N.C.R.V.). 9.10, Programme of the Catholic Radio Society (K.R.O.)—Mass, relayed from a Church in Amsterdam. 10.30 (approx.), See Vienna. 12.40 to 4.40 p.m., K.R.O. Programme. 12.40, Political Talk. 1.0, Sextet Concert. 1.40, Religious Talk. 2.10, Choral and Orchestral Concert. 4.10, Programme for Hospitals. 4.40 to 7.25, N.C.R.V. Programme. 4.40, Religious Address. 5.0, Recital of Sacred Music by Mme. A. Reclaire (Contralto) and M. F. Kloek (Organ). 5.30, Divine Service relay followed by Sacred Music. 7.25 till Close Down, K.R.O. Programme. 7.25, Talk on Ireland. 7.50, Football Results. 7.55, Extracts from La Bohème—Opera (Puccini). In the interval at 8.35 (approx.), News. 9.35, Popular Music on Gramophone Records. 9.40, Orchestral Concert, conducted by J. Gerritsen: March, Der Tausendkünstler (Blaukenburg); Overture, Die schöne Galathee (Suppé); Selection from Der Bettelstudent (Millheer); Waltz, Gold and Silver (Lehar); Sanctuary of the Heart (Kötteley). 10.20, Epitoge by the Small Choir, conducted by J. Piekkers. 10.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 160 kc/s, 1.875 metres; 8.5 kW.—8.10 to 11.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 8.10, Horticultural Talk. 8.40, Talk. 8.55, Football Report. 8.57, Organ Recital. 9.20, Recitations. 9.40, Orchestral Concert. 10.20, Talk: The Cinema. 10.40 (Concert (contd.)). 11.20, Address. 11.46 to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Oorlop (A.V.R.O.). 11.40, Concert by a Military Band, conducted by Walter Boer. Interludes on Gramophone Records. 1.40, Weekly Book Talk. 2.10, Concert, relayed from The Concertgebouw, Amsterdam. The Concertgebouw Orchestra, conducted by Dr. Willem Mengelberg. Soloists: Willem Andriessen. 3.40, Gramophone Records of Variety Music. 4.25, Sports Notes. 4.40 to 5.40, V.A.R.A. Programme: Children's Hour. 5.40 to 7.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 5.40, Review of Books. 6.25, Divine Service. 7.40 till Close Down. Programme of the A.V.R.O. 7.40, Time and News. 7.55, Concert by the Wireless Orchestra, conducted by Nico Trepp. Soloists: Helene Cals (Soprano), and Herbert Ernst Groh (Tenor); Introduction to the Third Act of Lohegrin (Wagner); Duet from The Barber of Bagdad (Cornelius); Entry of the Guests into the Wartburg from Tannhäuser (Wagner); Aria and Duet from Rigoletto (Verdi); Splendour and Victory (Finck); Duet from Manon Lescaut (Puccini). 8.40, Recitations. 9.0, Concert (contd.). Waltz, Roses from the South (Joh. Strauss); Two Songs from Musical Comedies. Overture, Flotte Bursche (Suppé); The Globetrotter (Leopold). 9.25, Gramophone Records of Light Music. 9.40, Concert by Kovacs Lajos and his Orchestra: Songs by Bob Scholte. 10.50, Gramophone Records of Light Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

NICE, 1,202 kc/s, 249.6 metres; 0.8 kW.—11.0 p.m. to 12 Midnight, Programme in English by the I.B.C. H. K. Hitchcock announcing.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—11.0 a.m., See Leipzig. 1.5 p.m., Reading (S. P. Andres). 1.30, Shortland Lesson. 1.50, Talk: Agricultural Colleges. 2.20, Talk on Plants. 2.40, Wireless Technical Talk. 3.0, Talk: Musicians who died young—Rudi Stephan. 3.30, Concert by a Thousand School Children, with the collaboration of a School Orchestra, conducted by Anton Hardörfer, relayed from the Saalbau, Essen. 5.0, A Visit to the Benedictine Monastery of St. Joseph Gerleve. 6.0, An Entertainment. 6.45, Sports Notes. 7.0, Variety Programme of Literature and Music: The Station Orchestra, conducted by Busch-Kötter; Soloist: Prof. Paul Grümmer (Cello); Reading: Carl Maria Weber and his opera Der Freischütz (R. Wagner); Overture, Der Freischütz (Weber); Thoughts on Music (Robert Schumann); Concerto for Cello (Schumann); Richard Strauss to Franz Willner on the First Production of Till Eulenspiegel on November 5th, 1835; Till Eulenspiegel's Merry Pranks (Richard Strauss); Das rechte Pedal ist an allem Schuld—A Scene with Music and Dance arranged for Radio (Adolf Raskin). 9.5, News and Sports Notes. 9.25, Serenade on Gramophone Records. 9.45, See Munich. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and DRESDEN, 941 kc/s, 319 metres.—10.20 a.m., Himmelskönig, sei willkommen—

Cantata (Bach), by the Gewandhaus Orchestra, the Choir of St. Thomas, and Soloists. 11.0, Concert by the Leipzig Symphony Orchestra conducted by Robert Mauzer. 1.0, Weather and Time. 1.5, Programme Announcements. 1.25, Agricultural Hints. 2.0, Zither Duets. 2.30, Reading for Young People. 3.20, Concert by the Leipzig Symphony Orchestra conducted by Willy Steffen: Overture, Die Opernprobe (Lortzing); Mazurka brillante (Liszt); Waltz, Die Werber (Lanner); Caprice (Dornich); Selection from Hansel and Gretel (Humperdinck); Two Lyrical Pieces (Grieg): (a) Abende im Hochgebirge, (b) An der Wiege; Stimmungsbilder (Lange); Gondoliera (Ries); Perpetuum mobile (Ries); March, Die Jugend matscheln (Lindemann). 4.45, Reading from the Works of Friedrich von Gagar. 5.15, Am anderen Ufer (On the other Bank)—Radio Play (Herbert Scheffler), with Incidental Music by Siegfried Scheffler. 6.30, Topical Report. 7.15, Topical Talk. 7.30, See Munich. In the interval at 9.5, News Bulletin. 11.0 (approx.), Close Down.

LINZ.—See Vienna.

MADRID

ARANJUEZ (EAQ); 9,860 kc/s., 30.43 metres; 20 kW.—10.30 p.m., Concert of Variety Music. 10.45, Humorous Talk. 11.0, Concert (contd.). 11.35, Talk. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO (EA7), 707 kc/s., 423.3 metres; 2 kW.—8.0 to 9.0 a.m., Topical Review. 2.0 p.m., Chimes, Time Signal, Theatre Notes, and Concert by the Arts Orchestra. 4.0 to 7.0, Interval. 7.0, Chimes and Dance Music, relayed from the Ritz Hotel. 7.30 (in an interval), Agricultural Talk. 8.30 to 9.30, Interval. 9.30, Chimes and Time Signal. 9.35 (approx.), Pianoforte Recital by Juan Costa Rust, Song Recital by Conchita Aguiló, and Flamenco Songs by Ricardo Fernandez, with Guitar Accompaniment. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—3.0 p.m., Concert of Light Music by the Station Orchestra, conducted by J. Plichta. 4.30 to 5.45, See Prague. 6.0, See Prague. 7.0, See Bratislava. 9.0, See Prague. 9.20, See Bratislava. 10.0 (approx.), Close Down.

MOSCOW

230 kc/s, 1,304 metres; 100 kW.—5.30 p.m., Kostelch the Immortal—An Autumn Legend (Rimsky-Korsakov), relayed from the Radio Theatre. 8.0, Talk in English. 8.45, Chimes. 9.5, Weekly Review.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserlautern, 536 kc/s, 550 metres; and Nürnberg, 1,256 kc/s, 239 metres.—11.0 a.m., See Leipzig. 12.5 p.m., Time, Weather and Programme Announcements. 12.15, Talk: Sheep Dogs. 12.35, Gramophone Concert of Variety Music. 1.30, Chess Lesson. 2.15, Programme for Children. 3.5, Concert of Light Music, conducted by Erich Kloss. 4.45, Folk lore of the West—a Study of German Songs and Poems in Alsace-Lorraine. 5.10, Die schön' Czuzi vo' Mittenwald—Upper Bavarian Minned Play (F. v. Kobell). 5.55, Organ Recital by Dr. Hermann Keller. 6.20, Weather and Sports Notes. 6.30, The Miniature Zoo—Radio Sequence (Lippel and Weninger). 7.30, Concert by the Radio Orchestra, conducted by Hans A. Winter. Soloist: F. J. Hüh (Pianoforte). Overture, Manfred (Schumann); Andante con moto and Scherzo from the Symphony in C (Schubert); Symphonic Variations for Pianoforte and Orchestra (Franck); Polovtsian Dances from Prince Igor (Borodin); Hungarian Fantasia for Pianoforte and Orchestra (Liszt); Air from Don Quixote (Beer-Walbrunn). 9.0, Famous Singers on Gramophone Records. 9.20, Time, Weather, News and Sports Notes. 9.35, Serenade, conducted by Erich Kloss. 10.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—11.5 a.m., Road Report. 9.20, Chimes and Divine Service from St. Saviour's Church. 12 Noon, Jubilee Choral Concert, relayed from Fredriksstad. 4.0 p.m., Sponsored Concert on Gramophone Records. 4.40, Recitations. 5.0, Talk. 5.30, Churnet Quintet (Mozart), relayed from Trondheim (605 kc/s, 495.8 metres). 6.0, Parliamentary Review. 6.30, A Sketch. 7.0, Time Signal. 7.1, Concert by the Station Orchestra, conducted by Hugo Kramm. Soloist: Madame Signy (Cleve-Gühndorf (Pianoforte). Concert Overture, In Autumn (Grieg); Concerto in A for Pianoforte and Orchestra (Cleve); Suite, Mozartiana (Tchaik-

kovsky). 8.10, Songs and the Week's Revue by Lyktemann. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Programme to be announced. 9.45, Gramophone Dance Music. 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PARIS

EIFFEL TOWER, FLE. 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals on 2,650 metres at 8.26 a.m. and 9.26 p.m. (Preliminary and 6-dot Signals).—12 Noon, News Bulletin. 12.15 p.m., Weather Report. 12.30 to 1.30, Concert by Jean Ibos and his Orchestra. 2.0 (approx.), Running Commentary on the International Football Match, France v. Belgium. 5.45, Le Journal Parlé. 6.45, Programme for Children. 7.20, Weather Report. 7.30, Gramophone Concert: Part I—Vendi Programme; Part II—Light Music. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc s, 328.2 metres; 60 kW.—3.45 a.m., Bible Reading. 9.0, News Bulletin. 9.5, Sponsored Concert. 10.5, Film Stars—Sponsored Programme. 10.40, Sponsored Gramophone Concert. 11.15, Songs from sound Films—Sponsored Programme. 11.45, Half-an-Hour of Fantasy by Paul Weill. 12.30 p.m., Sponsored Concert. 1.0 to 5.45, Interval. 5.45, Le Journal Parlé. 6.0, Sports Notes. 6.15, Light Music on Gramophone Records. 6.30, Catholic Report. 7.0, Interval. 7.15, Variety Music on Gramophone Records. 8.0, Poetry Reading. 8.50, Sponsored Concert. 9.10, Variety Music on Gramophone Records. 9.30, News Bulletin.

PARIS

RADIO-PARIS (CFR), 174 kc s, 1,725 metres; 75 kW.—6.45 a.m., Light Music on Gramophone Records. 7.0, Press Review and Weather. 7.30, Physical Culture. 9.0, Elementary Book-keeping Lesson. 9.20, Advanced Book-keeping Lesson. 9.40, Spanish Lesson. 10.0 to 10.30, Interval. 10.30 to 11.0, Programme in English by the I.B.C.: Mr. T. St. A. Ronald announcing: Sanctuary of the Heart, by Arthur Vivian (Baritone), with Male Chorus and Orchestra; What more can I Ask? from The Little Damozel, by The Three Virginians; The Dear Old Home; Songs, Part I: by Tarrant Bailey, Junior (Banjo); (a) My Grandfather's Clock, (b) The Old Rustic Bridge by the Mill, (c) After the Ball, (d) John Peel; Popular Times from the Latest Talks; Part II: by Ned Fox's Film Fans: (a) What more can I Ask?, (b) Where is this Lady?, (c) Brighter than the Sun; My Darling, by Val Rosing; Comedy Song, So Does She, by Bobbie Comber

(Comedian); Comedy Foxtrot, The Argument Song, by Jack Payne and his Band, with Vocal Chorus; Musical Memories: Part I: by Reginald New on the Latest Compton Cinema Organ: (a) Polonaise in A (Chopin), (b) Spring Song (Mendelssohn), (c) Serenade (Schubert), (d) Hungarian Dance (Brahms). 11.0, Religious Address. 11.20, Sacred Music on Gramophone Records. 11.30, Bilboquet. 11.45, Press Review, News and Weather. 12 Noon to 2.30 p.m., Programme in English by the I.B.C. 12 Noon, Gramophone Records: Mr. H. M. Lemoine announcing: Selection from The Maid of the Mountains: Part I: by the Commodore Grand Orchestra: Brighter than the Sun, by the Seda Dance Band; Song, My Darling, by John McKenna, with Orchestra; As your Hair Grows Whiter, by Harry Davidson, at the Commodore Organ; I'm Playing with Fire, by Tonzoni and his Dance Band; Cavalcade Memories: Part II: by the Commodore Grand Orchestra and Organ: Song, Bless this House, by Gladys Knight and Orchestra; The Musical Clock of Madame Pompadour, by the Commodore Grand Orchestra. 12.30, Gramophone Records: Mr. T. St. A. Ronald announcing. 2.0, Orchestral Concert: March, La petite Tonkinoise; Selection from The Gelsia (Jones); Selection from Betty in Mayfair; Foxtrot, My Darling; Selection from The Merry Widow (Lehar); Selection from Show Boat (Kern). 2.30, Classical Music on Gramophone Records. 3.0 to 4.0, Programme in English by the I.B.C.: Ten-Time Variety Hour: Mr. S. H. C. Williams announcing. 4.0, Lenten Sermon by the Reverend Father Pinard de la Boulaye: Jesus, the Apostle of God. 5.30 to 7.0, Programme in English by the I.B.C. 5.30, Variety Half-Hour: Mr. Glyne Williams announcing. 6.0, Film Fans' Hour: Mr. S. H. C. Williams announcing. 7.0, Radio Paris Circus. 7.30, News, Sports Notes and Weather. 7.45, Five Short Preludes (Harsanyi), on Gramophone Records. 8.0, Cette Nuit-là-Revue (Zilahy), relayed from the Théâtre de la Madeleine. In the Intervals, Press Review and News.

PITTSBURGH
WESTINGHOUSE ELECTRIC (KDKA), 580 kc s, 306 metres; 25 kW. Relayed by W2XK on 48.86 metres and 25.27 metres.—9.0 p.m., Dick Daring, from New York. 9.15, Temple of Song, from New York. 9.30, Vesper Services from Shady-side Presbyterian Church, Pittsburgh. 10.30, Pages of Romance, from New York. 11.0, Sealed Power,

from New York. 11.30, Time Signal. 11.31, Weather Report. 11.32, Teaberry Sport Review. 11.37, Press News Reeler. 11.42, Strange Facts. 11.44, Temperature Report—Philadelphia Company. 11.45, The Fireflies. 12 Midnight, Time Signal and KDKA Orchestra. 12.30 to 3.45 a.m. (Monday), New York Relay. 12.30 a.m., Great Moments in History. 1.0, The Land Where the Good Songs go. 2.0, Twenty Thousand Years in Sing Sing. 2.30, Walter Winchell. 2.45, Pickens Sisters. 3.0, D. W. Griffith's Hollywood. 3.45, Don Lucas—Piano Opera. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report—Philadelphia Company. 4.12, Weather Report. 4.15, Press Last-Minute News. 4.20, Alexander Roy (Tenor). 4.50, Jesse Crawford (Organist), from New York. 5.0, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

PRAGUE

614 kc s, 488.6 metres; 120 kW.—10.0 a.m., Concert by the Station Orchestra, conducted by Otakar Parik: Symphonic Poem, Op. 44, My Youth (Foerster); Symphony in E, Op. 11 (Suk). 11.0, Chimes. 11.5, See Brno. 12.30 p.m., Agricultural Report. 1.15, Talk: Social Workers. 2.30, Moravian Duets, Op. 32 (Dvorak). 3.0, See Moravská-Ostrava. 4.30, Talk. 4.45, Variety Music on Gramophone Records. 5.0, German Transmission: German Songs of the Baroque Period by Käthe Walter, R. Bandler and Walter Kaufmann and his Orchestra. 6.0, Chimes. 6.1, Humorous Programme. 7.0, See Bratislava. In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.1, News Bulletin. 9.20, See Bratislava. 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; LAUSANNE, 442 kc/s, 680 metres; and GENEVA, 395 kc/s, 760 metres.—8.40 a.m. (from Lausanne), Chimes. 8.45 (from Lausanne), Protestant Service, relayed from the St. Laurent Church. 10.0 (from Lausanne), Concert by Edouard Moser and his Orchestra. 11.0 (from Lausanne), Readings. 11.30, News Bulletin and Weather Forecast. 11.40 (from Lausanne), Light Music on Gramophone Records. 1.0 to 2.45 p.m., Interval. 2.45, Concert by the Lyre de Montreux, conducted by T. Hillaert, relayed from Montreux: Overture, Oberon (Weber); Concertino for Eight Clarinets (Weber); Italian Caprice (Tchaikovsky); Second Suite from L'Arlesienne (Bizet); Symphonic Poem, Les Pré-

ludes (Liszt). 4.30 to 5.30, Interval. 5.30 (from Geneva), Protestant Address. 6.0 (from Lausanne), Accordion Concert. 6.40 (from Geneva), Sports Notes, News, and Announcements. 7.0 (from Lausanne), Talk on Cats. 7.15 (from Geneva), The Week's Review. 7.25, Italian-Suisse Programme: Choral Concert of Folk Songs from Ticino. 7.55, Concert by the Station Orchestra, conducted by R. Echenard. 9.0, News and Weather. 9.15 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and 2R0, 11,810 kc/s, 25.4 metres.—9.10 a.m., News, Sports Notes and Amusement Guide. 9.30, Agricultural Notes. 9.45, Bible Reading. 10.0 to 11.0 and 11.30 to 1.30 p.m., See Turin. In the interval at 12 Noon, Time and Announcements. 2.45 (Naples), Programme for Children, Weather and Sports Notes. 3.0, Football Results. 3.15 to 5.15, Orchestral Concert. Sports Notes in the interval. 6.30, Football Results, Announcements and News. 7.0, Time and Announcements. 7.30, Sports Report. 7.45, The Girl in the Taxi Operetta in Three Acts (Gilbert). In the intervals: Talk and Reading of Poems. News after the Operetta.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF and by W2XAD (See Short-Wave List).—7.0 to 12 Midnight, New York Relay. 7.0 p.m., Clyde Doerr and his Saxophone Octet. 7.15, International Radio Forum. 7.30, Joe Green and his Marimba Band. 8.0, Wayne King's Orchestra. 8.30, Hour of Worship. 12 Midnight, Dr. Frank Hill Rogers (Organist). 12.15 a.m. (Monday), Wheatena Ville—Sketch with Ray Knight, from New York. 12.50, Horse Sense Philosophy. 12.45 to 2.30, New York Relay. 12.45, Smith Brothers. 1.0, Chase and Sanborn Hour. 2.0, General Electric Sunday Circle Concerts. 2.30, American Album of Familiar Music, followed by Programme Resumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW; BASLE, 1,229 kc/s, 244.1 metres; and BERNE, 1,220 kc/s, 245.9 metres.—9.0 a.m. (from Basle), Protestant Address and Morning Recital. 9.45 (from Basle), Concert of Chamber Music. 10.45 (from Basle), Dr. Margarethe Schwab-Plüss reads from her own



EIGHT RECORDS CHANGED AUTOMATICALLY

The Garrard Automatic Record Changing Unit is complete, fool-proof and fitted with "Garrard" Induction Electric Motor. It will play any number of records up to eight, then automatically stops, or will repeat or reject any record desired, simply by turning a knob. It converts the radio set into an automatic radio gramophone without any chance of interference with radio amplification. Reliable, simple and robust. Price £10.

Ask your dealer for folder or write direct.

GARRARD

"Perfection in every type of Gramophone Motor."

GARRARD ENGINEERING & MANUFACTURING CO. LTD., SWINDON, WILTS.



EVEN IN AMERICA WITH ITS MULTI-VALVE SUPER SELECTIVE SETS A PIX IS NEEDED

Read this Letter—

Hotel Grand, New York City. Please send me another "PIX" as I find by test that they are all that you claim for them and then some more. I have tried it out on one of the new 8 tube D.C. sets. . . . excellent clarity and volume. W. H. L.

This is only one of the many letters received from America. Thousands are being sold there weekly because they find a PIX improved the selectivity of even the finest sets.

The selectivity of your set can be improved by fixing a PIX in the aerial lead-in. Even if a pre-set aerial condenser is fitted inside your set, a PIX will give better and sharper tuning.

NO MORE DUAL PROGRAMMES. Fix a PIX in your aerial and separate programmes. A PIX can be fitted to any set, crystal, battery or all mains and will cut out the local and bring in foreign stations clearly.

THE BRITISH PIX COMPANY Ltd. (Dept. 487). 118/26, Southwark St.

OVER 1 1/2 MILLION USERS

2/ CLIP 6d.

MARCH 26th

SUNDAY

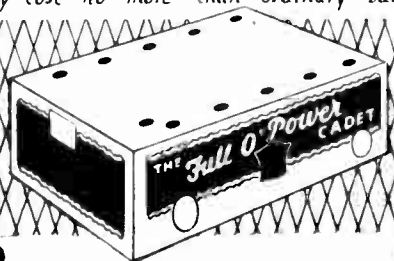
continued



When men discuss the merits of their wireless sets, the user of "Full O' Power" Batteries is always proud of the exceptional performance and life that he gets from these remarkable batteries. The pleasure of perfect radio often rests on the choice of battery. You'll obtain purity of tone from local stations, better and clearer reception from distant and foreign stations and a longer life from

FULL O'POWER

RADIO BATTERIES
and they cost no more than ordinary batteries



Buy
Full O'Power
by **SIEMENS**

Advt. of Siemens Electric Lamps & Supplies Ltd.,
38/39, Upper Thames Street, London, E.C.4.

Works. 11.10 (from Basle). Popular Music on Gramophone Records. In the interval at 11.28, Weather, Time and News. 12.30 p.m., (from Basle), Agricultural Talk. 1.0 (from Basle), Orchestral Concert. 1.30 to 2.30, Interval. 2.30 (from Basle), Concert of Yodels and Zither Quartet Music. 3.20 (from Basle). The Bottle Imp—Fairy Story (R. L. Stevenson), arranged for the Radio by Fritz Mack. 4.5 to 5.0, Interval. 5.0, Concert of Sacred Music from St. Laurence's Church, St. Gall. 6.15, Time, Weather, and Sports Results. 6.20 (approx.) (from Basle). Light Music on Gramophone Records. 6.30 (from Basle), Recitations. 7.0 (from Basle), Die heilige Elizabeth—Oratorio for Soloists, Choir and Orchestra (Jos. Haas). 8.15 (approx.) (in the interval), Weather and News. 9.15 (approx.), Sports Notes and Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—1.0 p.m., Symphony Concert, relayed from Norrköping, 1,292 kc/s, 232.2 metres. Sereenade in A, Op. 16 (Brahms); Concerto in G Minor for Violin and Orchestra (Eriksson); Symphony in G Minor (Mozart). 2.40, Talk in English. 3.0, Programme for Children. 4.0, Weather. 4.5, Popular Music on Gramophone Records. 5.0, Evensong. 6.15, Weather and News. 6.30, Variety Programme. 8.15, Reading. 8.45, Weather and News. 9.0, Concert of Light Music. 10.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—8.30 a.m., Orchestral Concert, conducted by Maurice de Villers. 9.45, Protestant Service in German. 10.30, Catholic Service. 11.0, Variety Music on Gramophone Records. 11.45, News. 12 Noon, Time. 12.1 p.m., Variety Music on Gramophone Records. 1.0, Agricultural Talk in German. 1.15, Interval. 1.30, Concert, conducted by Henri Tomasi, relayed from the Salle du Journal, Paris. 3.30, Paderloup Symphony Concert, relayed from the Théâtre des Champs Elysees, Paris. 6.0, Medical Talk in German. 6.15, Sports Notes in French. 6.30, Time, News, and Sports Results. 7.20, Lottery Results. 7.30, Alsatian Programme: E Meisl' pflilt im Apfelbaum—Radio Play in Two Scenes (Victor Schmidt); Lischen et Fritzelchen—One-Act Operetta (Offenbach). 9.30, Dance Music from the Savoy. 11.0 (approx.), Close Down.

STUTTGART

(MÜHLACKER), 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—10.30 a.m., See Leipzig. 11.0, Open Air Concert from the Stadtgarten, Freiburg. 12 Noon, Topical Talk. 12.15 p.m. (from Mannheim), Talk: German Patriotism. 12.30, Gramophone Records of Popular Music. 1.0, A Summer's Day Procession in Weinheim—Radio Report on a Children's Festival, relayed from Weinheim. 1.30, Recital of George Götler's Songs by Hans Hofele. 2.0, Piano-forte Recital of Russian Music by Erwin Kübler. 2.30 (from Freiburg), Programme for Young People: A visit to a Hunting Lodge in the Black Forest. 3.30 (from Mannheim), Drinking Songs by Gustav Adolf Knörzer (Bass). 4.0 (from Mannheim), Concert by the Mannheim Philharmonic Orchestra, conducted by Rudolf Boruyka: Marche, Deutschlands Waffenehre (Horn); Ballet Music from Les petits riens (Mozart); Waltz, Marienkäuge (Joh. Strauss); Selection from The Merry Widow (Lehar); Overture, Peter Schmolll (Weber); Homage March (Wagner). 5.0 (from Freiburg), Ode for St. Cecilia's Day (Handel), arranged by Fr. Chrysauder; The Freiburg Chamber Choir and Orchestra, with Hans Höflin (Tenor) and Ilse Wald (Soprano). 5.40, Sports Notes. 5.50, Dr. Zillich reads from his own Works. 6.10, Accordion Trio Recital. 6.30, Vita somnium breve Bunter Abend. 7.30, Programme to be announced. 9.0, Time, News, Weather, Programme Announcements and Sports Notes. 9.30, Newly-released Gramophone Records. 9.45, See Munich. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 779 kc/s, 385 metres; 8 kW.—11.15 a.m., News Bulletin. 11.30, Catholic Service. 12 Noon, Amusement Guide and Market Prices. 12.5 p.m., Orchestral Music. 12.15, Operetta Music. 12.40, Agricultural Report. 12.45, Protestant Service. 1.15, News Bulletin. 1.20, Orchestral Music. 2.0, Popular Songs. 2.15, News and Racing Results. 2.20, Viennese Music. 2.45, Airs from Operettas. 3.15, Racing Results. 3.20, Accordion Music. 3.30, Dance Music. 4.0, Popular Melodies. 4.15, News and Racing Results. 4.20, Orchestral. 4.45, Arias from Opera. 5.0, News Bulletin. 5.15, Military Music. 5.30 to 6.0, Programme in English by the I.B.C. 5.30, Concert of Dance Music. Announcer: W.

Brown Constable. I'm playing with Fir; Every Woman thinks she wants to wander; What more can I ask?; What a perfect Combination; In the Moonlight; Sitting in the Dark; Becky, play your Violin; Love Tales; The wise old Owl said "Hoo." 6.5, Sound Film Music. 6.15, News, Racing Results and Market Prices. 6.30, Viennese Music. 7.0, Opéra-Comique Music. 7.5, Cello Solos. 7.30, Popular Songs. 7.5, Suite Algérienne (Saint-Saëns). 8.15, Songs from Operettas. 8.30, Accordion Solos. 8.45, Orchestral Music. 9.15, North African News. 9.30 to 10.0, Programme in English by the I.B.C. 9.30, Concert of Light Music: Haunting Tunes of To-day; Everybody's going but me; River stay 'way from my door; Old Time Song Medley; The Wolf; When we are alone; When Yuba plays the Rumba; More Haunting Tunes. 10.0, Concert for Listeners in Morocco. 10.30, Dance Music. 11.0, Weather and Announcements. 11.5, Bal Musette. 11.15, Military Music. 11.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—8.40 a.m., See Turin. 8.55, Mass from the Cathedral of San Giusto. 10.0 to 10.20, Agricultural Notes. 11.0 till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genova, 959 kc/s, 312.8 metres; and Florence, 99 kc/s, 500.8 metres.—8.40 a.m., Giornale Radio. 8.55 to 9.40, Interval. 9.40, Agricultural Talk. 10.0, Mass from the Church of the Annunciation, Florence. 11.0 to 11.15, Bible Reading. 11.30, Orchestral Concert. In the interval at 12 Noon, Time and Announcements. 12.30 to 1.30, Orchestral Concert of Light Music. 2.30, Gramophone Records of Popular Music. 3.0, Orchestral Concert. Sports Notes in the intervals. 5.0 to 5.15, Giornale Radio and Sports Report. 6.0, Dopplavoro Notes. 6.5 (approx.), Popular Music on Gramophone Records. 7.30, Time, Announcements, and Gramophone Records (cont'd.). 7.0, Giornale Radio, Sports Notes, and Gramophone Records of Variety Music. 8.0, Guido del Popolo—Opera in Three Acts (Iginio Robbioni), relayed from the Scala, Milan. In the intervals, Talk, Theatre Notes, and Giornale Radio.

VIENNA

581 kc/s., 517 metres; 15 kW. Relayed by Graz, 852 kc/s., 352.1 metres; Innsbruck, 1,058 kc/s., 283 metres; Klagenfurt, 662 kc/s., 453.2 metres; Linz, 1,220 kc/s., 245.9 metres; and Salzburg, 1,373 kc/s., 218.5 metres.—10.30 a.m., Programme in Memory of Dr. Seipel, relayed from the State Opera House. The Vienna Philharmonic Orchestra and Choir, conducted by Clemens Krauss. Soloist, Richard Mayr (Bass). Introductory Address. Kyrie, from the Missa Papa Gregorii (Palestrina); Crucifixus (Antonio Lotti); Recitative and Aria, from Joshua (Händel); Aria from Elijah (Mendelssohn); The Third Symphony—Eroica, in E Flat, Op. 55 (Beethoven). 12.15 to 1.15 p.m., Concert of Old Time Marches. 2.0, Time and Programme Announcements. 2.5, Review of Books. 2.30, Chamber Music: String Quartet in A, Op. 16 (Korngold); Fugue in B Flat, Op. 133 (Beethoven). 3.30, Talk: Travels in Sicily. 3.55, Concert by the Johann Wilhelm Ganglbberger Orchestra and Soloists. 4.15, Talk: How animals help one another. 4.40, Reading (H. E. Jakob). 6.10, Song Recital by Karl Hammes (Baritone). 6.50, Time, Sports Notes, and Programme Announcements. 7.0, The Barometer Maker on the Enchanted Island—Sketch, with Music in Two Acts (Ferdinand Raimund). 8.45, News Bulletin. 9.0, Music from Paper. 9.30, Part Relay of the Benefit Concert for the Blind, from the Geschwandtner Etablissement.

WARSAW

212.5 kc/s., 1,411 metres; 120 kW.—0.57 a.m., Time Signal and Bangle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Weather Forecast. 11.15, Tchaikovsky Concert by the Warsaw Philharmonic Orchestra, conducted by C. Wilkominisky. Soloists: T. Luczak (Bass) and M. Sztajko (Violin). In the interval, Announcements. 1.0 p.m., Talk for Housewives. 1.20, Concert from Cracow (959 kc/s., 312.8 metres). In the interval at 1.40, Agricultural Talk. 3.0, Programme for Young People. 3.25, Light Music on Gramophone Records. 3.45, Talk on the Polish Language. 4.0, Recital on Two Pianos: Sonata in D for Two Pianos (Mozart); Variations on a theme by Haydn, for Two Pianos (Brahms); Piano-forte Solos: (a) Le Désir (Chopin-Liszt), (b) Waldesrauschen (Liszt), (c) Tarantella (Liszt). In the interval, Announcements. 4.55, Programme Announcements. 5.0, Light Music. 6.0, Miscellaneous Items. 6.25, Reading. 7.0, Vienna—Concert by the Station Orchestra, conducted by M. Geiger. Soloist, Mme. Turnai (Singer). In the interval, Sports Notes. 8.40, Violin Recital by C. Szanassy. 9.30, Dance Music. In the interval at 9.55, Weather and Police Notes.

ZURICH.—See Schweizerischer Landessender.

ALGIERS

825.3 kc/s, 264 metres; 13 kW.—7.0 p.m., Financial News. 7.10, Shipping News. 7.15, Agricultural Report and Weather Forecast. 7.20, Accordion Music. 7.40, Talk arranged by the Society for Prevention of Cruelty to Animals. 7.50, Wireless Notes. 7.55, News Bulletin. 8.0, Time Signal. 8.2, Book Review. 8.15, The Daughter of the Regiment—Opera (Donizetti). 9.30, News Bulletin. 9.35, Songs from Operetta: (a) Encore cinquante centimes (Yvain). (b) La Mascotte (Audran). (c) The Merry Widow (Lehar). 9.55, News Bulletin. 10.0 (approx.), Close Down.

ATHLONE

725 kc/s, 413 metres; 60 kW., and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Popular Concert on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Talk on Housing. 8.0, Harp and Flute Music. 8.30, Baritone Solos by T. W. Hall. 8.40, The Station Orchestra. 8.55, Baritone Solos by T. W. Hall. 9.5, Talk on Anglo-Irish Poetry. 9.30, Uilleann Pipe Solos. 9.45, Anglo-Irish Songs by Nora Finn (Contralto). 9.55, Concert of Irish Music by the Station Orchestra. 10.5, Contralto Solos by Nora Finn. 10.15, The Station Orchestra (contd.). 10.30, Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJJ, 860 kc/s, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert: Overture, Der Feischütz (Weber); Prelude, Op. 28, No. 17 (Chopin); Meditation from Thais (Massenet); Duet from Boris Godunov (Mussorgsky). 6.30, Quintet Concert, relayed from the Café de la Rambla. 7.30, Sports Talk, Exchange Quotations and Talk in Catalan. 8.0, Light Music on Gramophone Records and News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations and Market Prices. 9.5, Humorous Review of the Week in Verse. 9.15, Concert by the Station Orchestra: Pasodoble, Granada la arabeña (de Lesmo); Waltz, Freut euch des Lebens (Joh. Strauss); Berceuse (d'Ambrosio); Evensong (Rabey); Danse macabre (Saint-Saëns); Minuet in G (Beethoven); Danse (Berard). 10.0, The Art and Industry of Badalona—a Relay from a Theatre in Badalona.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Report and Popolavoro Notes. 7.20, Giornale Radio. 7.30, Time and Announcements. 7.35 (approx.), André Chénier—Opera (Giordano), on Gramophone Records. In the intervals, Talk and Announcements, News after the Programme.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—4.0 p.m., Dialogue in German. 5.55, Time and Programme Announcements. 6.0, Orchestral Concert of Variety Music. 7.0, Instrumental Concert, relayed from Zagreb (977 kc/s, 307 metres). 9.0, News, followed by Dance Music on Gramophone Records.

BERLIN

KONIGS WUSTERHAUSEN, 183.5 kc/s, 1,635 metres; 60 kW.—1.0 p.m., Gramophone Concert, relayed from Berlin (Witzleben). 2.0, Talk for Women: New Spring Pullovers. 2.30, Weather and Exchange. 2.45, Review of English and American Novels: (a) The Flowering Wilderness (Galsworthy). (b) Brave New World (Aldous Huxley). (c) Old Pybus (Warwick Deeping). (d) Ann Vickers (Sinclair Lewis). 3.0, Talk: Chemistry in the Curriculum of the High Schools. 3.30, Concert from Berlin (Witzleben). 4.10, Talk: Calderon's Dramatic Works. 4.30, Chamber Music by Marianna Liehke (Violin) and Egon Siegmund (Pianoforte): Sonata in D for Violin and Pianoforte (Handel); Sonata in A for Violin and Pianoforte (Mozart). 5.0, Talk: Everyday Legal Problems in connection with the Civil Service. 5.30, Making Music with Invisible Partners. 5.55, Weather and Announcements. 6.0, French Lesson. 6.30, A Poem. 6.35, Concert from Breslau. 7.20, Talk: The Desire to Create and Mechanisation. 8.0, Programme from Leipzig. 8.45, Recital of Transylvanian Songs by Lulu Mysz-Gmeiner. 9.10, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Musical Programme (to be announced). 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—1.0 p.m., Gramophone Concert of Classical Music. 1.55, Exchange and Market Prices. 2.20, Talk for the Housewife. 2.35, Recital of Old Italian Arias by Dorothea Schröder, with Harpsichord accompaniment. 2.50, Recital for two Harpsichords. 3.15, Talk on German Landscape. 3.30, Concert by the Ufa Symphony Orchestra, in aid of the Winter Relief Fund; Conductor, Dr. Hellmuth Thierfelder: Overture, Figaro (Mozart); Kaiserwalzer (Joh. Strauss); No-

MONDAY

MARCH THE TWENTY-SEVENTH

PRINCIPAL EVENTS OF THE DAY:

NATIONAL LONDON REGIONAL
Chamber concert. An Ashley Sterne revue. Instrumental and vocal concert.

MIDLAND REGIONAL
Midland Counties feature programme: Northamptonshire.

NORTH REGIONAL
Brass band concert.

WEST REGIONAL
Orchestral concert from National Museum of Wales.

BELFAST
Light opera and musical comedy.

AT HOME

BARCELONA BERO-MUNSTER BRNO
8.15 p.m. Josef Kunc concert on occasion of the composer's fiftieth birthday.

BRUSSELS (No. 1)
7.15 p.m. "Le Colonel Chabert," a play (after Balzac).

BRUSSELS (No. 2)
7 p.m. The Symphony Orchestra, conducted by A. Meulemans.

COPENHAGEN
7.30 p.m. Pianoforte recital by Viktor Fischer.

EIFFEL TOWER HAMBURG
7.30 p.m. Selections from Messenger's operettas.

HILVERSUM
7 p.m. Old and Modern Chamber Music, relayed from Kiel.

HUIZEN
8.55 p.m. Orchestral concert, conducted by Nico Treep.

RADIO-PARIS STRASBOURG
7.40 p.m. Bach concert, relayed from The Hague.
7 p.m. Operetta: "Les Brigands" (Offenbach).
7.30 p.m. Concert from the Municipal Theatre, Metz.

turne (Trapp); Song of the Volga Boatman (Glazunov); Folk Dance from Transylvanian (Bakou); Two Pieces (Sibelius): (a) The Swan of Tuonela, (b) Valse triste; Two Pieces (Liszt): (a) Polonaise, (b) Chromatic Gallop. 4.30, Talk: Programme for a German National Theatre. 4.50, Programme for Young People. 5.10, Max von Schillings Song Recital by Helga Stjerua (Soprano): Julinacht der Hutschmelde; Wie wundersam; Das mitteldeutsche Mädel; Freude soll an deinen Werken sein. 5.30, Talk on Baron Georg von Ompteda, on his Seventieth Birthday. 5.55, The Witzleben Station informs its Listeners... 6.0, Topical Talk. 6.10, Announcements. 6.15, Talk on Music. 6.25, Gramophone Records—with Commentary by Fritz Ganss. 7.5, Accordion Recital: March, Durch Nacht zum Licht (Laukien); Liebeslieder-Walzer (Joh. Strauss); Overture, Gri-Gri (Lincke); Song from La Vallière (Mory); Prelude, Chorus and Dance from Das Pensionat (Suppé); Waltz, Eldorado (Jungherr); Onestep, The Student passes by (Ibañez); Chinese Street Serenade (Siede); March, Deutschlands Ruhm (Schröder). 8.0, Behind Typewriters—a Programme by Gerte Hing. 9.0, Weather, News, and Sports Notes, followed by Dance Music. 11.0 (also on Zeesen, 31.38 metres). Bundschuh über Deutschland—a Play by Fritz Laukisch, with Music by Hans Kammeier.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

(PTT), 986 kc/s, 304 metres; 13 kW.—6.30 p.m., News Bulletin, Exchange Quotations, and Market Prices. 6.40, Talk: Bordeaux a Century Ago. 6.55, Lottery Results. 7.0, Programme for Children. 7.15, Charades. 7.20, News Bulletin. 7.30, Concert of Classical and Modern Music.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by F. Dyk. Soloist: R. Macdzinski (Pianoforte). 4.10, See Prague. 4.50, Talk. 5.5, Concert by the Station Wind Quintet. 6.0, See Prague. 6.10, Literary Review. 6.25, See Brno. 7.25, See Prague. 7.40, Popular Concert. 9.0, See Prague. 9.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayd by Gleiwitz, 1,184 kc/s, 253 metres.—12.10 p.m., Old Vienna—Gramophone Concert. 12.45, Time, Weather, News, Exchange, and Ship-

ping Notes. 1.5, Gramophone Concert: Selection from the Suite, Water Music (Handel); Die Quelle, Op. 81 (Schmalstieg); Scene from the Fontaine di Roma (Respighi); Auf dem Wasser zu singen (Schubert-Liszt); Overture, Meerestille und glückliche Fahrt (Meudelsolm). 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.30, Talk: Electric Supplies. 3.0, Review of Books on Russia. 3.20, Talk: The Third International Congress for Christian Archaeology in Ravenna. 3.40, Concert by the Station Orchestra, conducted by Franz Marszalek; Soloist, Hellmut Hallendorf (Tenor); Selection from Der Rosenkavalier (Richard Strauss); Overture, Fra Diavolo (Auber); Andante from Sylvia (Delibes); Overture, The Nuremberg Doll (Adam). 4.30, Talk: Can we learn Political Economy from Frederic the Great. 4.50, Talk: Intellectual Currents of the Day. 5.15, French Lesson. 5.40, Topical Talk. 6.0, Talk on Cracow. 6.30, Weather and Market Prices. 6.35, Concert by the Station Orchestra, conducted by Franz Marszalek: Entr'acte Music from Die Madonna von St. Martino (Weigt); Harlekinade (Homann-Weber); Waltz (Waldteufel); March Potpourri, Wovon man spricht (Bernards). 7.0, Former German Towns relate their History—Bozen, Thorn, Lemberg, and Memel—Historical Radio Sequence (arranged by Rudolf Mirl). 8.0, Concert of Chamber Music, relayed from London. 9.0, Time, Weather, News, Sports Notes, Market Prices, and Programme Announcements. 9.25, Answers to Correspondents on Technical Questions. 9.35, Talk on Mountaineering. 9.50 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—5.25 p.m., German Transmission: News, Elementary French Lesson, and Two Talks. 6.0, See Prague. 6.25, Cabaret Programme. 7.25, See Prague. 7.40, Concert by the Brno Brass Band, conducted by Jan Krenovsky. 8.15, Concert of Compositions by Josef Kunc, on his Fiftieth Birthday, relayed from the Blahoslav Hall: Sonata for Violin and Pianoforte; Two Songs for Male Voice Choir. 9.0, See Prague. 9.15 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—11 a.m., Concert by the Small Station Orchestra, conducted by P. Lecmans: Overture, La princesse juive (Saint-Saëns); Suite, Fête galante (Lacôme); Dance Air (Meyer-Helmund); Selection from Tosca (Puccini); Italian Rhapsody for Flute (Rougnon); Waltz, Gold and Silver (Lehar); Eysler Potpourri (Hrubý). 12 Noon, Journal Parlé, 12.10 p.m., Gramophone Concert: Overture, Si j'étais roi (Adam); Two Airs from Romeo and Juliet (Gounod); Scene from the Czar-das (Hubay); Extracts from L'Artésienne

(Bizet). 1.0, Programme for Schools. 4.0, Dance Music from the Saint Sauveur Pataie de Danse. 5.0, Talk: Educational and Scientific Films. 5.15, Song Recital by Marthe Angelici: Aria from The Messiah (Handel); Venetian Gondola Song (Mendelssohn); La procession (Franck); Trois tout petits enfants (Rasse); Heidenröslein (Schubert); Chanson triste (Duparc); Die Post (Schubert). 5.30, Sonata Recital by Mme. Laoureux (Pianoforte) and Henry Gadeyne (Violin): Sonata in A (Fauré); Sonata in D Minor (Herberigs). 6.15, Talk: The Belgian Congo. 6.30, Amusement Guide. 7.0, Gramophone Concert of Variety Music. 7.15, Colonel Chabert—Radio Play after Balzac's Novel (Theo Fleischman). 8.15, Concert of Light Music by the Radio Orchestra. 9.0, Journal Parlé. 9.10, Hot Jazz, with Commentary. 9.40, Dance Music on Gramophone Records. 10.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R.; 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish. 11.0 a.m., Gramophone Concert of Classical Music. 12 Noon, Journal Parlé. 12.10 p.m., Concert by the Small Station Orchestra, conducted by P. Lecmans. Soloist, M. Wigy (Violin). Murch (Heymann); Waltz, La barcarolle (Waldteufel); Selection from Gri-gri (Lincke); Slav Serenade for Violin (Doulez); Irish Melody, The Broken Lily (Alton); Tango, Manuela (Engel-Berger); Selection from Show Boat (Kern). 1.0, Programme for Schools. 4.0, Concert by the Radio Orchestra: Marche des communiers brugeois (Dabois); Flemish Sketches (Brusselmans); Tempo Tempo (Dostal); Spanish Dances (Albeniz); Ballet Music from La cigale (Massenet); Four Ways (Coates). 4.45, Programme for Children. 5.30, Concert by the Small Station Orchestra, conducted by P. Lecmans. Soloist, M. Gilman (Flute). Overture, Heimkehr aus der Fremde (Mendelssohn); Oehsenmuetz (Haydn); Le mariage des roses (Franck); Danse lente (Franck); Selection from Figaro (Mozart); Flute Solo, Soir sur la plaine (Gambert); Fantasia, Unser Straus (Weber). 6.15, Educational Talk. 6.30, Programme by Pirreke Pirrewit. 7.0, Concert by the Symphony Orchestra, conducted by M. Meulemans: Ballet Music from Namouna (Lalo); Aan de Leie (Uytendhoeve); Three Songs (Bayens); Gipsy Dance (Stadtfeld). 7.45, Talk: The Middle Classes and their Influence on the Cost of Living. 8.0, Orchestral Concert (contd.): Marche du Willemsfonds (Roel); Nocturne for Four Horns (Benold); Readings from Charlotte Corday (Gütten); Slav Dances (Dvorák); Marche de Librado (Alpaerts). 9.0, Journal Parlé. 9.10, Gramophone Concert. Part I: Variety Music. Part II: Old and New Dance Music. 10.0 (approx.), Close Down.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—4.0 p.m., Concert of Light Music by the Station Orchestra. In the interval at 5.0, News and Time Signal. 6.0, Talk: Romanian Music. 6.20, Scientific Talk. 7.0, Quartet in D, No. 12 (Mozart), by the Theodorosco Quartet. 7.30, Talk. 7.45, Recital on Two Pianofortes. 8.15, Quartet in D Flat (Dohnanyi), by the Theodorosco Quartet. 8.45, News. 9.0, Concert by the Dinicu Orchestra, relayed from the Einesco Restaurant.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW.—Programme also relayed on 840 metres from 6.0 to 11.0 p.m. 4.30 p.m., Cigány Concert. 5.30, German Lesson. 6.0, Song Recital by Gabrielle Rolle: Aria from A Masked Ball (Verdi); Allerseelen (R. Strauss); Aria from Il Trovatore (Verdi); Gretchen am Spinnrad (Schubert); Prayer from Tosca (Puccini); Song (Brodi); Melody (Kurucz). 6.30, Talk. 7.0, Gramophone Concert of Popular Music. 9.0, Talk, followed by Concert by the Opera House Orchestra, conducted by Ernst Dohnanyi.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayd by Kalundborg, 260 kc/s, 1,153 metres.—11.0 a.m., Town Hall Chimes. 11.2 to 1.0 p.m., Concert from the Hotel d'Angleterre. 2.20, Talk for the Housewife. 2.30, Orchestral Concert, conducted by Lanny Gröndahl. Soloist: Else Marie Bruun (Violin); Turkish March, Bon-Aly-Bey (Menge); Concert Overture, Ruy Blas (Mendelssohn); Waltz, Gold and Silver (Lehar); Selection from Eugene Ouegin (Tchaikovsky); Spanish Serenade, Giorietta (Hilddolph); Entr'acte from L'Etoile du Nord (Meyerbeer); Jagtgalop (F. Nielsen); Violin Solos: (a) Legend (Wieniawsky). (b) Souvenir (Drlla). (c) Réverie (Debussy). (d) Spanish Dance (Granados); Slav March (Tchaikovsky); Overture, Light Cavalry (Suppé); Waltz, Tout Paris (Waldteufel); Gamle Minder (Möller); Legend, Rosenwunder (Jessel); Czardas from Der Geist des Wojewoden (Grossmann); Gallop, Prestissimo (Waldteufel). 4.40, Exchange and Market Prices. 4.50, Talk: Open Air Schools. 5.20, English Lesson. 5.50, Weather and News. 6.15, Time Signal. 6.30, A Discussion: Laub's Music in Divine Service. 7.30, Pianoforte Recital by Viktor Fischer

MARCH 27th

MONDAY

continued

Five Pieces (Mac Dowell); Humoresque, Jouglenr (Paul Hindemith). 8.20, News Bulletin. 8.35, Relay of Foreign Stations. 11.0, Town Hall Chimes and Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—6.0 p.m., Miscellaneous Items and Announcements. 6.15, Talk: The Production of Gold. 6.30 to 10.0, See Warsaw. 10.0, Relay of Foreign Stations. 11.0, Fanfare from St. Mary's Church.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., Light Music on Gramophone Records. 11.30, News Bulletin. 11.45, Concert relayed from Caen. 5.30 to 7.0, Programme in English by the I.B.C. (These times are subject to alteration.) C. Danvers-Walker, B. McNabb and F. Lauping announcing. 5.30, Military Band Concert for Bogzior Listeners; Sussex by the Sea (Ward Higgs); Bells across the Meadows (Kettelbey); See MacGregor Patrol (Amers); Selection from Iolanthe (Sullivan); Policeman's Holiday (Ewing); In a Monastery Garden (Kettelbey); Tipperary (Judge Williams); Selection from The Pirates of Penzance (Sullivan). 6.0, Orchestral Concert for Hastings Listeners; Demande et Réponse (Coleridge Taylor); Here's to the Old Days (Caldwell); I miss a little Missy (Coats); Absent-minded (Summers); Dancing Doll (Poldini); Mr. and Mrs. Sippi (Tierney); You don't have to toll me (Donaldson); Girl of a Million Dreams (Gay); The Skaters' Waltz (Waldteufel). 6.30, Violin Recital for Eastbourne Listeners. Trio: Evensong (Easthope Martin); Au mois d'Avril (Adlington); Moment musical (Schubert); The Lark (Tchaikovsky); Meditation from Thaïs (Massenet). Trio: Un peu d'amour (Silesu); Fandango (Godovsky); Melody (Gluck); Valse Bluette (Drigo). Trio: Love's Old Sweet Song (Molloy). 7.0, Local News and Variety Music on Gramophone Records. 7.30, Radio Gazette. 8.0, Programme relayed from Boulogne. 10.0 till Close Down. Programme in English by the I.B.C. (These times are subject to alteration.) 10.0, Light Music: Laughing at Life; Building a Home for You; A Little Love Song; Out of Nowhere; Hello Beautiful; Just a Gigolo; Poor Kid; Mood Indigo; When I take my Sugar to Tea; You're the one I care for; Laughing at the Rain; Lady play your Mandoline; Mad about you; The Peanut Vendor; Two little blue little Eyes. 11.0, Orchestral Music: Selection from The Gipsy Princess (Kálmán). The Child from Alsace (Lehar); Selection from Waltzes from Vienna (Griffiths); You are my heart's delight, from The Land of Smiles (Lehar); Selection from The New Moon (Rouberg). 11.30, Light Spanish Music: Madrid; Lady of Spain (Evans); With my Guitar and You (Snyder); Fonso my Hot Spanish Knight; Mama Inez (Gronet); Love Song of Old Valencina (Massine); Oh Sebastian; In Old Madrid; Thrill me, 12 midnight, Variety Music; Let's all have a Sing Song; Alone in the Rain; I found you; The Zoo Keeper; Slippery Sam the Stoker; Molly; Let Love take care of you. 12.30 a.m. (Tuesday), Songs: Go Home and tell your Mother (McHugh); Crying for the Carolines (Warren); Gipsy Melody (Nicholls); When you wore a Gingham Gown (Gilbert); Bye-bye Blues; Wasn't it nice? Say a little Prayer for me (Nicholls); Old New England Moon. 1.0 a.m., Accordion Duets; Medley of Swedish Airs; Waltz, Lorentina; My Florence; Waltz, The Blue Danube (Joh. Strauss); Festival March; Overture, Trieste; Marine March; Mazurka; Little Lady. 1.30, Vocal Trios; A Pair of Blue Eyes; A Bench in the Park; You'll never realise; Orchestra; Sunny-side-Up; Laughing down the Lane; I like to do things for you; Without a Song. 2.0, Try a little Tenderness; The Old Man of the Mountains; When the Morning rolls around; Let's put out the Lights and go to sleep; Let's all sing like the Birdies Sing; Say it isn't so; Wanderer; How'm I doing; Love me to-night; They all start whistling; Mary; Round the Marble Arch; While we danced at the Mardi Gras; Happy go lucky you; It ain't no fault of mine. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres.—5.50 p.m., English Lesson. 6.15, Time, Announcements, Weather and Economic Notes. 6.20, Jehol—The Magic City of the Manchou Emperor—A Radio Sequence. 7.5, The Last Day—an Oratorio (Otto Joachim), relayed from the Saalbau; The Station Symphony Orchestra; The Frankfurt Teachers' Choral Society and Singakademie; a Motet Choir and Soloists. 8.30, Gramophone Concert: Overture, Romeo and Juliet (Tchaikovsky); Melancholy Twilight (Giordano); Song from The Force of Destiny (Verdi); Variations on a Theme of Paganini's, Op. 35; Songs (Brahms): (a) Die Botenschaft, (b) Nicht

mehr zu dir zu gehen; Songs (R. Strauss): (a) Ständchen, (b) Zueignung. 9.20, Time, News, Weather and Sports Notes. 9.45, See Langenberg. 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.20 p.m., Hans Grimm reads from his own Works. 7.0 (from Kiel), Concert of Old and Modern Chamber Music by the Municipal Orchestra, conducted by Fritz Stein, relayed from the University. Soloists: Paul Hindemith (Viola and Viola d'amore); Ernst Träger (Violin); Joseph Kraft (Flute); and Richard Lauschmann (Oboe d'amore). Concertante Symphony for Violin and Viola (Mozart); Concerto for Flute, Oboe d'amore and Viola d'amore (Feldmann); with String Orchestra and Harpsichord Accompaniment; Caprice (Busch); Sonata for Viola, Op. 25 (Hindemith); Three Pieces for Radio (Hindemith); conducted by the Composer. News in an interval. 9.0, Time, Weather, News, Sports Notes and Police Report. 9.10, Topical Talk. 9.20, concert, relayed from the Café Wallhof. In an interval at 9.50, Ice Report.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 602 kc/s, 453.2 metres.—12.5 p.m., Gramophone Concert of Variety Music. In the interval at 12.20, News. 1.30, Exchange Quotations. 2.0, Market Prices. 2.30, Programme for Children. 3.0 (from Danzig), Concert by the Danzig Theatre Orchestra, conducted by Otto Selberg. Overture, Die Felsenmühle (Reissiger); Frauenther Porzellan Püppchen (Lincke); Waltz, Etincelles (Waldteufel); Ballet, Fantasia (Paepcke); March, Vom Rhein der Wein (Lincke); Potpourri, Schlagler-Echo (Lindsay-Thiemer); Waltz Intermezzo, Flitterwochen (Siede); Operetta Revue (Fetras); March, Friderens Rex (Radeck). 4.45, Review of Modern Books. 5.15, Market Prices. 5.20, Ice Report. 5.25 (from Danzig), Talk: Danzig Bürgermeisters of the Seventeenth and Eighteenth Centuries. 5.50, Talk: Memorial Days of the Week. 6.0, Recital of German Baroque Songs, by Prof. Ludwig Hess. Two Songs (Christian Dedekind): (a) Schäfers Totenlied, (b) Wandel der Zeit; Ten Songs (Adam Krieger), with String Quartet and Harpsichord Accompaniment: (a) Der Auge Seyhorn, (b) Der Unbestand, (c) Mein Lieb ist weiss wie Schnee, (d) Soll denn mein junges Leben, (e) Weicht ihr Gedanken, (f) Abendlied, (g) Bei mir muss sein ein Freund und Wein, (h) Junggesellenfreuden, (i) Ihr Fremde lasst uns lustig sein, (k) Sht nur, wie der Rheinwein. 6.30, Elementary English Lesson. 6.55, Wireless Technical Talk. 7.10, News and Weather. 7.15, Concert of Popular Music and Soldiers' Songs, by a Soldiers' Choir and a Military Band, conducted by Karl Kaus. March, Ein Mäuseswort (Franz Pollock); Overture, Das Nachtlager in Granada (Kreutzer); Choir: (a) Ich hatte einst ein schönes Vaterland (Sühnel), (b) Wander-schaft (Zöllner); Fantasia on Four German Songs (Schmidt); Einkehr (Zöllner); Potpourri of Hunting Songs, Horrido (Kohlmann); March, Aus Stahl und Eisen (Rathke); Concert Overture in Style of Frederick the Great, Fridericiana (Zimmer); March, Old Comrades (Teike); Trumpet Solo, Auf der Wacht (Dierig); Potpourri of Soldier Songs (Hamm-mann); Marching Song Argonner Wald (Münnecke); Preussenmarsch with Song (Golde). In the interval at 8.0, News. 9.15, Weather, News and Sports Notes.

HILVERSUM

Announced HUIZEN, 1,013 kc/s, 296.1 metres; 20 kW. 7 kW. up to 4.40 p.m.—Programme of the Christian Radio Society (N.C.R.V.). 11.55 a.m., Gramophone Concert: Contralto Solo. An Old Yiddin (Fisher); Tenor Solos: (a) Beautiful Isle of Somewhere (Pearis), (b) All through the Night; Soprano Solo, with Violin, Cello, and Piano for accompaniment; Melody in F (Rubinstein). 12.10 p.m., Organ Recital from Amsterdam. 1.40, Talk for Schools. 2.15, Sacred Music on Gramophone Records. 2.25, Talk on Cooking. 2.55, Dressmaking Lesson. 3.25, Programme to be announced. 3.40, Religious Programme. 4.40, Concert by the Amsterdam Salon Orchestra, conducted by D. Kiekens; Adagio religioso (Sinigaglia); Two Songs (Schubert): (a) Am Meer, (b) Frühlingsglaube; Impressions malgaches (Landeroin); Rosa of the South (Joh. Strauss);

Overture, The Bohemian Girl (Balfe); Potpourri, From Schubert's Sketch Book (Urbach); The Forge in the Forest (Michaëlis); The Bayadere (Waterman); Bedouin Serenade (Lorraine); Overture, Barbe bleue (Offenbach); March, Auf Wache (Rosey). 6.10, Question Time. 6.55, Time Signal. 7.10, Police Notes. 7.25, News Bulletin. 7.40, Concert by the Bach Choir, relayed from a Church at The Hague; Fantasia and Fugue in G Minor for Organ (Bach); Weimen, Klagen, Sorgen, Zagen (Cantata No. 12 for Soloists, Choir, and Orchestra (Bach). Address; Choir: Zonnehilied (Loydekker); Sonata in E for Oboe and Organ (Lœillet); Du, Hirte Israel, höre! from Cantata No. 104, for Soloists, Choir, and Orchestra (Bach); Cello Solos: (a) Cantilène (van Goens), (b) Andante from the Concerto in D (Haydn); Nun ist das Heil und die Kraft—Cantata No. 50 (Bach). 9.25, News Bulletin. 9.35, Serenade for Thirteen Wind Instruments (Mozart) on Gramophone Records. 9.55, Organ Recital. 10.40, Gramophone Records of Sacred Music. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 160 kc/s, 1,875 metres; 8.5 kW. Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—11.40 a.m., Time Signal. 11.41, Concert of Light Music. 1.35 to 2.10 p.m., Interval. 2.10, Popular Music on Gramophone Records. 3.40, Pianoforte Recital by Eibert Veen; Sonata in A (Mozart); Spinning Song (Mendelssohn); Rondo (Mendelssohn). 4.10, Talk by Max Tak, illustrated by Gramophone Records. 5.10, Concert by the Kovács Lajos Orchestra. Soloist: Bob Scholte (Songs). 6.10, Book Review. 6.40, Orchestral Concert (cont'd.). 7.10, Talk. 7.40, Time and News. 7.45, Concert by the Wireless Orchestra, conducted by Nico Treep. Soloists: Isobel Lamond (Songs); Overture, L'Isola disabitata (Haydn); Recitative and Aria from Rinaldo (Handel); Overture, Figaro (Mozart); Aria, Ah perfido (Beethoven); Spain and Hungary, from the Suite Aus aller Herren Länder (Moszkowsky); Aria from Otello (Rossini); Spanish Dance (Fallá); Recitative and Aria, The King of Thule (Berlioz); Aria from The Damnation of Faust (Berlioz). 8.40, Concert by a Male Voice Choir. 8.55, Concert by the Wireless Orchestra, conducted by Nico Treep: Marche Iorraine (Ganne); Waltz, España (Waldteufel); Dance of the Hours, from La Gioconda (Ponchielli). 9.20, Song Recital by Mariette Serlé. 9.40, Orchestral Concert (cont'd.): Wiener Operetten Revue (Rebrecht); Die kleine Kompagnie (Ganglbinger); Japanese Bell Dance (Yoshitomo); Hals-und Beinbruch (Morena). 10.10, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

NICE, 1,202 kc/s, 249.6 metres; 0.8 kW.—9.30 to 10.30 p.m., Programme arranged in English by the I.B.C.: H. K. Hitecock announcing.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—5.15 p.m., Agricultural Report. 5.25, Talk. 6.5, Concerto in G (Beethoven), by Kurt Walden (Pianoforte), and the Helsinki Municipal Orchestra, conducted by Toivo Haapanen, relayed from the University. 6.50, Recitations. 7.15, Song Recital by Pia Ravenna. 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert, conducted by Eysoldt: March, Unter dem Siegesbanner (Blon); Rakoczy Overture (Keler-Bely); Selection from Oberon (Weber); Flower Waltz (Tchaikovsky); Suite, At the Circus (Lautenschlager); Schön Rosmarin (Kreisler); Cherry Blossom (Albert); Selection from The Bird Fancier (Zeller). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme, with Gramophone Records. 2.30, Exchange and Time Signal. 2.50, Programme for Children. 3.20, Haydn Concert for Young People. Mixed Choir, Organ, and Orchestra; Piece from Danklied; Overture in D; Hymn for Mixed Choir, Organ, and Orchestra; German Dances. 4.0, Orchestral Concert, conducted by Kühn. Soloist, Schneiderhau (Violin). Overture, Das Liebesverbot (Wagner); Violin Concerto No. 8 (Spohr); Tone Poem, Jugend (Ehrenberg); March from The Cid (Cornelius). 5.20, Talk for Parents. 5.45, Weather, Time, Exchange, and Sports Notes. 6.0, Talk for Women. 6.20, Reading of Unpublished Works—Poems (Ludwig Schulte). 6.30, Talk: Economics and Culture—A Century of the German Customs Union. 6.55, First General News. 7.10, Gramophone

Records of Edwin Fischer (Pianoforte): Chromatic Fantasia and Fugue in D Minor (Bach); Prelude and Fugue in D, from Das Wohltemperierte Klavier (Bach). 7.20, Programme to be announced. 9.0, News and Sports Notes. 9.15, Programme of Songs and Poems. 9.45, Serenade, conducted by Wolf. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 130 kW. Relayed by Dresden, 941 kc/s, 319 metres.—Concert of Popular Songs on Gramophone Records. 12 Noon, News, Weather, and Time. 12.15 p.m., Light Music on Gramophone Records, followed by Exchange Quotations. 1.0, Art and Film Review. 1.45, Reading: Der zerbrochene Tassen (Klart, Herrmann). 2.0, Talk for Women. 2.35, Exchange and Market Prices. 3.0, Concert by the Station Orchestra, conducted by Theodor Blumer: Overture, Das tapfere Schmeldelein (Händel); Scandinavian Music (Hammerik); Selection from The Golden Cross (Brüll); Prelude to Die Zwillinge (Weis); Bräute on blonde (Waldteufel). 4.30, Weather and Time. 4.50, Exchange Quotations. 5.0, Educational Talk: The Country School-child. 5.30, Talk: A Thousand Year of German Literature—Grobianism. 5.50, The Leipzig Station informs its Listener... 6.0, Concert by the Endé Orchestra: Overture, Nebuchadnezzar (Verdi); Waltz, Nachtschwärmer (Zelter); Intermezzo, Puppenstücke (Lederer); Spring Serenade (Drlla); Pudding Potpourri (Morena); Two Songs from Frederica (Lehar); Marionetten-Brantzug (Rathke); March, Glückauf, mein Vaterland (Schneider). 7.0, Talk: Fresh Sources of Electric Power. 7.30, Symphony No. 3 in G Minor (Richter), by the Dresden Philharmonic Orchestra, conducted by Wilhelm Reuss with Introductory Talk and Folk Songs. Soloist: Milda Thiele (Soprano). 9.5, News Bulletin. 9.20 (approx.), Light Music and Dance Music on Gramophone Records. 10.3 (approx.), Close Down.

LINZ.—See Vienna.

LOWO

788 kc/s, 381 metres; 16 kW.—6.0 p.m., Art Notes. 6.15, Miscellaneous Items. 6.30, See Warsaw. 9.0, Talk. 9.15, See Warsaw. 10.30 (approx.), Close Down.

LYONS

LA DOUA (PTT), 644 kc/s, 465.8 metres; 1.1 kW.—6.30 p.m., Radio Gazette for Lyons and the South-East. 7.30, Concert: Double Concerto (Bach); Concerto (Vivaldi); France (de Bréville); Scenes from Orpheus (Gluck); Spanish Melodies (Fallá); News after the Programme.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 20 kW.—10.30 p.m., Concert of Popular Music. 10.45, Radio Chronicle. 11.0, Concert of Popular Music (cont'd.). 11.35, Sports and Bull-fighting Notes. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO (EAJZ); 707 kc/s, 424 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, and Request Gramophone Concert. 8.15, News Bulletin. 8.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—5.30 p.m., German Transmission: Recitations and a Sketch. 6.0, See Prague. 6.25, See Brno. 7.25, See Prague. 7.40, See Brno. 9.0, See Prague. 9.15 (approx.), Close Down.

MOSCOW

230 kc/s, 1,304 metres; 100 kW.—5.30 p.m., Tosca—Opera (Puccini), relayed from the Grand Theatre. 8.0, Talk in English: The Skilled Worker and Small Trader in the Soviet Union.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 510 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.0 p.m., Orchestral Concert, conducted by Erich Kloss: Overture to a Revue (Lincke); Slav Cradle Song (Seruda); Scenes from Die Königskinder (Humperdinck); Invitation to the Dance (Weber); Selection from The Blue Mazurka (Lehar); Hochzeitständchen (Klose); Réve (d'Ambrosio); Czardas No. 8 (Michiels). 5.15, Talk: Petroleum Supplies in Germany. 5.35, Talk: The German Post Office. 5.55, Time, Weather and Agricultural Notes. 6.5, Wind Instrument Concert: Congress Overtures (Wagner); Selection from Tannhäuser (Wagner); Die Fahne hoch (Redl); Waltz, Am Wörthersee (Koschag); Potpourri of Historic Marches (Kott); March (Schilling). 7.10, Recitations of Old German Love Poems. 7.20, The Ninth Symphony (Beethoven) by the Munich Philharmonic Orchestra, Two Choirs, and Soloists, relayed from the Tonhalle. Conductor: Siegmund von Hausegger. 8.25, Talk: Good German

MARCH 27th

MONDAY

continued

Books. 8.50, The Serenades of Haydn, Mozart, Schubert, Brahms and Strauss, by the Small Station Orchestra, conducted by Erich Kloss. Commentary by P. P. Althaus. 9.20, Time, Weather, News and Sports Notes. 9.45, Concert from Langenberg. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

KRINGKASTINGSSELSKAPET, 277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.0 p.m., Concert by the Radio Ensemble, conducted by Oscar Gustavson. 5.0, German Lesson. 5.30, Theatre Review. 6.0, Announcements, Weather, and News. 6.30, Agricultural Talk. 7.0, Political Review. 7.30, Concert by the Fredrikstad Music Society. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Concert of Light Music. 9.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

553 kc/s, 537.6 metres; 3 kW.—7.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 7.20, Light Music on Gramophone Records. 7.30 (in an interval), Time Signal and Announcements. 7.45, Concert of Chamber Music. Soloists: Nini Misiti (Pianoforte), E. Paladino (Cello), and M. Diamante (Flute). Pianoforte Solo, Chromatic Fantasia and Fugue (Bach); Sonata for Cello and Pianoforte (Di Donato); Two Movements from the Suite for Flute (Longo); Pianoforte Solos: (a) Nocturne, Op. 48 (Chopin), (b) Waltz, Op. 64 (Chopin); Cello Solos: (a) Aria (Porpora), (b) Capriccio (Piazzini), (c) Tarantella (Croce); Flute Solos: (a) Concert Study (Mercadante), (b) Dance of the Marionettes (Kohler); Pianoforte Solos: (a) Souvenirs (Liszt), (b) Les Jeux d'eau à la Villa d'Este (Liszt). After the Concert, Light Music on Gramophone Records. 9.55, News Bulletin.

PARIS

EIFFEL TOWER (FLE), 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Talk on the Theatre. 6.0, Le Journal Parlé. 7.20, Weather Report. 7.30, Messenger Operetta Concert: Songs from François les bas bleus, Véronique, Fortunio, Les p'tites Michus, La Fauvette du Temple and Isoline. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—5.45 p.m., Le Journal Parlé. 6.0, Hot Jazz on Gramophone Records. 6.30, Sponsored Concert. 7.0, Medical Talk. 7.5, Talk: Motor Cars. 7.30 to 9.40, Sponsored Concerts. 9.40, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 6.30, Weather and Physical Culture (contd.). 6.45, The Nutcracker Ballet (Tchaikovsky), on Gramophone Records. 7.0, Press Review and Weather. 11.0, Concert by the Radio Orchestra: Overture, Stratonice (Méhul); Selection from Der Freischütz (Weber); Two Arias from La Juive (Halévy), on Gramophone Records; Selection from Le roi de Lahore (Massenet); Spinning Chorus from The Flying Dutchman (Wagner); March and Bridal Chorus from Lohengrin (Wagner). 12 Noon, Exchange, News, and Weather. 12.35 p.m., Pianoforte Recital by Marthe Remesson: Tambourin (Rameau); Le Coucou (Daquin); Pastorale variée (Mozart); Mazurka (Chopin); Berceuse (Chopin); Waltz (Chopin); La Neige (Debühes); Serenade to the Moon (Pugno); Le petit âne blanc (Bert). 12.50, Exchange. 12.55, Orchestral Concert (contd.); Ballet Music from The Bartered Bride (Smetana); Cypalisse et le chèvre-pied (Pierné), and Un dimanche basque (Laparra). 1.0, Exchange. 2.45, Exchange and Market Prices. 5.10, Agricultural Talk. 5.30, Elementary English Lesson. 5.50, Film Review. 6.0, Review of New Books. 6.20, Concert by the Radio Paris Orchestra: Light Overture (Luigini); Suite pittoresque (Fourdrain); L'entrée des Fétards (Février); Marche bohémienne (Filipucci). 6.45, Commercial Prices and News. 6.50, Gardening Talk. 7.0, Les Brigands—Operetta (Offenbach). In the intervals at 7.30, News and Weather, at 7.40, Review by Paul Reboux, and at 8.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relayed by W2XK on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Ballroom Promenade. 9.30, Weather Report. 9.32, Market Report. 9.45, Blue Ridge Buddies. 9.57, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Programme to be announced. 10.15, Dick Daring, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Booth Tarkington's

Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reel. 11.27, Strange Facts. 11.29, Temperature Report—Philadelphia Company. 11.30, KDKA Orchestra. 11.45 to 1.45 a.m. (Tuesday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Tastyest Jesters. 12.30, Five Star Theatre—Marx Brothers. 1.0, Club of Eskimos. 1.30, Time Signal and Don Carney—A Talk for Dog Lovers. 1.45, Programme to be announced. 2.0 to 3.30, New York Relay. 2.0, Sinclair Minstrels. 2.30, Jack Frost Melody Moments. 3.0, Three Keys. 3.15, Vic and Sade. 3.30, Bridge School of the Air, by E. Hall Downes. 3.45, Samuel Di Primio (Tenor). 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report—Philadelphia Company. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15 Press Last Minute News. 4.20, Smith Ballew and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, Hotel Bismarck Orchestra, from New York. 5.30, Time Signal, and Goodnight.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—3.10 p.m., See Bratislava. 4.10, Talk: The Holy Sepulchre at Jerusalem. 4.20, Talk: The Teacher and Politics. 4.30, Programme for Children. 4.50, Variety Music on Gramophone Records. 5.5, Agricultural Talk. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Two Talks: (a) The Art of Portrait Painting, (b) Economics. 6.0, (Chimes. 6.1, News Bulletin. 6.10, English Conversation. 6.25, See Brno. 7.25, Talk: The Schools and Religion. 7.40, Cello Recital by Bohus Hgran; Suite in C (Bach); Sonata in G for Cello and Pianoforte (Sammartini). 8.0, Time Signal. 8.5, Concert by the Odokolek Band. 9.0, Time Signal. 9.1, News Bulletin. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; LAUSANNE, 442 kc/s, 680 metres; and GENEVA, 395 kc/s, 760 metres.—5.0 p.m., Programme for Children. 5.30 (from Lausanne), German Lesson. 6.0 (from Lausanne), Weather Forecast, News Bulletin, and Announcements. 6.30 (from Lausanne), Lesson for Apprentices in Carpentry. 7.0 (from Geneva), Humorous Readings. 7.15 (from Geneva), Concert of Chamber Music: Sonata da Camera (Pierné); Suite, 1922 (Hindemith); Quartet (Fauré). 8.0, Cabaret Programme arranged by Ray Blag with the Co-operation of the Broadcasting Serenaders, conducted by Jean-Marc Pasche. 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva), Talk: The Work of the League of Nations. 9.30 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News. 9.30, Reading. 10.0, Popular Concert by the Station Quartet, with Songs.

RJUKAN.—See Oslo.

ROME

680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and 2R0, 11,810 kc/s, 25.4 metres.—12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Gramophone Concert of Popular Music. In the interval at 12.30, Children's Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30, Pianoforte Recital by Alfred Cortot, relayed from the Royal Philharmonic Academy. 6.0 (Naples), Shipping and Sports Notes. 6.10, Agricultural Report and Dopplavoro Notes. 6.20, Giornale Radio. 7.0, Time, Announcements and Light Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 8.0, See Turin. 9.0, Humorous Programme. 9.15, Concert of Light Music. 9.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF, and by W2XAD (See Short-Wave List).—7.30 p.m., The Revolving Stage, from New York. 8.0, Talk, from New York. 8.15, Antoinette Halstead (Contralto). 12 Midnight, Boy Scout Programme. 12.15 a.m. (Tuesday), Stock Reports. 12.30, The Up-staters. 12.45 to 2.30, New York Relay. 12.45, The Goldbergs. 1.0, Soonyland Sketches. 1.30, Voice of Firestone. 2.0, A. and P. Gipsies. 2.30, Buick Programme, Whiteman's Orchestra, followed by Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; BASEL, 1,229 kc/s, 244.1 metres; and BERNE, 1,220 kc/s, 245.9 metres.—11.28

a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Basle), A Musical Competition on Gramophone Records. 12.35 p.m., Weather and Exchange. 12.40 (approx.), to 2.30, Interval. 2.30 (from Berne), Bavarian, Austrian and Hungarian Folk Music on Gramophone Records. 3.30 (from Berne), Dajos Bela and his Band on Gramophone Records. 4.30, Weather. 4.32 to 5.30, Interval. 5.30 (from Berne), Talk: An Indian Tribe in Eastern Europe. 6.0, Time and Weather. 6.30 (from Berne), A Journey to the Tourist Congress—Sketch (Walter Schweizer). 7.0 (from Zürich), Symphony Concert, relayed from the Concert Hall. Soloist: Samuel Dushkin (Violin). 9.0 (approx.), Weather, News and Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

RADIOTJANST (SASA), 689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 212.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.5 p.m., Talk in German. 4.30, Popular Music on Gramophone Records. 5.30, A Play (Margit Palmær). 5.55, Violin Recital by Issay Mitutzky. 6.15, Weather and News. 6.30, Talk. 7.0, Orchestral Concert, Wedding March (Widor); Second Peer Gynt Suite (Grieg); Allegretto pastorale from Nordland (Jonsson); Sakkad, for Cello and String Orchestra (Hägerstrand). In the Steppes of Central Asia (Borodin); Valse romantique (Sibelius); In the Garden (Goldmark); Norwegian Rhapsody, No. 2 (Svendsen); Overture, Oberon (Weber). 8.25, Parliamentary Report. 8.45, Weather and News. 9.0, Concert of Light Music. 10.0 (approx.), Close Down.

STRASBOURG

269 kc/s, 345 metres; 11.5 kW.—10.30 a.m., Gramophone Concert of Light Music. 11.0, Concert of Jazz Music, conducted by M. Roskam. 11.45, News. 12 Noon, Time and Exchange. 12.5 p.m., Orchestral Concert of French Operetta Music, conducted by Maurice de Villers: Overture, Orpheus in the Underworld (Offenbach); Selection from Le jour et la nuit (Lecocq); Selection from Gillette de Narbonne (Audran); Overture, Rip van Winkle (Planquette); Selection from (a) Véronique (Messager); (b) Ciboulette (Hahn). 1.0 to 3.15 p.m., Interval. 3.15, Concert relayed from Radio Coloniale (Paris), 11,705 kc/s (25.63 metres): Suite Algérienne (Saint-Saëns); L'Eglise de Village (de la Presle); Second Suite from Peer Gynt (Grieg); Cara Piccina (Lama); Selection from Benvenuto Cellini (Diaz); Chanson des Noisettes (Dupont); Selection from La Mascotte (Audran). 4.15, Talk in French on Electricity. 4.30, Vincent d'Indy Concert on Gramophone Records: (a) Walenstein's Camp, (b) Introduction to Fervaal. 5.0, Talk in French on Films. 5.15, Talk in French: Through Lorraine. 5.30, Concert by the Municipal Theatre Orchestra, relayed from Metz. Conductor: H. Ehrmann. Soloist: M. Culenere (Cello). Overture, Les Cloches de Corneville (Planquette); Selection from Si j'étais roi (Adam); Cello Solos: (a) Air grave, (b) Tarantella, Du nord au midi (Paquet); Selection from Les dragons de Villars (Maillart); Serenade, Amina (Lincke); Selection from Coppélia (Delibes); Selection from Pas sur la bouche (Yvain). 6.30, Time and News. 6.45, Light Music on Gramophone Records. 7.20, Lottery Results. 7.30, Arias and Songs: Concert by the Cercle artistique de l'Est, relayed from Nancy: Quartet from Le roi d'Ys (Lalo); Five Arias from The Magic Flute (Mozart); Duet from The Snow Maiden (Rimsky-Korsakov); Air d'Orienta (Cesti); Une jeune fille parle (de Bréville); Two Arias from Chansons printanières (Huü); Au temps des fées (Kochlin); Hebrew Melody, Kaddisch (Ravel); A Phylidë (Hahn); Selection from Antar (Dupont). 9.15 (approx.), Close Down.

STUTTGART

MUHLACKER, SUDEDEUTSCHER RUND-FUNK, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12.30 p.m., Concert from Langenberg. 1.0 to 1.15, Musical Programme arranged by the Post Office. 1.15 to 1.30 (from Karlsruhe), Musical Programme arranged by the Post Office. 1.30, Spanish Lesson. 2.0 to 2.30, Elementary English Lesson. 4.0, See Munich. 6.10, Time, Weather, and Agricultural Notes. 6.10, Talk: The Economic Life of Germany. 5.50, See Frankfurt. 6.15, Time and News. 6.30 (from Karlsruhe), Literature and Music of the Northern Countries—Mountains—People—Sea. 8.30, Arnold Bronnen reads from his New Book, Erinnerung an eine Liebe. 9.0, Time, News, Weather, and Programme Announcements. 9.20, Chess Lesson. 9.45, See Langenberg. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 779 kc/s, 388 metres; 8 kW.—5.15 p.m., Viennese Music. 5.45, Tourist Talk. 6.0, Popular Melodies. 6.15, News, Racing Results and Market Prices. 6.25, Local News. 6.30, Orchestral Music. 6.45, Opéra-Comique Songs. 7.0, Military Music. 7.15, Airs from Operettas. 7.30, Accordion Solos. 7.45, Music Hall Programme. 8.15, Orchestral Music. 8.30, Opera Music: Arias from Lohengrin (Wagner); Don Giovanni (Mozart); and Sigurd (Reyer). 8.45, Violin Solos. 9.0, Recitations. 9.15, North African News. 9.30, Concert for Listeners in Morocco: Clavelitos (Valverde); Petite chuse (Charlys); Suite orientale (Popy); Duet from Werther (Massenet); Selection from Il est charmant (Moretti). 10.0, Popular Concert. 10.30 to 11.0, Programme in English arranged by the I.B.C.: W. Brown—Constante announcing; Dance Music: I Love a Parade; The Files crawled up the Window; Good-night Vienna; Can't we Meet Again?; I want to Cling to Ivy; Sweethearts of Yesterday. 10.57, I.B.C. Good-night Melody. 11.0, Weather and Announcements. 11.5, Dance Music. 11.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—4.30 p.m., See Rome. 6.5 to 6.35, See Turin. 6.35, Orchestral Music from the Café Dante. 7.0 (approx.) till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—4.30 p.m., See Rome. 6.5, Giornale Radio. 6.30, Time, Announcements and Tourist Report. 6.35 (approx.), Gramophone Records of Variety Music. 7.0, Giornale Radio, Weather and Gramophone Records (contd.). 7.45, Talk. 8.0, Song Recital by Tito Schipa (Tenor). Orchestral Music in the intervals. 9.0, A Comedy in One Act. 10.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in Italian. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—3.50 p.m., Concert of Light Music by Edl Csöka and his Band. 5.5, Recital of Danish Folk Songs by Helge Roswaenge, with Introductory Talk by the Danish Vice-Consul. 5.45, Talk for Workers. 6.0, Talk: Spring in Popular Customs. 6.20, Talk: Books and Works of Reference in Connection with the Week's Talks. 6.25, English Lesson. 6.50, Time, Weather and Programme Announcements. 7.0, Popular Concert by Otto Waeck and his Band: Overture, Karneval in Rom (Joh. Strauss); Waltz from Die schöne Risetete (Fall); Selection from The Bird Fancier (Zeller); Gavotte, Die kleine Marquise (Waeck); Auf dem Sommerhiedweg (Sitting); Selection from Viktoria and her Husar (Abraham); Rainer-Marsch (Mahr). 8.0, Concert of German Music: Partita in E Minor (Bach); Aria from Almira (Handel), with Oboe Obligato; Hörst, ihr Augen, auf zu weinen—Aria for Soprano with Oboe obligato (Bach); Bald von Färchten, bald von Hoffen (Gluck); Suite (Bach); Trio in E Flat for Pianoforte, Clarinet and Viola (Mozart). 9.20, News, Weather and Announcements. 9.35, Dance Music by Juan Llossas and his Band, relayed from Hübners Kursalon.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—10.51 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Traffic Report. 2.35, Answers to Correspondents. 2.50, Popular Music on Gramophone Records. 3.25, Elementary French Lesson. 3.40, Talk: Taxation. 4.0, Song and Pianoforte Recital by Mme. T. Skonieczna-Czernicka (Mezzo-Soprano) and E. Hornydzki: Variation in C Minor (Beethoven); Fantasia in C (Schumann); Songs. In the interval, Announcements. 4.55, Programme Announcements. 5.0, Talk on History. 5.20, News. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Answers to Agricultural Correspondence. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Die romantische Frau—Operetta in Three Acts (Weinberger). In the interval, Sports Notes and Radio Journal. 9.0, Technical Notes. 9.15, Dance Music. In the interval at 9.55, Announcements and Aviation Weather Report.

ZAGREB

977 kc/s, 307 metres; 10.5 kW.—7.0 p.m., Concert of Music by Miroslav Schlick. 8.0, Yugoslavian Symphonic Dances (Dobronic), by the Orchestra of the State Academy of Music, conducted by Fran Lhotka. 9.30, News and Weather.

ZURICH.—See Schweizerischer Landessender.

TUESDAY

MARCH THE TWENTY-EIGHTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Recital of Sir Landon Ronald's songs. Orchestral concert.

LONDON REGIONAL An Ashley Sterne revue. Orchestral concert.

MIDLAND REGIONAL Symphony concert from the Town Hall, Northampton.

NORTH REGIONAL "Hounds of High Heaton," feature programme.

WEST REGIONAL "The Sleepless Soul," a fantasy by Froom Tyler.

SCOTTISH REGIONAL Mr. T. Henderson: The Foundations of Scottish Song.

BELFAST Vaudeville programme.

ABROAD

BARI 7.35 p.m. Concert by a Plucked String Quartet.

BRUSSELS 7 p.m. Symphony orchestra, conducted by J. Kumpus.

BUCHAREST (No. 2) 7 p.m. Symphony concert by the Station Orchestra.

COPENHAGEN 7 p.m. Operetta: "Drei alle Schachteln" (Kollo).

HILVERSUM 6.40 p.m. Pianoforte duets by Ethel Bartlett and Rae Robertson.

LEIPZIG 9.20 p.m. Orchestral concert, conducted by Hans Jessen.

OSLO 7 p.m. Operetta: "La Belle Hélène" (Offenbach).

PITTSBURGH 3 a.m. (Wed.). The Baltimore Symphony Orchestra, from New York.

PRAGUE 8.1 p.m. The Los Aguilar Lute Quartet.

STUTTGART 7.40 p.m. The Philharmonic Orchestra, conducted by G. Görlich.

WARSAW 9.30 p.m. Mozart concert by the Station Orchestra.

ALGIERS
825.3 kc/s, 364 metres; 13 kW.—7.0 p.m., Financial News. 7.10, Shipping Notes. 7.15, Agricultural Report and Weather Forecast. 7.20, Orchestral and Balalaika Music. 7.35, Two Scenes (Molière): (a) from Les précieuses ridicules, (b) from L'École des femmes. 7.55, News Bulletin. 8.0, Time Signal. 8.2, Talk: Touring in the Sahara. 8.15, Concert of Chamber Music. Two Pieces for Flute, Clarinet, Bassoon and Horn (Ropartz); Quintet for Wind Instruments (Taffanel). 8.40, News. 8.45, Talk on Algiers. 9.0, Concert of Oriental Music. 9.30, News. 9.35, Oriental Music (contd.). 9.55, News. 10.0 (approx.), Close Down.

ATHLONE
725 kc/s, 413 metres; 60 kW.; and **CORK**, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.10, British Market Report. 7.20, News. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Reading of Poems. 8.0, The Station Orchestra. 8.30, Soprano Solos by Gladys MacNevin. 8.45, Variety Programme. 9.15, The Station Orchestra. 9.35, Song Recital by Peter Dunn (Tenor). 9.50, Violin Duets. 10.15, The Station Orchestra. 10.30, Time Signal, News, Weather Report and Close Down.

BARCELONA
RADIO-BARCELONA; Call EAJ1; 800 kc/s 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations and Art Notes. 8.0, Light Music on Gramophone Records and News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast and Messages to Seamen. 9.10, Concert of Sardanas. 9.15, Football Results and Light Music on Gramophone Records. 10.0, Los Carletes de la Reina—Musical Comedy in One Act (Luna) followed by La Revoltosa—Musical Play (Chapi). 11.0 (in an interval), News Bulletin. 12 Midnight (approx.), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Report, and Dopolavoro Notes. 7.20, Giornale Radio. 7.30, Time and Announcements. 7.35 (approx.), Concert by a Plucked String Quartet: Overture, Giovanna d'Arco (Verdi); Ricordo di Roma (Franca); Second Movement from the Pathetic Symphony (Beethoven); Selection from I Puritani (Bellini). 8.10, A Night in the Middle Ages—Play in One Act (Caretta). 8.40, Concert (contd.): Overture, Roma Torino (de Giovanni); Bolero (Bonatti); Serenade (Brdlja); Divertissement from Fra Diavolo (Auber); I montanari (Anicelli). 9.0, Gramophone Records of Popular Music. 9.55, News Bulletin.

BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—4.0 p.m., Talk. 5.55, Time and Programme Announcements. 6.0, Song Recital by Anni Wünsche (Song (Zajc); Arias from: (a) Rusalka (Dvorák); (b) La Bohème (Puccini); Ave Maria and Penso (Tosti); Parla Waltz (Arditi). 6.30, Talk. 7.0, Variety Music on Gramophone Records. 7.30, Concert by the Philharmonic Orchestra. 9.15 (approx.), News.

BERLIN
KONIGS WUSTERHAUSEN, 183.5 kc/s, 1,635 metres; 60 kW.—1.0 p.m., Gramophone Concert relayed from Berlin (Witzleben). 2.0, Talk for Young People. 2.30, Weather and Exchange. 2.45, Reading, Das wartende Land (Paul Fechter). 3.0, Talk for Women: Women and Engines. 3.30, See Leipzig. 4.10, Talk in Connection with the Centenary of the Evangelical Deacon's Association. 4.30, Recital of German Arias by Margarete Polhnd (Soprano); Three Arias (Handel): (a) Cleopatra's Aria from Julius Caesar, (b) Aria from Tamerlano, (c) Aria from Isis und Galathea: Two Arias from Figaro (Mozart). 5.0, Dialogue on Political Economy. 5.30, The Understanding of Music—a Dialogue with Two Amateurs. 5.55, Weather and Announcements. 6.0, Talk: The Political Struggle against the War Guilt Accusations. 6.30, A Poem. 6.35, Political Press Review. 7.0, See Vienna. 9.0, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Musical Programme (to be announced). 11.0 (approx.), Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.0 p.m., Topical Talk. 6.10, Talk on Exemplary Lives by Friedrich Wilhelm Heintz. 6.30, Announcements. 6.35, Concert by the Berlin Wireless Orchestra, conducted by Bruno Seidler-Winkler; Gretzy Suite (W. Jacobi); Serenade for Small Orchestra, Op. 15 (Fiedler); Comedy Overture, Op. 38 (Busoni); Tétran from the Moorish Rhapsody (Humperdinck); Spanish Dances: (a) Novillada (Mannella); (b) Spanish Caprice, Del Sacro Monte (de Azagra); (c) Viva lo Cani (Sopena); (d) El Antequerano (Espet Morera); (e) Spanish Caprice, España mia, (f) Viva Sevilla, (g) Sevillana, (h) Malagueña (Mannella). 8.20, Concert by the Berlin Cathedral Choir: Unter Die nen Schirmen, Trotz dem alten Drachen, from the motet, Jesu, meine Freude (Bach); Gib dich

zufrieden (Bach); Psalm 22 (Mendelssohn); Choral Piece, Denn er hat seinen Engeln befohlen, from Elijah (Mendelssohn); Hebe deine Augen auf—Angel Trio from Elijah (Mendelssohn); Jerusalem (Reinhold Suico). 9.0, Weather, News, and Sports Notes. 9.30, Musical Programme (to be announced).

BERNE—See Schweizerischer Landessender.
BEROMUNSTER—See Schweizerischer Landessender.
BODEN—See Stockholm.
BODO—See Oslo.

BORDEAUX-LAFAYETTE
(PTT), 985 kc/s, 304 metres; 13 kW.—6.30 p.m., News Bulletin and Exchange Quotations. 6.40, Talk for Housewives. 6.55, Lottery Results. 7.0, Topical Talk. 7.15, News Bulletin and Weather Forecast. 7.30, Dramatic Programme.

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—4.20 p.m., Violin Concerto in A (Mozart), played by Jan Stefka. 5.5, Light Music on Gramophone Records. 5.15, A Comedy in One Act (Anerheim); Czech Translation by Horakova. 5.45, Slovak Spelling Lesson. 6.0, See Prague. 6.10, See Moravská-Ostrava. 7.10, See Prague. 7.25, See Brno. 8.0, See Prague. 10.0 (approx.), Close Down.

BRESENLAU
923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—12.10 p.m., Gramophone Concert of German Songs and Marches. 12.45, Time, Weather, News and Exchange. 1.5, Cello and Pianoforte Recital on Gramophone Records. 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Market Prices. 2.40, Programme for Children. 3.10, Pianoforte Recital by Ludwig Kühn; Prelude and Fugue in F Sharp Minor (Bach); Prelude and Fugue in C Sharp Minor (Bach); Sonata in D, Op. 28 (Beethoven); Three Etudes (Chopin): (a) in C Sharp, Op. 25, No. 7; (b) in A Flat, Op. 25, No. 1; (c) in F, Op. 10, No. 8; Polonaise in A Flat (Chopin). 4.0, Book Review. 4.20, Agricultural Prices. 4.25, Gertrud von le Fort reads from her own works. 4.55, Topical Programme. 5.35, German Music on Gramophone Records; Melody from the Suite in D (Bach); Song from The Seasons (Haydn); German Dances (Mozart); Finale from the Trout Quintet (Schubert); Movement from the Symphony in B Flat (Beethoven); Selection from A German Requiem (Brahms); Overture, The Mastersingers (Wagner). 6.30, Weather and Market Prices. 6.35, Talk on Reval. 7.0, See Vienna. 9.0, Time, Weather, News, Sports Notes and Programme Announcements. 9.25, Review of Political Periodicals. 9.50, Theatre Talk. 10.5, Quartet Concert from Hamburg. 11.0 (approx.), Close Down.

BRNO
878 kc/s, 342 metres; 35 kW.—5.0 p.m., Music Review. 5.15, Talk for Workers. 5.25, German Transmission: News, Talk, and Agricultural Report. 6.0, See Prague. 6.10, Reading from a French Novel. 6.30, Concert by the Station Orchestra, conducted by Jan Janota. Soloist: Jas. Krenek (Cello); Scherzo from A Midsummer Night's Dream (Mendelssohn); Variations for Cello and Orchestra (Tchaikovsky); Bachelante from Tomliäuser (Wagner); Polovtsian Dances from Prince Igor (Borodin). 7.10, See Prague. 7.25, A Radio Film. 8.0, See Prague. 10.0 (approx.), Close Down.

BRUSSELS (No. 1)
I.N.R.; 590 kc/s, 509 metres; 15 kW.—11 a.m., Concert by the Small Station Orchestra, conducted by P. Leemans. 12 Noon, Journal Parlé. 12.10 p.m., Gramophone Concert of Waltzes; Waltzes from (a) The Land of Smiles (Lehár); (b) Arabian Nights (Joh. Strauss); Hofballtänze (Lanner); Waltz from Die Teresina (O. Straus). 12.40, Concerto (Gershwin). 4.0, Concert of Opera Music by the Radio Orchestra, conducted by H. Walpot; Overture, La fille de Madame Angot (Lecocq); Ballet Music from Isolide (Mesager); Selection from La poupée (Andran); Overture, The Black Domino (Auber). 4.30, Programme for Children. 5.5, Literary Review. 5.15, Reading of Poems by Henri Deligne. 5.30, Handel Music by the Small Station Orchestra, conducted by P. Leemans; The Occasional Overture (Handel); Prayer, for Violin; Campanella. 5.45, Recital of Songs (Leemans) by Yvonne Streulens. 6.0, Debussy Music: Prelude, La damoiselle élue; Danse sacrée and Danse profane, for Pianoforte and Strings. 6.15, Weekly Review of the Radio Catholic Belgian Society, and Film Review. 6.30, Talk for Women. 7.0, Concert of Light Music by the Quetz' Andouilles and the Radio Orchestra. 7.45, Talk for Ex-Servicemen. 8.0, Concert by the Symphony Orchestra, conducted by Jean Kumpus. Soloist: Mireille Flour (Harp). Bourrée fantasque (Chabrier); Harp and Orchestra; Concert Piece (Pierné); Petite Suite (Ducasse). 8.30, Harp Recital by Mireille Flour; Prelude and Dance (Büsser); Minuet (Rameau); La volière magique (Fourier); Popular French Song (Grandjean). 8.45, Concert (contd.). Divertissement on Russian Themes (Raband). 9.10, Request Gramophone Concert. 9.40, Concerto grosso No. 8 (Corelli). 9.55, Christus vincit. 10.0 (approx.), Close Down.

BRUSSELS (No. 2)
N.I.R.; 887 kc/s, 332.2 metres; 15 kW. Programme in Flemish. 11.0 a.m., Gramophone Concert, with Pianoforte Solos by Ida Lowy. Overture, Ruy Blas (Mendelssohn); On Wings of Song (Mendelssohn); Von ewiger Liebe (Brahms); Du bist die Ruh'

(Schubert); Ständchen (Schubert); Pianoforte Solos: (a) Capriccio (Mendelssohn); (b) Am Bach (Schumann); (c) Fantasia (Chopin); Der Erbkönig (Schubert); Dio Forelle (Schubert); Ständchen (R. Strauss). 12.10 p.m., Concert of Light Music by the Small Station Orchestra, conducted by P. Leemans. 4.0, Concert by the Symphony Orchestra, conducted by J. Kumpus; Children's Symphony (Rompberg); Pieces from the Album for the Young (Schumann); Children's Symphony (Haydn); Selection from Hansel and Gretel (Humperdinck). 4.45, Programme for Children. 5.30, Gramophone Concert of Dances; Ballet Music from Les aventures du roi Pausole (Honegger); Dances from La Vida Breve (Fallá); Ballet Music from Chant (Prokofiev); Ballet Suite, Liebeswalzer (Reger); Dance of the Seven Veils, from Salome (R. Strauss); Three Dances from La tragédie de Salomé (Schmitt); Ballet oriental (Poot). 6.15, Talk: The Flemings in the Walloon Country. 6.30, Tourist Talk. 7.0, Concert by the Symphony Orchestra, conducted by J. Kumpus. Soloist, Greta De Wieuw (Songs). Norwegian Dances (Grieg); Songs: (a) Frühlingsträume (Schubert); (b) Ballad, Die Uhr (Loewe); (c) Jünges Grün (Schumann); Symphonic Dances (Grieg); In de dinnen (Waelput); Kindje, wat ben je toch zacht (Mortelmans); Zacht lief (Watebel); Rhapsody on Two Flemish Songs (De Boeck). After the concert, Sarov Monthly Mosaic. 8.15, Concert by the Radio Orchestra, conducted by Charles Walpot. Soloists: Verest and Kemna (Accordions); Waltz, Tales from the Vienna Woods (Joh. Strauss); Three Gramophone Records: Waltz, Wienerblut (Joh. Strauss); Accordion Solos: (a) March de cortège (Van Haverbergh); (b) Saxophone Waltz (Wood); Radetzky March (Strauss). 9.0, Journal Parlé. 9.10, Variety Music on Gramophone Records. 10.0 (approx.), Close Down.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—4.0 p.m., Light Music and Romanian Music by the Mitoa Orchestra. In the interval at 5.0, News and Time Signal. 6.0, Talk: Romanian Religious Painting. 6.20, Literary Talk. 7.0, Symphony Concert by the Station Orchestra, conducted by C. Nottara. Soloist: M. Nienlesco (Songs). Overture, A Midsummer Night's Dream (Mendelssohn); Symphony in E Flat, No. 30 (Mozart); Final Scene from The Valkyries (Wagner); Petite Suite (Debussy). In the interval at 7.45, Talk. 8.15, News.

BUDAPEST
545 kc/s, 550 metres; 18.5 kW. Programme also relayed on 840 metres from 6.30 p.m. to 11.30 p.m.—4.0 p.m., Pianoforte Recital by Paul Kiss. 4.40, Talk. 5.0, Orchestral Concert. 6.0, French Lesson. 6.30, Song Recital in Commemoration of Alos Tarnay. 7.45, News Bulletin. 8.0 (approx.), Cigány Concert from the Hotel Britannia. 9.10, Weather Report. 9.15 (approx.), Concert by the Hungarian String Trio; String Trio in G, Op. 9, No. 2, for Violin, Viola, and Cello (Beethoven); Kleine Tanzsuite (Molnar); Trio for Strings in B flat (Schubert). 10.15, Dance Music from the Hotel Danapalota. CASSEL.—See Frankfurt.

COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW. Relaye by Katundborg, 260 kc/s, 1,153 metres.—11.0 a.m., Town Hall Chimes. 11.2 to 1.0 p.m., Concert from the Bellevue Strand Hotel. 2.0, Orchestral Concert, conducted by Laury Gröndahl; Overture, Lépreux villageoise (Grieg); Waltz, A toi (Waldteufel); Selection from the Music to Youth and Madness (Dupuy); Russian Cradle Song (Gröndahl); Danish Rhapsody (Otto Olsen). Reading of Poems; March, The Spirit of Liberty (Rosqvist); Overture, La Sirène (Auber); Waltz, Solnyvnyter (Lambey); Two Icelandic Dances (Jon Leif); Selection from The Bartered Bride (Smetana); March, Los Banderilleros (Volpatti). 4.0 to 4.30, Programme for Children. 4.40, Exchange and Market Prices. 4.50, Talk: Northern Non-way in Literature. 5.20, German Lesson. 5.50, Weather and News. 6.15, Time Signal. 6.20 (from the Aarhus Studio), An Interview in connection with the Radio Journal Det danske Hørselskab—Three Talks. 6.45, Talk on the following Operetta, 7.1, Drottliche Schachteln (Three Old Maids)—Operetta (Kollo). 10.0 (approx.), News Bulletin. 10.15, Dance Music from the Lorry Etaldissement. In an interval at 11.0, Town Hall Chimes. 11.30 (approx.), Close Down.

CORC—See Athlone.
CRACOW
959 kc/s, 312.8 metres; 1.5 kW.—6.0 p.m., Miscellaneous Items and Announcements. 6.15, Talk on Old Cracow. 6.30 till Close Down. See Warsaw. 11.0 (approx.), Close Down.

DANZIG—See Heilsburg.
DRESDEN—See Leipzig.
FECAMP
1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., Military Music. 11.30, News Bulletin. 11.45, Variety Concert. 5.30 to 7.0, Programme in English by the I.B.C. Danvers-Walker, E. McNabb and E. Lamping announcing (These times are subject to alteration.) 5.30, Accordion Solos for Torquay Listeners. Annette (Phillips); An Revoir (Cuvelier); Marche joyeuse (Cuvelier); Donauwelle

MARCH 28th

TUESDAY

continued

(Rosas); Flor d'Espagne (Vola); La Tourterelle (Damaré); Rosa (Vola); Restless Fingers (Cuvelier). 6.0, Military Band Concert for Plymouth Listeners; Overture, Zampa (Herold); In a Monastery Garden (Kettelbey); Nibelungen March (Wagner); Selection from The Three Musketeers (Friml); Cradle Song (Brahma); In a Persian Market (Kettelbey); Squirrel Dance (Elliott Smith); Selection from The Vagabond King (Friml). 6.30, Song Recital for Devonport Listeners; Two Songs (Woodforde Finden); (a) Temple Bells, (b) Less than the Dust. I pitch my Lonely Caravan at Night; The Night you sang Sweet Genevieve; Oetel, Hindu Song (Rimsky-Korsakov); Two Songs (Woodforde Finden); (a) Kashniri Love Song, (b) Till I wake (Woodforde Finden); Somebody, Somewhere, Someday; We live and we love; Oetel, Minuet in G (Beethoven). 7.0, Local News and Popular Music on Gramophone Records. 7.30, Radio Gazette. 8.0, The Listeners' Quarter-of-an-Hour. 8.15, Talk. 8.30, Concert relayed from **Le Havre**. 10.0 till **Close Down**. Programme in English by the I.B.C. (These times are subject to alteration.) 10.0, Light Music: I'm all dressed up with a Broken Heart; A little less of the Moonlight; Let a little pleasure interfere with Business; I'll putcha pitecha in the Paper; At your command; Blues in my Heart; My baby said Yes Yes; Dance Hall Doll; Oh it looks like rain; I'm getting superstitions about you; Little Girl; Guilty; You can't stop me from loving you; Time alone will tell; Look in the Looking Glass. 11.0, Light Orchestral Concert: Stephanie Gavotte (Zibulka); Ideale (Tosti); Violin Solo: Spanish Dance (Fallá); Wedding of the Winds (Hall); Serenade (Heykens); Violin Solo: Ballet Music from Rosamund (Schubert); Vienna, City of my Dreams (arr. Rover). 11.30, The Studio Chorus in Negro Spirituals: I got a robe; Deep River; Couldn't hear nobody pray; Go down Moses; Levee Sing; Swing low sweet Chariot; Little David play yo' Harp; Ah ain't gwine study war no more. 12 midnight, Variety Music: I'm walking in the Sun; Paradise Alley; Laughing Sam the Railwayman; In Sunny Seville; Overnight; Taking the Cake. 12.30 a.m. (Wednesday), Songs: Blue Pacific Moonlight; Fall in love with me; Now you're in my Arms. Orchestra: Raspberries; One Night Alone with You; Out of nowhere; You're just a lover. Orchestra: You'll die if you worry. 1.0, Hawaiian Band Concert: Serenata (Toselli); Land of the Might have been (Adeler); Someloh (Hackforth); Sleepy Head (Hackforth); Go home and tell your Mother (McHugh); My Bluebird was caught in the rain (Creamer); With my Guitar and you; Somewhere in Old Wyoming (Lessor). 1.30 a.m. (Wednesday), Songs and Xylophone Solos: Xylophone Solo, Schön Rosmarin. Songs: (a) There's danger in your Eyes, Cherie, (b) I remember you from Somewhere, (c) With you; Xylophone Solo, Parade of the Minutes; Songs: (a) My Song of the Nile, (b) West Wind, (c) Go to Bed. 2.0, Variety Music; Listen to the German Band; Underneath the Arches; I do like to see a Game of Football; The Clouds will soon roll by; Lullaby of the Leaves; I love a Parade; Paradise; Ooh, that Kiss; To-day's the Day; Masquerade; Auf Wiedersehen, my Dear; Smuggled on your Shoulder; Good Evening; Just another Dream of you. 2.57, I.B.C. Good-night Melody. 3.0 (approx.) Close Down.

FLENSBURG.—See Hamburg.
FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres.—6.15 p.m., Time, Announcements, Weather and Economic Notes. 6.20, Art and Science Notes. 6.30, Concert by the Station Orchestra, conducted by Reinhold Merten; Overture, Die Fledermaus (Joh. Strauss); Waltz, Juristenballtänze (Strauss); Selection from Der arme Jonathan (Müllicker); Spanish March (Strauss); Waltz, Lebenspuls (Lanner); Selection from Der Obersteiger (Zeller). 7.40, See Stuttgart. In the interval at 9.0, Time, News, Weather and Sports Notes. 11.0 (approx.) Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBURG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.20 p.m., Cabaret music on Gramophone Records. 5.55, Exchange and Market Prices. 6.0, Agricultural Talk. 6.25, Weather. 6.30 (from Hanover). Readings (Detmold). 7.0, See Vienna. 8.0, Concert of Dialect Songs by a Male Choir and Soloists, relayed from the Convent Garden. 9.0, Time, Weather, News, Sports, and Police Notes. 9.20, Topical Talk. 9.30, Concert by the Berlin String Quartet: Quartet No. 1 in D (Dittersdorf);

Quartet in F, Op. 96 (Dvorak). 10.20, Ice Report. 10.25, Gramophone Concert of Light Music.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—12.5 p.m., Gramophone Concert. Chopin Potpourri, Dutch March; Two Folk Songs: (a) Ach wie ist's möglich denn, (b) Muss i denn zum Städtle hinaus; Duet from Cavalleria rusticana (Mascagni); Bass Solos: (a) Aria from Ernani (Verdi), (b) Aria from La Favorita (Donizetti); Ballet Music from Aida (Verdi); Tenor Solos (Weinberger): (a) Wo zu die Sehnsucht, die Selbsterlöser, (b) Du wärst für mich die Frau gewesen; Wiener Volksmusik (Kozzak); Ein Traum des Glücks (Sturm); Selection from One Hour with You (Rollins-Whiting). In the interval at 12.20, News. 1.30, Programme arranged by the Post Office, with Gramophone Records. 2.0, Exchange Quotations. 2.30, Musical Improvisations for Children. 3.0, Mahnung an die Jugend, sich der Musik zu heilfessigen—Cantata (Paul Hindemith), on Gramophone Records. 3.30, See Leipzig. 4.35 (from Danzig), Dialogue: Walter Grzan, a War-blinded Danzig Officer, wins the Gold Sports Badge. 4.50, Talk: Popular Art in East and West Prussia. 5.15, Market Prices. 5.20, Ice Report. 5.30, Talk on Handicrafts: Upholstering. 5.55, Short-hand Lesson. 6.20, An Evening with the Recruits—Military Band Concert from Hastenburg. 7.0, Weather and News. 7.10 (from Danzig), Operetta Concert, conducted by Otto Selberg. 9.10, News Bulletin.

HILVERSUM

(Announced Huizen), 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.55 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Sextet. 12.5 p.m. to 1.40 p.m., Interval. 1.40, Topical Talk. 2.15, Talk for Women. 3.10, Dress-making Lesson. 3.40, Millinery Lesson. 4.10, Concert of Light Music by the K.R.O. Boys, conducted by P. Lustenhouwer. Soloist: J. Mossel (Songs). 6.10, Esperanto Lesson. 6.30, Popular Music on Gramophone Records. 6.40, Talk on Karl Marx. 7.0, Light Music on Gramophone Records. 7.10, Police Notes. 7.25, Talk. 7.40, Sacred Music relayed from the cathedral at Roermond: Domine nunc sum dignus (Victoria); Meditation on the Passion; Ave Regina; Selection from Stabat Mater (Franzen); Tantum Ergo (Nieland); Funeral March (Mendelssohn); Priere a Notre Dame (Boellmann). 9.10, News Bulletin. 9.15, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen. Soloist: Mme. Maria von Basildes (Songs). Overture, Alceste (Gluck); Selection from Titus (Mozart); Light Music on Gramophone Records; Symphony in E Flat, No. 39 (Mozart). 10.10, News Bulletin. 10.15, Concert (cont'd.). Six Songs (Schubert): (a) Amerschen Grab, (b) Gesegnet sei, (c) In der Schatten meiner Locken, (d) Die junge Nonne, (e) Das Lied im Grünen, (f) Die Forelle; Overture, La Dame blanche (Boieldieu); Waltz, Roses from the South (Strauss); Am Hofe Rossinis (Urbach). 11.10, Popular Music on Gramophone Records. 11.40 (approx.) Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced Hilversum, 160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Algemeene Vereniging Radio Omroep (A.V.R.O.). 11.41 a.m., Concert by the Wireless Orchestra, conducted by Nico Treep. 1.55 to 2.10 p.m., Interval. 2.10, Popular Music on Gramophone Records. 2.40, Dressmaking Lesson. 3.40, Pianoforte Recital by Julia Noach. 4.10, Concert by a Children's Choir, conducted by Jacob Hamel. 4.40, Programme for Children. 5.10, Talk (arranged by the Liberal Protestant Radio Society). 5.40, Concert by the Wireless Orchestra, conducted by Nico Treep. March, Leicht zu Fuss (Lataun); Overture, Berlin, wie es wohnt und lecht (Conradi); In the Harbour of Port Said (Armandola); Selection from The Dollar Princess (Fall); Waltz, Over the Waves (Rosas-Pachernegg); Selection from Fedora (Giordano); In the Temple of the Bells (Yoshitomo); Mamula del Rio (Lucchesi). 6.40, Pianoforte Duets by Ethel Bartlett and Rae Robertson. Variation on a Theme by Haydn (Brahms); Si oiseau j'étais (Heusch); Rondo (Chopin). 7.10, English Lesson. 7.40, Time and News. 7.45, Russian Music. 9.0, The Second Act of Justice—Play (Galsworthy), arranged for Radio by Kommer Klein. 9.40, Concert of Light Music by Kovacs Lajos and his Orchestra. Soloist: Bob Scholte (Songs). 10.40, News. 10.50, Popular Music on Gramophone Records. 11.40 (approx.) Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

NICE, 1,202 kc/s, 249.6 metres; 0.8 kW.—9.30 to 10.30 p.m., Programme in English by the I.B.C.: H. K. Hitchcock announcing.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—6.15 p.m., Announcements and Gramophone Records. 6.25, Sports Notes. 6.30, See Warsaw. 10.0, Dance Music from the Café Monopol.

KAUNAS

155 kc/s, 1,835 metres; 7 kW.—6.30 p.m., Concert by the Station Orchestra, conducted by V. Orviki. 8.0, Popular Concert. 8.30, Talk. 8.50, Evening Concert. 9.30 (approx.) Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—4.0 p.m., Concert by the Station Orchestra, conducted by Erkki Linko; Overture, Die beiden Husaren (Doppler); Waltz, A Day in Sevilla (Waldteufel); Norwegian Song for Strings (Svendsen); Selection from Frederica (Lehar); Cello Solo: Serenade from Les Millions d'Arlequin (Drigo); Czardas (Mielchli). 5.15, Talk. 5.40, Violin Recital by Olavi Vinttinen. 6.20, Talk. 6.25, Recitations. 6.45, Concert by the Turku Municipal Orchestra, relayed from Turku, 1,220 kc/s, 245.9 metres; Conductor: Tarmo Hanjankainen. 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert of Opera and Operetta Music by the Station Orchestra, conducted by Kühn. Overture, Das Nachtlager in Granada (Kreutzer); Cigany Dance from The Huguenots (Meyerbeer); Ballet Music from Macbeth (Verdi); Will of the Wisp's Dance and Sylph's Dance from The Damnation of Faust (Berlioz); Overture, The Daughter of the Regiment (Donizetti); Scenes from Othello (Verdi); Ballet Music from Tatjana (Lehar); Dream Waltz from Der Feldherrlicher (Müllicker); Gallop from Die Fledermaus (Joh. Strauss). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Exchange and Time Signal. 2.50, Programme of Fairy Tales for Children. 3.20, Review of Books. 3.30, Talk: Monte Carlo without the Glamour. 4.0, Concert of Operetta Music conducted by Wolf. Soloist: Margarethe Palt (Mezzo-Soprano). Overture, Rosamund (Schubert); Marienwalzer (Lanner); Spring Suite (Nevin); Songs: Music to Pole Pappenspäler (Stierlin); Ballet Music from Die Puppenfee (Bayer). 5.15, Italian Lesson. 5.45, Weather, Time, Exchange, and Sports Notes. 5.55, Agricultural Talk. 6.15, Talk: The Four Hundred and Fiftieth Anniversary of the Birth of Raphael. 6.35, Talk: Tendencies in Modern Economics. 6.55, First General News. 7.0, See Vienna. 9.5, News, Sports Notes, and Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—11.0 a.m., Wind Instrument Concert on Gramophone Records. 12 Noon, News, Weather and Time. 12.15 p.m., Gramophone Concert. Overture, Das Liebesverbot (Wagner); Songs (Liszt): (a) Es muss ein Wunderbares sein, (b) Im Rhein, im schönen Strome; Polonaise No. 2 (Liszt); Aria from The Barber of Bagdad (Cornelius); Overture, Witches' Ride and Gingerbread Waltz from Hansel and Gretel (Humperdinck); Am Rhein (Humperdinck). After the Concert, Exchange Quotations. 1.0, Advice for the Unemployed. 2.35, Exchange and Market Prices. 3.0, Talk: Animals. 3.30, Concert by the Station Orchestra, conducted by Willy Steffen. Concert Overture, Oberon (Weber); Minuet in F (Haydn); Hungarian Divertimento in B Flat, Op. 51 (Schubert). 4.30, Weather and Time. 4.50, Exchange Quotations. 5.25, French Lesson. 5.50, Introduction to the Gewandhaus Concert of the 30th March. 6.0, Programme to be announced. 6.40, Artists four the World—Radio Sequence from Writings of Albrecht Dürer. Ludwig Richter, G. Carus, Paul Gauzin and Others (Wilfried Göpel). 7.0, See Vienna. 9.5, News Bulletin. 9.20 (approx.), Orchestral Concert, conducted by Hans Jessen. 10.30 (approx.) Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Talk: Heroes of To-day. 7.0, Talk on Music. 7.30, Concert of Chamber Music. 8.30, Quintet Concert. 9.0, Time and News. 9.5 (approx.) Concert of Light Music.

LWOW

788 kc/s, 381 metres; 16 kW.—6.0 p.m., Technical Correspondence. 6.15, Miscellaneous Items. 6.30, See Warsaw. 9.25, Relay of Foreign Stations. 9.55, See Warsaw. 10.30 (approx.) Close Down.

LYONS

LA DOUA (PTT), 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., Radio Gazette for Lyons and the South-East. 7.30, Dramatic Programme, followed by News Bulletin.

MADRID

ARANJUEZ (EAO); 9,860 kc/s, 30.43 metres; 20 kW.—10.30 p.m., Popular Concert. 10.45, Radio Chronicle. 11.0, Popular Concert (cont'd.). 11.30, Talk. 11.40, Light Music. 12 Midnight (approx.) Close Down.

MADRID

UNION RADIO, EAJ7, 707 kc/s, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations and Request Gramophone Concert. 7.30, Talk by Joaquin España Cantos, followed by Request Gramophone Records (cont'd.). 8.15, News Bulletin and Political Review. 8.30 to 9.0, Interval. 9.0, Linguaphone English Lesson. 9.30, Chimes, Time Signal, Political Review, and Lucia di Lammermoor—Opera (Donizetti) on Gramophone Records. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by J. Plichta. 4.10, See Prague. 4.50, Popular Music on Gramophone Records. 5.0, Talk. 5.15, See Prague. 5.25, See Brno. 6.0, See Prague. 6.10, Concert of Light Music by the Station Orchestra. 7.10, See Prague. 7.25, See Brno. 8.0, See Prague. 10.0 (approx.) Close Down.

MOSCOW

230 kc/s, 1,304 metres; 100 kW.—4.30 p.m., Concert of Classical Music. 8.0, Talk in French: Miners in the Soviet Union.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.0 p.m., Concert by the Willy Ehrmann Orchestra: Overture, Banditenstreich (Suppé); Waltz, Lotusblumen (Ohlsen); Walter's Prize Song from The Mastersingers (Wagner); Selection from The Bird Fancier (Zeller); Waltz Intermezzo, Amorettenreigen (Fueki); Two Military Marches; March, Alpenlieder (Gruber). 5.15, Legal Talk. 5.35, Talk on Raphael. 5.55, Time, Weather and Agricultural Notes. 6.5, Talk on Contemporary German History. 6.25, Concert by the Radio Orchestra, conducted by Karl List. Overture, Frau Aventure (Noetzel); Potpourri, Strausfederer (Morona); Japanese Romance (Morel); Waltz, Dorfkinder (Kalm); Spring Serenade (Lacombe); Alsatian Peasant Dances (Merklung); Waltz, Amorettenfünze (Gungl); Selection from Grigri (Lincke); March from Fatinitza (Suppé). 7.45, Reading in Palatine Dialect. 8.10, Recital of Sixteenth Century Music for the Double-stringed Lute. 8.35, Reading of Two Ballads (Schiller). 8.50 (from Nürnberg), Recital of Pianoforte Duets by Maria and Fritz Binder: Romantic Dance Pictures, Op. 41 (Raphael); Six Short Dance Pieces, Op. 41 (Rowley). 9.20, Time, Weather, News and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.0 p.m., Concert by the Station Orchestra, conducted by Hugo Kraumm; Overture, The Thieving Magpie (Rossini); Schubert Potpourri (Urbach); Elegy (Mowinkel, Jr.); Nær brura gjekt gjennom thurstet ved kyrkjia (Johansen); Potpourri, Telefunken (Morona); Russian March (Ganne). 5.0, Programme for Housewives. 5.45, Recitations. 6.0, Announcements, Weather and News. 6.30, Discussion between a Lawyer, a Bishop and a Prisoner: The Problem of Prisons. 7.0, Le Belle Hélène—Operetta in Three Acts (Offenbach), relayed from the National Theatre. In the intervals at 8.5, Topical Talk, and at 9.5, Weather and News. 9.55 (approx.) Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—Transmits at intervals from 7.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Notes, and Giornale Radio. 7.20, Popular Music on Gramophone Records. 7.30 (in an interval), Time Signal and Announcements. 7.45, Popular Concert, conducted by M. Fortunato Russo. In the intervals: Talk and Art Notes. 9.0, Light Music on Gramophone Records. 9.55, News Bulletin.

PARIS

EFFEL TOWER (FLE), 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Pre-

Binary and 6-dot Signals). 5.45 p.m., Talk on the Theatre. 6.0, Le Journal Parlé. 7.20, Weather Report. 7.30, Dr. Knock—Comedy in Three Acts (Jules Romains).

MARCH 28th TUESDAY continued

to 11.0, Programme in English by the I.B.C. W. Brown—Constable announcing. Chorus from Congress Dances (Heymann); Selection from Iolanthe (Sullivan); The Skaters' Waltz (Waldteufel); The Maid of the Mountains (Fraser-Simpson); A Waltz Dream (O. Strauss); Of Man River from Show Boat (Kern). 10.57, I.B.C. Good-night Melody. 11.0, Weather and Announcements. 11.5, Argentine Music. 11.15, Organ Solos. 11.30 (approx.), Close Down.

PARIS
POSTE PARISIEN, 914, kc s, 328.2 metres; 60 kW.—5.45 p.m., Le Journal Parlé. 6.0, Post-lar Music on Gramophone Records. 7.0, Film Review. 7.5, Talk on the Circus. 7.30, Concert of Music by Charles Widor and Henri Raoul. 9.30, News Bulletin.

PARIS
RADIO PARIS, Call CFR, 174 kc s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 6.30, Weather and Physical Culture (contd.). 6.45, Gramophone Records. 7.0, Press Review and Weather. 11.0, Concert by the Kretzky Orchestra: Overture, La Part du Diable (Auber); Selection from Le Postillon de Longjumeau (Adamo); Prelude, Serenade, March and Gipsy Dance from The Fair Maid of Perth (Bizet); Entr'acte from The Pet Dove (Gonod); Selection from Les Folies Amoureuses (Pessard); Selection from Tosca (Puccini); Two Songs from Boris Godunov (Musorgsky), on Gramophone Records; Two Arias from Figaro (Mozart), on Gramophone Records; Dance (Turina); Polonaise (Brzezinski); Norwegian Dances (Grieg); Two Waltzes (Dvorak); Ballet Suite (Linfante); In the intervals at 12 Noon, Exchange and Announcements, News and Weather; and at 12.30 p.m., Exchange, 1.0, Exchange, 2.45, Exchange and Market Prices. 3.30, Elementary English Lesson. 5.10, Agricultural Talk. 5.30, Advanced English Lesson. 5.50, Theatre Review. 6.5, Talk on Art: The Bourdelle Exhibition. 6.20, Concert by the Kretzky Orchestra: Sortilège de Printemps (Berlioz); Air de danse (Penau); Nocturne (Paray); Gavotte (Steck); Suite brève (Busser). 6.45, Commercial Prices, News and Review of the British Press. 7.0, Concert. 7.30, News and Weather. 7.40, Review by Miguel Zamacois. 7.45, I Pagliacci—Opera (Leoncavallo) on Gramophone Records, by the Cast of the Scala Milan. In the interval at 8.15, Press Review and News.

PITTSBURGH
WESTINGHOUSE ELECTRIC, KDKA, 980 kc/s, 306 metres; 25 kW. Relayed by W8XX on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Selma Brandt (Pianist). 9.30, Weather Report. 9.31, Market Reports. 9.45, Johnny Muskrat. 9.50, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Programme to be announced. 10.15, Dick Darling, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Booth Tarkington's Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaherry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report—Philadelphia Company. 11.30, KDKA Orchestra. 11.45 to 1.45 a.m. (Wednesday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Pop-scent Amos 'n' Andy. 12.15 a.m., National Advisory Council on Radio in Education—The Lobby. 12.45, The Townsend Murder Mystery. 1.0, Eno Crime Club. 1.30, Time Signal and Adventures in Health. 1.45, Programme to be announced. 2.0 to 4.0, New York Relay. 2.0, Household Musical Memories. 2.30, Willard Robinson's Deep River Orchestra. 3.0, Baltimore Symphony Orchestra. 4.0, Time Signal. 4.1, Teaherry Sport Review. 4.11, Temperature Report—Philadelphia Company. 4.12, Weather. 4.15, Press Last Minute News Flashes. 4.20, Smith Ballou and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, Cotton Club Orchestra, from New York. 5.30, Time Signal and Good night.

PRAGUE
614 kc/s, 488.6 metres; 120 kW.—3.10 p.m., See Moravská-Ostrava. 4.10, Talk on Economics. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Variety Music on Gramophone Records. 5.5, Agricultural Report. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Spring in Songs—Recited by Erna Fischer. 6.0, Chimes. 6.1, News. 6.10, See Moravská-Ostrava. 7.10, Talk: The Different Races inhabiting Czechoslovakia. 7.25, See Brno. 8.0, Time Signal. 8.1, Concert by the Los Aguilar Lite Quartet. Prelude and Karabande (Cziff-Aguilar); Minuet (Mozart); Sevilla (Albeniz-Aguilar). Eight Pieces (Stravinsky): (a) March. (b) Waltz. (c) Polka. (d) Andante. (e) España. (f) Balalaika. (g) Napolitana. (h) Gallop; Persian Song (Schelling); Merry March (Halter); From Andalusia (Nim); Fire Dance (Falla). 9.0, Time Signal. 9.4, News Bulletin. 9.15, Concert by the Ondrick Quartet. Ten Songs with Pianoforte Accompaniment for Voice, with accompaniment for Violin, Viola, Cello, Flute, and Harp (Tcherepnin); Psyche (Falla); String Quartet in C (Zich). 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE
SOTTENS, 743 kc s, 403 metres; 25 kW.; LAUSANNE, 442 kc s, 680 metres; and GENEVA, 395 kc/s, 760 metres.—5.0 p.m. (from Lausanne), Medical Talk. 5.30 (from Geneva), English Lesson. 6.0 (from Geneva), Weather Forecast, News Bulletin and

Announcements. 6.20 (from Geneva), Answers to Correspondence. 6.30 (from Geneva), Concert of New Gramophone Records. 7.0 (from Geneva), Concert of Folk Music by the Moser Orchestra and the Lausanne Yodelling Club. 7.40 (from Geneva), Concert of Light Music by the Station Orchestra, conducted by R. Echenard. In the interval: Songs from Operettas by Mme. Olivet-Decompoix. 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva), Talk: The Work of the League of Nations. 9.30 (approx.), Close Down.

REYKJAVIK
250 kc/s, 1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Pianoforte Recital by Emil Thoroddsen. 10.15, Recitation. 10.35, Trio (Haydn) on Gramophone Records.

RIGA
572 kc s, 525 metres; 15 kW.—5.5 p.m., Concert of Opera Music. 7.0, News. 7.20, Pianoforte Recital. 7.50, Popular Music. 8.0, Weather and News. 8.30, Light Music. 9.30 (approx.), Close Down.

ROME
680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2R0, 11,810 kc/s, 25.4 metres. 12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Concert of Light Music from Turin. In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30 to 5.15, Orchestral Concert. 6.0 (Naples), Shipping and Sports Notes. 6.10, Lesson in Morse. 6.20, Giornale Radio, Agricultural, and Dopolavoro Notes. 7.0, Time and Announcements. 7.2, Talk: The Heavens in April. 7.15, Light Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 7.45 (approx.), Programme to be announced. In the intervals: Talk and News.

SCHENECTADY
GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF and by W2XAD (See Short-Wave List).—12 Midnight, General Electric Programme. 12.15 a.m. (Wednesday), Wheatena Ville Sk-tech, from New York, followed by Stock Reports. 12.30 to 3.0 a.m. (Wednesday), New York Relay. 12.30 Soloist. 12.45, The Goldbergs. 1.0, Blackstone Plantation. 1.30, Wayne King's Orchestra. 2.0, Ben Bernie's Blue Ribbon Orchestra. 2.30, Ed Wynn and the Fire Chief Band. 3.0, Lucky Strike Hour and Programme Resume.

SCHWEIZERISCHER LANDESENDER
BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; BASEL, 1,229 kc/s, 244.1 metres; and BERNE, 1,220 kc/s, 245.9 metres.—11.28 a.m., Time Signal from the Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Basel), Light Music on Gramophone Records. 12.35 p.m., Weather and Exchange. 12.40 to 2.30, No Transmission. 2.30 (from Berne), Cinema Organ Recital on Gramophone Records. 3.0 (from Berne), Popular Film Stars sing on Gramophone Records. 3.30 (from Berne), Light Music on Gramophone Records. 4.30, Weather Report. 4.32 to 5.30, No Transmission. 5.30 (from Berne), Talk: The Psychology of Youthful Prodigies. 6.0, Time and Weather Report. 6.2 (from Berne), Educational Talk. 6.10 (from Berne), Concert of Songs and String Quartet Music. 6.50 (from Berne), Dr. Chlupf Dialect Comedy in Three Acts (Otto von Greyerz). 8.40, Weather and News. 8.50 (from Berne), Dance Music. 9.15 (from Berne), An Excursion with the Microphone. 9.25 (approx.), Close Down.

STOCKHOLM
(SASA), 689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc s, 1,229.5 metres; Göteborg, 932 kc s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 212.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc s, 542 metres.—4.5 p.m., Programme for Children. 4.45, Popular Music on Gramophone Records. 5.45, Elementary French Lesson. 6.15, Weather and News. 6.30, Talk. 7.0, Military Band Concert, conducted by Nils Wiclander, relayed from Borås, 1,450 kc s, 207 metres. 7.55, Literary Review. 8.25, Prelude, Air and Finale for Pianoforte (Franck); by Herbert Westrell. 8.45, Weather and News. 9.0, Organ and Song Recital by H. Schindler and Joel Berghund: Concerto in B Flat, Op. 1, No. 2 for Organ (Händel); Songs: (a) Mein gläubiges Herze (Bach),

(b) Arioso (Händel): Prelude and Fugue in F for Organ (Buxtehude); Three Choral Overtures for Organ from Op. 122 (Brahms); Songs from Ernste Gesänge (Brahms); Fantasia from the Sonata in F Sharp Minor, Op. 33 for Organ (Beger). 10.0 (approx.), Close Down.

STRASBOURG
869 kc/s, 345 metres; 11.5 kW.—10.30 a.m., Light Music on Gramophone Records. 11.0, Orchestral Concert, conducted by Maurice de Villers: Overture, Armide (Gluck); Dance Airs from Hippolyte et Aricie (Rameau); Four Airs from Manfred (Schumann). 11.45, News. 12 Noon, Time and Exchange. 12.5 p.m., Orchestral Concert (contd.): Airs (Giraud): (a) Selection from Piccolino, (b) Persian Dance, (c) Scene and Waltz from Gretia Green; Carnival. 1.0 to 3.45, Interval. 3.45, Talk in French on Toulouse. 4.0, Orchestral Concert, conducted by Roskam: Liberty March (Kostal); Waltz, Feuilleton (Fück); Humoresque (Bayer); Overture, The Story of the Princess (Kostal); Selection from Romeo and Juliet (Gonod); A l'heure rompus (Gillet); Was Blumen träumen (Trauslabauer); Selection from The Grisha (Jones). 5.0, Historical Talk in French. 5.15, Topical Talk in French. 5.30, Concert by the Municipal Theatre Orchestra, relayed from Metz. Conductor: H. Ehrmann. Overture, Le pré aux clercs (Herold); Selection from Il Trovatore (Verdi); Rigandon des petits pages (Debussy); Gracieux page (Delannay); Selection from: (a) Le petit duc (Lecocq), (b) La princesse de Trébizonde (Offenbach), (c) Les Saltimbanques (Ganne). 6.30, Time and News. 6.45, Dance Music on Gramophone Records. 7.20, Lottery Results. 7.30, Dramatic Programme, relayed from Paris. 9.30 (approx.), Close Down.

STUTTGART
MUHLACKER, 832 kc s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12.50 p.m. (from Freiburg), Pitzner Song Recital by August von Mannel (Bartone): Zweifelhede Liebe; Ich will mich im grünen Wald ergehen; Zügelnd; Die Bäume wurden gelb; Wasserfahrt; Frieden; Der Gärtner; Willkommen und Abschied; Säerspench; Less scharrn deiner Kasse Buf. 1.0, Musical Programme arranged by the Post Office. 1.30 to 2.0, Advanced English Lesson. 3.0, Talk on Flowers. 3.30, Talk for Women: Women in the Hotel Industry. 4.0 (from Freiburg), Concert by the Freiburg Concert Orchestra, conducted by Richard Fried. Soloist: Hugo Stoffel (Violin). Overture, Lisola disabitata (Haydn); Concerto for Violin and Orchestra (Hermann Goetz); Fantasia on Haydn's Music (Trbach); Overture, Turandot (Luchner); Concert Overture, Nachklänge aus Ossian (Gade); Violin Solo: Romance (Svendsen); Swedish March (Södermann). 5.15, Time, Weather and Agricultural Notes. 5.25, Actors and Critics—a Dialogue between Karl Köstlin and Herbert Hering. 5.50, Talk by Barbara Bonin: My First Flight. 6.15, Time and News. 6.30 (from Freiburg), Variety Programme. 7.0, Authors whom we should know: A Sequence of Dialogues on Authors killed in Action (Georg von der Vring). 7.40, Concert by the Stuttgart Philharmonic Orchestra, conducted by Gustav Gürlich, Soloist: Gerda Hansi (Soprano). Overture and Two Ariettas from Oberon (Weber); Three Pieces from the Music to Björnson's Sigurd Jorsalfar (Grieg); Overture, Der Waddmeister (Joh. Strauss); Recitative and Aria from Die schöne Galathée (Suppé); Waltz, Mon rêve (Waldteufel). 9.0, Time, News, Weather and Programme Announcements. 9.50, Dance Music with Vocal Refrains. 11.0 (approx.), Close Down.

TOULOUSE
RADIOPHONIE DU MIDI, 779 kc/s, 385 metres; 8 kW.—5.15 p.m., Opéra-Comique Songs. 5.30, Orchestral Selection from The Comtesse Maritza (Kálmán). 5.45, Popular Songs. 6.0, Military Music. 6.15, News, Racing Results and Market Prices. 6.25, Local News. 6.30, Accordion Solos. 6.45, Songs from Sound Films. 7.0, Orchestral Music. 7.15, Songs from Operettas. 7.30, Orchestral Concert: Waltz (Thomé); Allegro and Minuet from the Toy Symphony (Haydn); Two Movements in Symphonic Form (Franck); Im Walzertrausch (Lincke); Dance of the Sylphs from The Damnation of Faust (Berlioz); Overture, Idomenus (Mozart). 8.0, First Concert by the Toulouse Symphony Orchestra, conducted by M. Tartane: Coronation March from The Prophet (Meyerbeer); Overture, Morning, Noon and Night (Suppé); Contemplation (Mazellier); In the Steppes of Central Asia (Borodin); Spanish Dance from La vida breve (Falla); Cortège de Bacchus from Sylvia (Debussy). In the interval, Popular Songs. 9.15, North African News. 9.30, Concert for Listeners in Morocco. 10.30

TRIESTE
1,211 kc/s, 247.7 metres; 10 kW.—4.50 p.m., till Close Down, See Turin.

TURIN
1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—4.50 to 5.15, Dance Music from the Savoia. 5.35, Giornale Radio, Agricultural and Dopolavoro Notes. 6.5, Giornale Radio. 6.30, Time, Announcements, Report of the Royal Geographical Society, and Gramophone Records of Variety Music. 7.0, Giornale Radio, Weather, and Gramophone Records (contd.). 7.45, Talk. 8.0, Variety Programme. 9.0, Talk. 9.15, Dance Music. 10.0, Giornale Radio.

VATICAN CITY
15,120 kc/s, 19.84 metres (Morning), and 5,963 kc/s, 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in English. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA
581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc s, 245.9 metres; and Salzburg, 1,373 kc s, 218.5 metres.—3.55 p.m., Concert of Popular Music by Karl Hawranek and his Band. 5.5, Agricultural Talk. 5.30, Italian Lesson. 5.55, Talk: The Significance of History. 6.20, Time, Weather, and Announcements. 6.30, Reading: Die Dilligence von Bordeaux (Oscar A. H. Selmitz). 7.0, Strauss Concert by Josef Holzer and his Orchestra. Soloist, Maria Gerhart (Soprano). Joh. Strauss: (a) Festmarsch, (b) Overture, The Gipsy Baron, (c) Song from Karneval im Ron, (d) French Polka, L'Entantille, (e) Waltz, Wo die Zitronen blühen (arranged for Coloratura Soprano by Lothar Kiedinger), (f) Prelude to Jabuka; Waltz Paraphrase for Pianoforte and Orchestra on Strauss Themes (Otto Schultzhof); Johann Strauss: (a) Waltz Song from Indigo, (b) Overture, Prince Methusalem, (c) Waltz, Füllhühnerstimmen; Josef Strauss: Ein Rätsel ist das Frauenherz; Johann Strauss: (a) Song from Jabuka, (b) Czardas from Cagliostro; Josef Strauss: Waltz, Spährenklänge; Johann Strauss: (a) New Pizzicato Polka, (b) Song from The Queen's Kerchief; Waltz Paraphrase for Pianoforte and Orchestra on Motives by Josef Strauss (Schultzhof); Johann Strauss: Quick Polka, Tritsch-Tratsch, 9.0, News, Weather, and Announcements. 9.15, Dance Music by Jean Litwin's Syncopators and Los Pamperos Tango Band, relayed from the Café de Paris. Soloist, Bertram Alfonso (Songs).

WARSAW
212.5 kc/s, 1,411 metres; 120 kW.—10.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.10 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Aviation Report and Anti-Gas Drill. 2.30, Announcements. 2.35, Book Review. 2.50, Light Music on Gramophone Records. 3.20, Talk on History. 3.40, Talk: The Economic Crisis in Ancient Rome. 4.0, Symphony Concert by the Warsaw Philharmonic Orchestra, conducted by W. Bortajew; Overture, Rienzi (Wagner); Symphony No. 4 (Beethoven). In the interval, Announcements. 4.55, Programme Announcements. 5.0, Talk on Polish Literature—Zotomski 5.20, News. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Notes. 6.30, Talk on Chopin. 6.45, Radio Journal. 7.0, Concert by the Station Orchestra, conducted by Ozminski. Soloist: I. Cwynski (Soprano). Polonaise (Ozminski-Lefeld); Overture, Raymond (Thomas); Prelude and Berceuse (Jarmfeldt); Slav Dance in G (Dvorak); Mountaineers' Dances from Halke (Mondusko); Songs: (a) Traum durch die Dämmerung (R. Strauss), (b) Song (Brahms), (c) At my Window (Rachmaninov), (d) Song (Tchaikovsky), (e) Chanson de Mai (Gall); Tartar Dance (Borodin); Hungarian Dance in G Minor (Brahms); Songs: (a) Air and Minuet from Manon (Massenet), (b) Elsa's Dream from Lohengrin (Wagner); Orchestra: Entr'acte from Lohengrin (Wagner). 8.20, Sports Notes. 8.25, Radio Journal. 9.30, Mozart Concert by the Station Orchestra, conducted by J. Ozminski. Soloists: T. Ochlewski (Violin) and M. Szaleski (Viola). Overture, Don Giovanni; Minuet from the Divertimento; Concertante Symphony for Violin, Viola and Orchestra. 3.10, Reading. 9.25, Dance Music. In the interval at 9.55, Weather Report and Police Notes.

ZURICH.—See Schweizerischer Landessender



DUBILIER RESISTANCES

the "Wireless World's"
exclusive choice for the
A.C. MONODIAL SUPER
with
automatic volume control



THEY HAVE
PROVED THAT
THERE IS NONE
BETTER THAN
DUBILIER
RESISTANCES



DUBILIER
CONDENSER
Co. (1925) Ltd.
Ducon Works,
Victoria Road,
N. Acton,
London, W.3.



EDISWAN

The name that means 'EXCELLENCE'

THE GREATEST BATTERY VALUE
- at any price!



Guarantee.

The Edison Swan Electric Co., Ltd. guarantees that Ediswan Batteries are of full voltage and capacity. Should any Ediswan Battery fail to give satisfactory service, we undertake to deal with customer's complaint within 24 hours of receipt of defective battery.

60 VOLTS
5/6
STANDARD CAPACITY

When you buy an Ediswan battery you don't have to take it on trust. It has run the gauntlet of the most exacting tests. It has been passed as fit to bear the Ediswan Guarantee. It's ready for a long life of good service.

Standard Capacity	-	10 M/a	
99 volts	9/-	108 volts	10/-
120 volts	11/-		
150 volts (new type)	-	-	14/6
Also tapped for Q.P.P.			
Super Capacity types	-	-	20 M/a

Write for your FREE Copy of "How to get the most out of your H.T. Battery." Full of useful data

EDISWAN

Guaranteed RADIO H.T. BATTERIES



THE EDISON SWAN ELECTRIC CO. LTD.
PONDERS END, MIDDLESEX

EDISWAN - the Better Service Batteries

B.237.

The NEWEST RADIOGRAM!

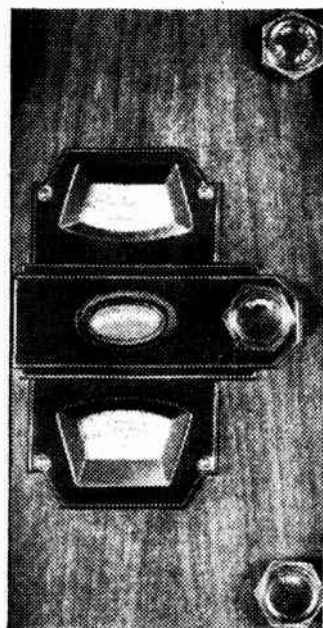
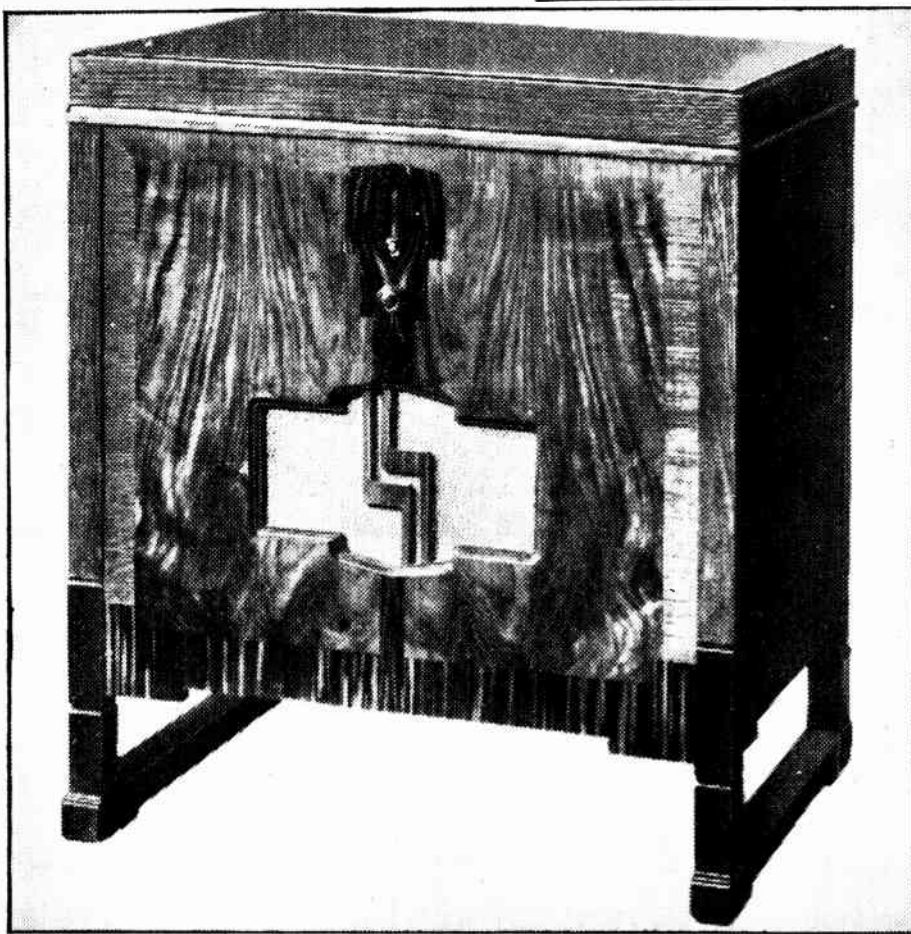


"HIS MASTER'S VOICE"
AUTORADIOGRAM SEVEN, MODEL 524
 MODERN TO THE MINUTE
 —OUTSIDE AND INSIDE

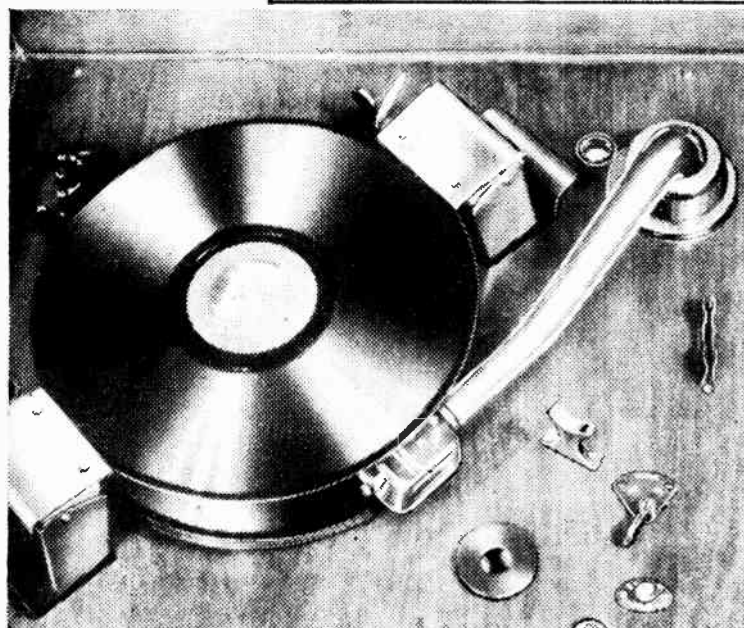
● **CONSIDER THESE FEATURES**

- Cabinet design in keeping with present-day ideas, making full use of choice veneers in contrasting tones and grains. Planned with special regard to acoustics.
- Illuminated wave-length scale marked in metres and bearing the names of the principal broadcasting stations.
- Latest type eight-record-changing automatic mechanism with switch for "Repeat," "Automatic" or "Hand" operation. For 10" or 12" records, unmixed.
- Chassis: Seven-valve superheterodyne circuit employing variable mu valves. *Proved* performance and reliability.
- Controls: Wave-change switch, tuning knob, tone (or brilliance) control, and external volume control.
- Electro magnetic moving coil speaker.

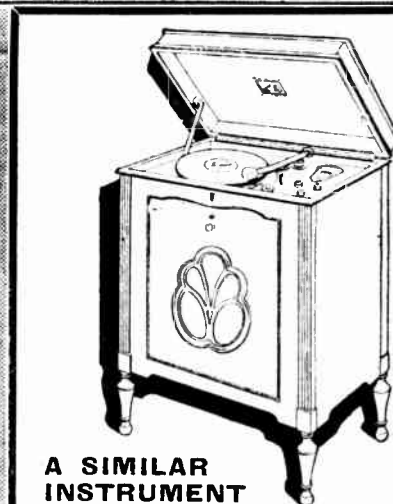
PRICE - 55 GUINEAS



Arrangement of Controls



Top view showing Automatic Record Changer



A SIMILAR INSTRUMENT

(Model 523) but without the automatic record-change, is the Superhet Radiogram Seven (as illustrated), a seven-valve (inc. rectifier) superheterodyne receiver combined with an electrically reproducing gramophone. The range of stations obtainable on the wireless side, and the "true-to-life" tone on both wireless and gramophone are fully equal to those of the Superhet Auto-radiogram Seven. **PRICE 48 GUINEAS** or by hire purchase

A.C. (524) Models will be available shortly.

"His Master's Voice"

The Wireless World

THE
PRACTICAL RADIO
JOURNAL
22nd Year of Publication

No. 708.

FRIDAY, MARCH 24TH, 1933.

VOL. XXXII. No. 12.

Proprietors: ILIFFE & SONS LTD.

Editor:
HUGH S. POCOCK.

Editorial Offices:
116-117, FLEET STREET, LONDON, E.C.4.
Editorial Telephone: City 9472 (5 lines).

Advertising and Publishing Offices:
DORSET HOUSE, TUDOR STREET,
LONDON, E.C.4.

Telephone: City 2846 (17 lines).
Telegrams: "Ethaworld, Fleet, London."

COVENTRY: Hertford Street.

Telegrams: "Cyclist, Coventry." Telephone: 5210 Coventry.

BIRMINGHAM:

Guildhall Buildings, Navigation Street, 2.
Telegrams: "Autopress, Birmingham." Telephone: 2970 Midland (3 lines).

MANCHESTER: 260, Deansgate, 3.

Telegrams: "Iliffe, Manchester." Telephone: Blackfriars 4112 (4 lines).

GLASGOW: 26B, Renfield Street, C.2.

Telegrams: "Iliffe, Glasgow." Telephone: Central 4857.

PUBLISHED WEEKLY. ENTERED AS SECOND
CLASS MATTER AT NEW YORK, N.Y.

Subscription Rates:

Home, £1 1s. 8d.; Canada, £1 1s. 8d.; other
countries abroad, £1 3s. 10d. per annum.

As many of the circuits and apparatus described in these
pages are covered by patents, readers are advised, before
making use of them, to satisfy themselves that they would
not be infringing patents.

CONTENTS

	Page
PROGRAMMES FROM ABROAD, pp. 1-XXIV	
Editorial Comment	217
The Midget Universal Mains Set	218
The Screened H.F. Pentode	221
News of the Week	223
Adding A.V.C. to the Monodial ..	224
Unbiased	228
Broadcast Brevities	229
Letters to the Editor	230
Practical Hints and Tips	231
Readers' Problems	232

EDITORIAL COMMENT

Automatic Volume Control

An Essential Fitment

IT is not too soon to contemplate what is likely to be the general trend of design of receivers of next season, and one thing appears to us abundantly clear: that designers have a very busy time immediately ahead of them if they are to be ready for next season with new receivers which will do justice to the wealth of intriguing new valves and circuit arrangements.

From the point of view of the sensitive set designed to receive a choice of foreign programmes, the most outstanding development is undoubtedly the provision of automatic volume control. There are various methods of applying it to choose from, but whatever the system the general result of its incorporation in a sensitive modern receiver is the same; even those stations which hitherto faded up and down to such an extent as to make reception scarcely worth while are receivable at constant strength and often comparable with what is termed "local-station" reception in quality.

Automatic volume control is, in our view, of such importance to every set claiming to be more than a "local-station" receiver that we cannot help believing that next season there will be but a poor market for any receiver of this type which does not incorporate it in some form.

We complete in this issue the description of how to apply A.V.C. to the Monodial A.C. Super; there could be no more suitable receiver for the purpose, for from the point of view of distant reception at good quality it is unsurpassed and its extreme sensitivity leaves a margin of amplification suffi-

cient to cover almost the worst examples of fading.

There are many readers who may not feel prepared to embark on the construction of an elaborate set until they have tested out the advantages of automatic volume control in some less ambitious form first. We think, therefore, that a little unit which we shall describe in next week's issue should achieve wide popularity. This is an automatic volume control unit costing only a few shillings to construct, which is applicable for use as an addition to any receiver with an efficient H.F. stage.

Every reader who has not already tried out some form of automatic volume control will want to try this unit, which is the first constructional device to provide for A.V.C. with existing sets.

Midget Sets

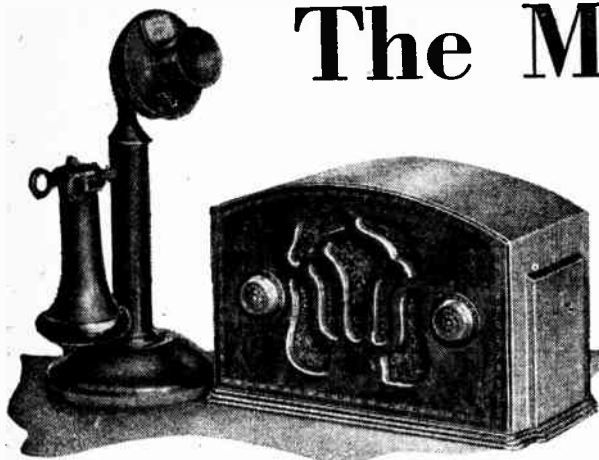
Are They Worth While?

THERE has been almost a stampede amongst manufacturers in America in recent months to devise something new in the way of radio sets, so as to tempt buyers who are by no means as plentiful as before the American financial crisis.

One of the products of these efforts is the midget set, a complete receiver designed on the smallest possible lines, incorporating the loud speaker and having the additional novelty of operating from both D.C. or A.C. supply. An article on these sets from an American correspondent appears in this issue, and although it is implied that the enthusiasm for this type of set has now almost died down, it is possible that with our varied electric supplies it may find favour in this country. Unfortunately, however, it would appear that size rather than quality of reproduction has been made the first consideration in design.

The Midget Universal Mains Set

The Latest American Innovation



The Pierce Airo—a complete receiver with built-in speaker.

By KEITH HENNEY, New York

At a time when the American radio market seemed utterly dead, a new craze has revived it, the craze of the universal D.C.-A.C. set; a receiver that cares not to what kind of power circuit it is connected, a receiver employing some of the newest circuits and valves, so that it is bound to interest British manufacturers and listeners.

Almost overnight it has developed into a full-fledged industry in which those builders of sets that had small plants, small overheads, and no warehouses filled with obsolete receivers could capitalise. Thus it is that comparatively unknown manufacturers have been able to do over a million dollars' worth of business, and, in fact, have seemingly exhausted the

ENORMOUS sales of a new type of midget receiver workable without alteration from A.C. or D.C. mains have helped to revive the American radio industry in the midst of national depression. In view of this "midget" craze it is pertinent to ask whether such a set would find favour over here. At all events details of the new valve technique afford interesting reading.

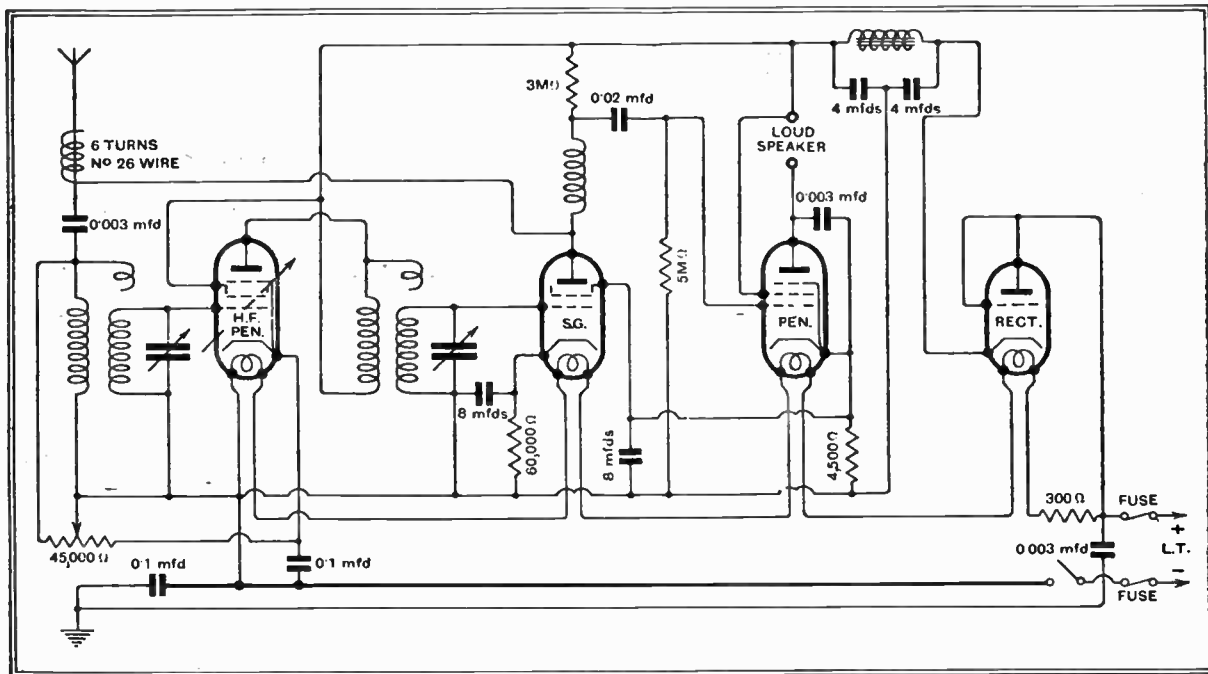
States live in D.C. districts; certainly, it is not the fidelity of response of the newest batch of midgets, for there is so little bass that it might as well be absent completely. It must be that people have wanted very small, easily portable, and fairly good-looking sets. The public was apparently tired of sets made to look like a mantel-clock and actually reminding them of a tombstone. It wanted wireless that looked

built using the same principles. In America the circuits and valves are used to make cheap sets, but the principles may come into general practice. Another season may tell this story.

The Kadette introduced by International is made in a bakelite case in several colours. The listener can take his choice. At the start of the craze he paid 25 dollars for the set; the dealer made 10 dollars on each one sold; if he cut this price he lost his franchise. This was unusual in the American market, where dealers have been educated by their manufacturers to cut prices. Furthermore, the manufacturer in this case maintained his price; again, an unusual procedure. Usually, the manufacturer no sooner gets rid of a batch of sets to his dealers than he cuts the price from under the dealer and announces a new model. Therefore, the action of International pleased the dealer, and the public; and, because the little set had great novelty value, it sold.

It is said that about one million dollars' worth of the sets have been sold; one manufacturer in New York City, hitherto almost unknown, has sold nearly 100,000 of the sets. Now there are many of them on the market, the price is being cut widely, and the fad is nearly over. But its influence will last some time, especially as its circuits are of considerable importance.

How does the universal set work? In the first place, new valves made the set possible. It utilised valves designed originally for car receivers. The valves are all of the heater type, using 6.3 volts and consuming 0.3



The Crosley Totem set with screened H.F. pentode; an indirectly heated triode acts as mains rectifier.

market before the big companies could get under way.

Just what it is about these tiny cigar-box sets, or vest-pocket sets, as they are often called, sets which will operate from either D.C. or A.C., that so impresses the public, one cannot say. Certainly it is not the D.C.-A.C. feature, for but 5 per cent. of the population of the United

like wireless, and in the universal set it got it. Soon the market was surfeited with models from half a dozen companies.

In the English market, with the problem of many kinds of power, the circuits employed in these American midgets ought to be of interest. There is no reason why a really high-class receiver of high sensitivity, selectivity, and fidelity cannot be

ampere. The universal sets use four of these valves, all the filaments being operated in series. The first valve is almost invariably a 39 (equivalent to the British H.F. variable-mu pentode, described elsewhere in this issue). The detector, which immediately follows this single-stage amplifier, is a 36, which is a screen-grid valve. This drives a pentode which works into a

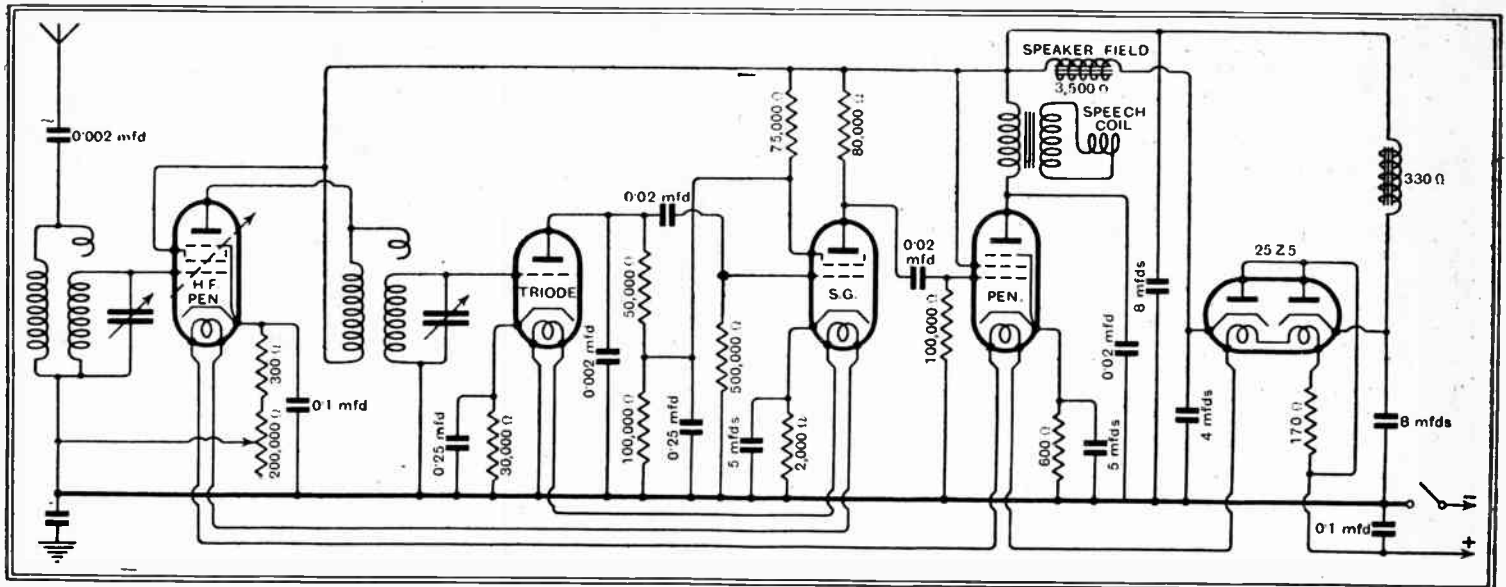
The Midget Universal Mains Set

magnetic type of loud speaker. Finally, there is a rectifier, usually a 37, also belonging to the automobile series of valves, a triode with grid and plate connected together.

The rectifier (and this is of interest to

Some manufacturers have adapted this central design to work on other voltages; either 32 volts for farms with their own lighting plants, or on 220-volt circuits. When the set operates from 110 volts the four 6.3 volt valves in series only account for 4 x 6.3 or 25.2 volts, and so there must

to secure appreciable amplification and power. In the average home 110 volts is available, and with the successful efforts toward making valves more efficient there is little need of higher voltages. The power expected of the little sets is not much, about one watt into the speaker,



Universal Ica-Mascot, in which the new 25.Z.5 rectifier is used. Note the order of wiring the heaters.

the English manufacturer) stays in the circuit, whether the receiver is operated on D.C. or on A.C. On A.C. it acts, of course, as a half-wave rectifier, furnishing energy to a filter system which smooths out the bumps and passes along to the other valves their plate power. But on D.C. the

be some additional series resistance so that the string of valves can be put across the 110-volt line. This resistance is of the order of 300 ohms, and must dissipate about 27 watts. If the set is to operate from 220 volts, more voltage must be wasted in this series resistor, but that is not a

and so the 110-120-volt lines supply plenty of pep.

To increase the sensitivity and selectivity of the receiver, regeneration is employed. This is accomplished either by inductive or capacitive feed back from detector to the H.F. stage, or the coils are so placed that the natural coupling is assisted somewhat by capacitive effects. At any rate, the man who installs the set, or sells it, adjusts it so that the thing does

CHARACTERISTICS OF VALVES USED IN UNIVERSAL A.C.-D.C. SETS.

Type.	Purpose.	Filament Volts.	Filament Amps.	Anode Volts.	Anode Current.	Bias.	Screen Grid Volts.	A.C. Resistance.	Amp. factor.	Mutual Conduct.	Power Output (mW.).	Optimum Load.
36	H.F. Amp.	0.3	0.3	180	3.1	3.0	90	350,000	370	1.05	—	—
37	General Purpose	0.3	0.3	180	4.7	13.5	—	10,000	9	0.9	—	—
38	Power Amp. ...	0.3	0.3	135	9.0	13.5	135	102,000	100	0.975	52.5	13,500
39	Vari-mu	0.3	0.3	180	4.5	3.0	90	750,000	750	1.0	—	—
25.Z.5	Voltage Doubler	25	0.3	A.C. volts per plate R.M.S. = 125; D.C. output current = 100 mA.								

rectifier merely acts as a resistance in series with the plate circuits of the other tubes. If the set is plugged into the D.C. line properly, the plate of this rectifier tube will be positive, and, of course, current will flow through it. But if the set is plugged in the wrong way round, nothing at all happens. The set is therefore really universal, operating on either D.C. or A.C. without any changes whatever. Universal sets have, of course, been on the market in England for some time, but in this case use has been made of a high-voltage rectifier.

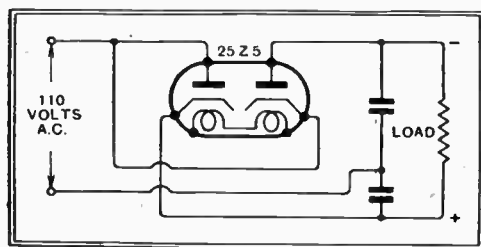
difficult problem. This is the most usual circuit.

In some cases there is a gaseous rectifier resembling the older Raytheon tube, except that this tube is usually a half-wave rectifier. In other cases a special plug is used on D.C., which disconnects the rectifier system. In still another case a relay operates when the set is plugged into D.C., and this relay opens the rectifier circuit. Such complications are rare, however, and there seems little likelihood that many receivers will be built using them. After all, the simplest circuits seem to work properly, and so give the greatest value for the least effort and money.



Another Midget Universal mains receiver—the Crosley four-valve Super.

not oscillate, but is pretty near it most of the time, and once plugged into the light socket it is ready for action.



The 25.Z.5 rectifier wired in a voltage doubling circuit.

Of course, the bass response in these little sets is very poor. Therefore, there is little need for expensive filtering. A single choke with 4-mfd. electrolytic condensers at either end furnishes the required smoothing.

Nearly always the set operates without a transformer. Of course, on D.C. the transformer could do no good; and on A.C. the voltages available are sufficient

A New Rectifier

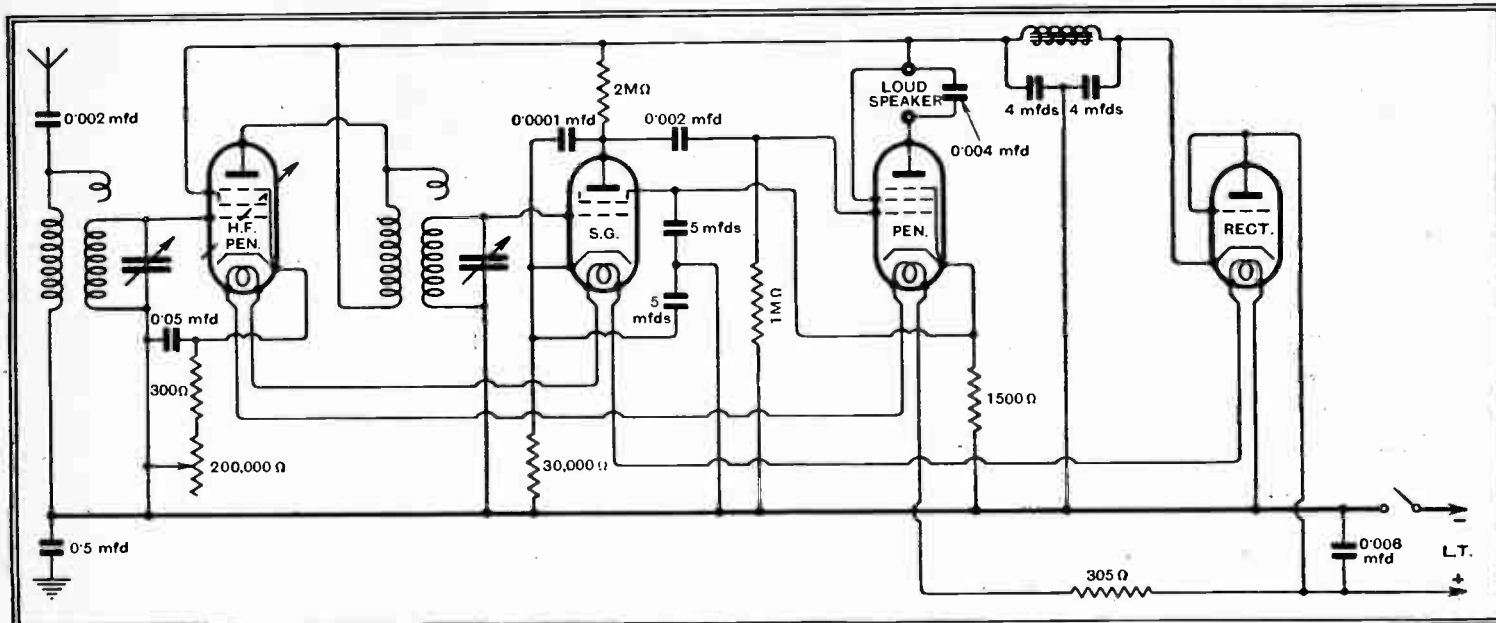
The large loss of voltage and wastage of power in the 300-ohm resistor to reduce the voltage across the valves to the proper value has been overcome to some extent by the development of a new rectifier, the 25.Z.5 (this is one of the first valves to use the new American numbering system,

The Midget Universal Mains Set

The 25 indicates that the filament voltage is 25, the Z indicates that it is a rectifier, and the 5 indicates that five elements

greater than with a more conventional circuit, but the voltages they must stand are only the line voltage. Cheaper condensers can therefore be used, and with the

radios were (about 100,000 were sold up to February), a new development threatens their sale. This is a five-valve superheterodyne with much greater pick-up and selec-



The Emerson Universal Compact making use of a general purpose valve as mains rectifier.

are brought out to pins in the base). This valve has two cathodes and two anodes, and all leads are brought out to the base.

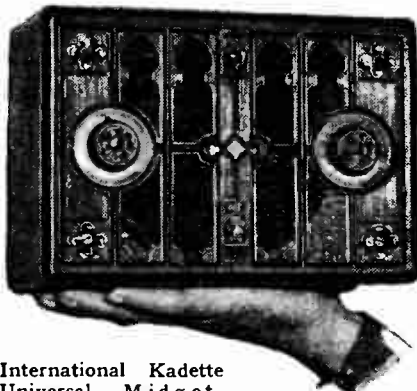
Thus, the valve can be connected as a single-wave rectifier by merely connecting the plates and cathodes together, or it may be used in the conventional full-wave rectifier circuit, or it may be connected in the voltage-doubling circuit used by so many amateurs. In the voltage-doubling circuit 220 volts may be secured from a 110-volt circuit without the use of a transformer, so that another saving has been made, both in cost and in space.

This valve with its 25-volt filament takes care of a considerable part of the voltage used up in the 300-ohm resistor, so that now a 170-ohm resistor is used with less heat to be dissipated.

The capacities necessary to be used with the voltage-doubling circuit are somewhat

proper capacity plenty of current at twice the line voltage is available.

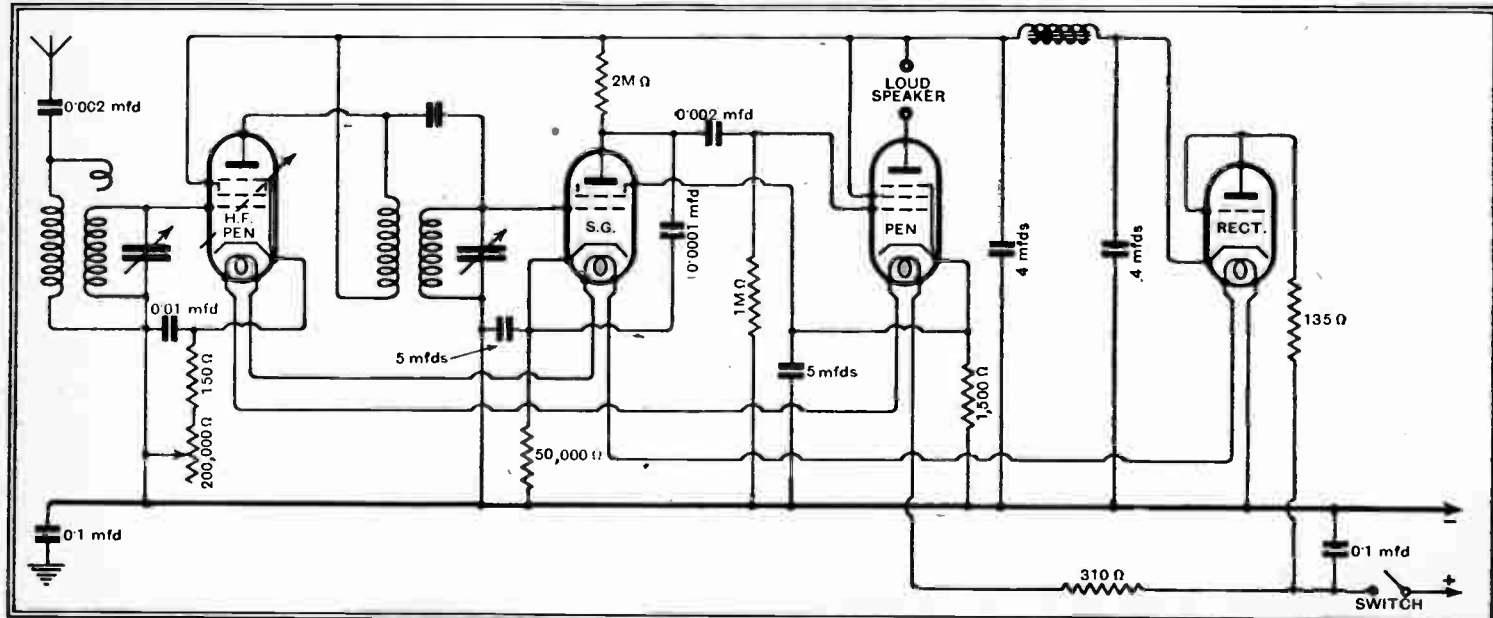
Successful as the 4-valve cigar-box



International Kadette Universal Midget, claimed to be the smallest four-valve receiver in the world. It weighs only 6 pounds and covers little more than the palm of the hand.

tivity than the four-valve tuned radio-frequency set. This, in turn, will be supplanted by a less expensive four-valve super, then still cheaper supers will be available. It is even rumoured that a two-valve super will come along about the middle of 1933. These small sets are made possible by developments in the valve industry. Valve engineers have been successful in combining the functions of two valves into one bottle, with consequent saving of space and set cost.

And so it goes on. The aim is always to reduce the selling price of the set. Competition, and lowered purchasing power of the public in America, forces the industry to lower levels, and at the same time to put more and more efficiency into the receivers. In the case of the universal set, many of the lessons learned will undoubtedly prove of value in future.



International Kadette Universal Midget set with screen-grid detector.

The Screened H.F. Pentode

Its Advantage as an H.F. Amplifier and Detector

By T. E. GOLDUP *



The new Mullard SP1 and VP1 valves—the screened and variable-mu pentodes respectively.

IT has long been known that the ordinary screen-grid valve is handicapped by a secondary electron effect which introduces a kink in the characteristic and thus limits its signal-handling capacity. In the screened H.F. pentode and the variable-mu pentode about to become available in this country, this disability is avoided and the substitution of the new valves for their S.G. tetrode counterparts, in both straight sets and superhets., will result in considerable improvement in stage gain and stability.

An efficient, though quite simple, circuit arrangement has been developed which takes advantage of the pentode characteristic, a curve of which is shown in Fig. 1. It will be seen that with low anode voltages (such as 30 volts) on the anode and with normal auxiliary grid and control grid voltages, there is a sharp "knee" in the characteristic curve, and if the valve is operated just above this point, excellent rectification is obtainable with complete absence of re-radiation.

This method of rectification is not possible with screen-grid valves because the negative resistance characteristic gives rise to dynatron oscillation.

Single-valve Frequency Changer

Fig. 2 shows a suitable circuit arrangement for operating the screened pentode as a first detector under the above conditions.

A further important use of the screened pentode is undoubtedly its application as a combined oscillator-detector. Although for this purpose the auxiliary grid coup-

THE development of the high-frequency or screened pentode represents a further improvement in high-frequency amplification, and its advantages are not confined to this stage of a receiver.

The screened pentode is similar in external appearance and connections to the screen-grid valve, and may be regarded as a development of the screen-grid tetrode rather than the normal L.F. pentode. By the introduction of an additional grid between the anode and screening grid of the screen-grid valve, the special characteristics of the H.F. pentode are obtained. This grid, as in the L.F. pentode, has the effect of removing the negative resistance kink from the characteristic of the tetrode and also gives an extremely high magnification factor together with an adequate slope.

Advantages Over S.G. Valve

The impedance of the screened pentode is generally considerably higher than that of the tetrode, and consequently the sensitivity of the H.F. stage will depend very largely on the dynamic impedance of the tuned circuits. This high impedance of

efficient coils are used, the gain will be very much greater than that obtainable with a tetrode. Even with normal coupling coils, the H.F. pentode will give improved results over a screen-grid valve.

In spite of its very high magnification factor, the pentode has a grid base equal to that of a normal tetrode, although, in general, where signal voltages of varying amplitude are to be handled, the multi-mu pentode would be used, in the same way as the multi-mu screened grid.

Following the usual practice in high-frequency amplifiers, the multi-mu pentode is preferable to the normal type for both high- and intermediate-frequency stages, as it has the additional advantage of sensitivity control by negative bias variation, and has, at minimum bias, a stage gain equal to that of the normal screened pentode.

It is well known that, in the case of the screen-grid tetrode, considerations of secondary emission effects limit the screen voltage to a narrow region. No such restriction exists in the pentode valve, where secondary emission effects have been eliminated, and by suitable variations in auxiliary grid voltage, wide adjustment of the multi-mu characteristics is possible.

The resistance network required to maintain the auxiliary grid voltage at a constant potential, irrespective of bias variation, is similar to that for multi-mu tetrodes.

One of the main spheres of usefulness of the screened pentode lies in its application as detector, and particularly as that of first detector in superheterodyne receivers. It can be used quite satisfactorily with any of the circuits already developed for screen-grid valves, and will give improved results with less critical voltage adjustment.

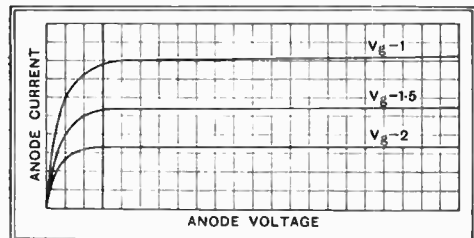


Fig. 1.—Typical characteristic curve of an H.F. pentode. It will be seen that the negative resistance kink, common to the screen-grid tetrode, has disappeared.

the pentode ensures practically unaltered radio frequency characteristics of the associated circuits, and, in addition, if really

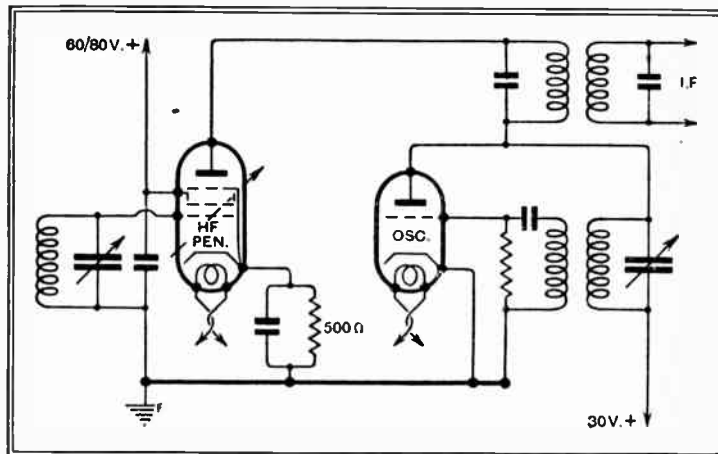


Fig. 2.—Skeleton circuit of a two-valve frequency changer in which the first detector is an H.F. screened pentode.

ling method can be employed, cathode coupling using a suitably designed circuit is more satisfactory. Using the former method, with the comparatively small coupling coil permitted by the high amplification factor of the valve, re-radiation is less than when using the most suitable L.F. pentode, previously considered to be most satisfactory in this respect.

The prevalent opinion in this country, that cathode coupling causes excessive re-radiation, would seem to indicate that it was not realised how small the coupling coil could be made while still maintaining sufficient coupling for oscillation. A small coil (of about 5 microhenrys for medium waves) gives extremely satisfactory results,

* The Technical Department, The Mullard Wireless Service Co., Ltd.

The Screened H.F. Pentode.

and the re-radiation voltages are considerably lower than those given by any other coupling method. It should be noted that the use of too large a coil may give bad re-radiation.

Fig. 3 shows a circuit arrangement suitable for a cathode-coupled oscillator-detector using a screened pentode.

Used for negative-bend detection, the pentode has the important advantage that larger anode voltage swings are possible than with the screen-grid tetrode. As there are no secondary emission effects the maximum anode voltage swing is practically a constant with normal external anode resistances. Due to

the very high impedance, sensitivity is practically proportional to the anode resistance chosen, but the usual limitations im-

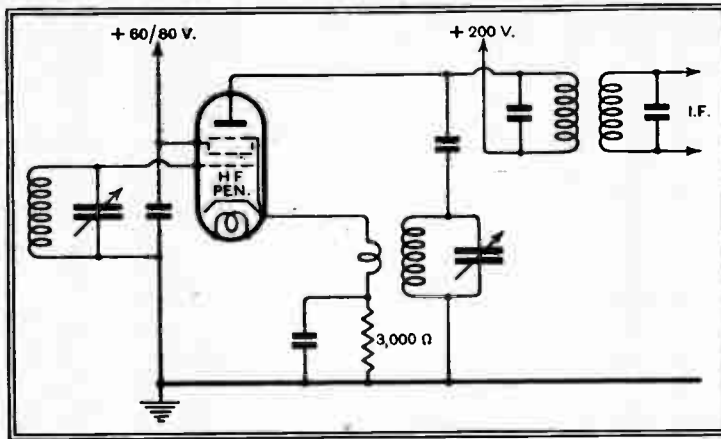


Fig. 3.—The screened pentode as a single-valve frequency changer with cathode coupling.

posed by the necessity of retaining the higher audio frequencies must be carefully taken into account.

DISTANT RECEPTION NOTES

IN view of the heterodyne which recently accompanied the Huizen (Hilversum programmes) transmissions one wonders whether alterations have been made in either the Kaunas or the Lahti transmitters. Though the former is rated at 7 kilowatts and the latter at 40, neither is as a rule at all strongly received in this country, nor have there been noticeable heterodynes with Huizen. The interference appeared to be coming from a station on a higher wavelength, and this points to Kaunas as the source of the trouble.

A kind correspondent from Warsaw sends me official particulars of the Polish stations. A week or two ago I referred to the amazing strength with which Katowice was received in this country, and suggested that the output power might be in excess of the 16 kilowatts shown in the lists. My correspondent, who is an electrical engineer, tells me that the unmodulated power of Katowice is 12 kilowatts, or 16 kilowatts when working with average modulation depth. The station is very well situated for providing a large service area, since it stands on high ground, and there are no large conducting bodies in the neighbourhood which might cause absorption.

Improvements are to be carried out at Katowice within the next few weeks with a view to eliminating harmonics, but the power rating will not be altered. I hear that Warsaw No. 2 on 214.3 metres is temporarily out of action. The actual modulated power rating of Lodz, Poznan, and Cracow is 2 kilowatts, whilst Lwow and Wilno (now working on 563 metres) work with 16 kilowatts unmodulated, or 22 kilowatts modulated.

A new station is to be built at Trondheim (495.8 metres) with a power rating of 20 kilowatts, and the power of the Bergen transmitter (364.1 metres) will be increased at the same time also to 20 kilowatts. One rather wonders how these new big stations will be fitted in, for at present Trondheim is separated by only 6 kilocycles from Florence, while Bergen is 3 kilocycles from

Fredriksstad, and but one from Algiers on the other side.

Wonderful reception is obtainable at present from Rome, which with even a small set comes through with splendid quality and volume. Other good Italians are Florence and Milan, but Turin and Trieste have suffered badly from heterodyne troubles.

Conditions all round are, in fact, much better than they were a week or two ago, the improvement being particularly noticeable from about 430 metres upwards. Budapest, Munich, Brussels No. 1, Prague, Langenberg, and Lyons Doua hardly ever fail to provide good reproduction. It is a thousand pities that Berömunster is still so often jammed.

In Next Week's Issue:—

The A.V.C. Unit

Automatic Volume Control for Practically any "H.F." Receiver.

FADING is now the only serious obstacle to consistent and enjoyable long-distance reception; in order to maintain sensibly constant loud speaker volume, frequent adjustment of the controls is often necessary, as compensation for minute-to-minute changes in the strength of incoming signals.

With automatic volume control the receiver may be left in its most sensitive condition with the assurance that, during periods of "peak" signal, the usual distressing overloading will not occur. To cope with fading signals, the necessary sensitivity will be automatically restored as and when it becomes necessary.

The addition of a conventional A.V.C. system to many types of set necessitates a number of alterations, and involves the risk of reducing maximum sensitivity, restricting wavelength coverage, or even of

Madrid is more worth attention than it was, and Hamburg, which had a long spell of weakness at the beginning of the year, is now an excellent transmission.

Heterodynes, due mainly to wavelength wobble or wandering, are unfortunately rather numerous on most nights. In addition to those mentioned, stations that have been affected in this way are Bordeaux, Leipzig, Katowice, and the Poste Parisien.

On the long waves Kalundborg is still not in very good form, though all of the other well-known stations can be well received in daylight or after dark.

D. EXER.

THE BRUSSELS NOTEBOOK

Wavelength Vagaries during February

AN unknown Russian telephony station operating between Radio Paris and Zeesen supplies the usual element of mystery in the records of the Brussels control station of the International Broadcasting Union for February.

Vienna is continuing its long wave tests, and Moscow Experimental was testing for two days at the beginning of the month on 1,481 metres, possibly in connection with the rumoured 500-kW. station. Two unknown stations have been testing in the neighbourhood of 678.7 metres, the wavelength officially allotted to the new Swiss station at Monte Ceneri, which will shortly begin transmissions on 15 kW.

Conditions on the medium waveband have not improved. Tartu is still clinging to 512 kc. which is perilously close to the shipping wavelength. Palermo on 558 kc. continues to heterodyne Munich in spite of protests. Radio Vitus moved away from Cardiff's wavelength and seems to have decided to remain on the Zagreb wavelength. Bremen appears to be the black sheep among the German stations, for while the Hungarian relay and Valencia adhere to the wavelength which they are supposed to share with Bremen, the German station continues to wobble.

According to the Brussels records, Aberdeen and Newcastle were not as steady as they might have been.

introducing instability. The A.V.C. Unit, on the other hand, is a self-contained unit, connected externally by four leads, and its addition cannot have any untoward effects. It is applicable to "straight" H.F. sets or to superheterodynes, whether battery or mains-operated.

LIST OF PARTS.

After the particular make of component used in the original model, suitable alternative products are given in some instances.

- | | |
|---|---------------------|
| 1 Valve-holder, horizontal type | W.B. "Universal" |
| 1 Potentiometer, 50,000 ohms | Rotor-Ohm |
| (Bulgin, Lewcos, Claude Lyons, Radiophone, Watmel, Wearite) | |
| 1 Resistance, fixed, 0.25 megohm | Erie |
| (Dubilier, Graham Parish, Loewe, Claude Lyons) | |
| 1 Fixed condenser, 0.5 mfd. | Dubilier |
| (Formo, Hellesens, Peak, Radiophone, T.C.C., Telsen) | |
| 1 Dry cell, 1.5 volt | Ever Ready Size "O" |
| (Lissen, Siemens) | |
| 1 Connector, 5-way | Wilburn |
| 5 Wander plugs, H.T.-, H.T.+ , G.B.+ , G.B.- , G.B.-1, | Clix Type "B" |
| (Belling-Lee, Bulgin, Eelix, Goltone, Lissen) | |
| 2 H.T. batteries (see text) | |
| Wire, sleeving, flexible wire, screws, wood, etc. | |

NEWS of the WEEK

Sporting Offer

MR. S. G. MORGAN (G6SM), 3, High Street, Croydon, Surrey, would be glad to hear from the person who has been using his call sign for tests on 40 metres so that he can forward a batch of reports.

Radio at Paris Fair

RADIO will feature at two forthcoming Paris exhibitions, namely, the Foire de Paris at the Porte de Versailles in May next, and the International Cinematograph, Gramophone and Radio Salon, opening on June 15th next, also at the Porte de Versailles.

Theatre Broadcast Record

GERMAN programme builders probably rely more on theatre and opera broadcasts than those in any other country. During 1932 there were no fewer than 140 relays from theatres and opera houses. The greatest number of relays have been given from the National Theatre in Munich.

Long Waves in Demand

SEVEN countries which are at present restricted to the medium band applied for long waves at the recent Technical Conference of the International Broadcasting Union at Brussels, and will probably uphold their demands at the Lucerne meeting.

There are only eleven long-wave channels available for broadcasting, and these are all in use.

A Melancholy Exam.

"**I** CAN only describe the results of this examination as appalling," writes the examiner in his report on the June, 1932, Associateship Examination of the Institute of Wireless Technology.



MODERN ORATORY. When Dr. Goebbels, one of the prominent figures in German politics, addressed a meeting in the Berlin Sports Palace a few days ago, nine microphones awaited him on the platform. They had been placed there by the broadcasting authorities, public address engineers and various film companies.

"The candidates almost to a man are illiterate." "They cannot set out an answer to a question involving a numerical result in any intelligible form." "There is no knowledge shown on fundamental principles," are other phrases which occur in the survey.

None of the competitors, it seems, showed the slightest conception of the law of the sine wave. "These," declares the examiner, "are wireless men!"

Current Events in Brief Review

Programme Exchanges

GERMANY offered the rest of Europe and America 288 broadcast programmes during 1932, and relayed 250 programmes from foreign countries.

The Early Bird

MORNING broadcasts between 7 and 9 o'clock are now a feature at Poste Parisien. Reveillé is sounded at 7 a.m. with lively gramophone music and good-humoured banter by the announcer, followed by a rapid review of the morning newspapers.

The station welcomes "appreciations and suggestions," which should be sent to 116, bis Avenue des Champs-Élysées.

Death Ray Again

EVIDENTLY we were mistaken in our belief that the "death ray" had been decently buried, for a lethal beam answering to this description is being blamed for interference to listeners' sets in the Beckenham area.

It seems that interference is noticed on the long waveband from about 9 p.m. onwards. Post office experts have endeavoured to trace the origin of the noises without success.

Big Ben Impersonated

AN artificial Big Ben has been cleverly contrived for broadcasting regular chimes from loud speakers on the Marconiphone building in Tottenham Court Road, London, between the hours of approximately 8 a.m. and 8 p.m. Unable to secure permission to relay the actual chimes from Westminster, the engineers

A Chief Resigns

THE sudden resignation is reported of Herr Schäffer, Chief Engineer of the German Broadcasting System. It is stated (says a correspondent) that the contract between the chief engineer and the Reichs Rundfunk Gesellschaft was dissolved in view of the recent political developments.

Herr Schäffer, who was a Telefunken engineer and designed the early broadcast transmitters, has been a familiar figure at the conferences of the International Broadcasting Union. He joined the R.R.G. in 1929. No successor has yet been appointed.

Noginsk Calling

ONE more Russian station, which, according to Press reports, will "wipe out" British broadcasting, is to start operations within the next few days with a power of 500 kilowatts. The station is at Noginsk, and its wavelength will be 351 metres, within 5 metres of London Regional.

Paris Show: Tenth Anniversary

THE Paris Radio Salon will celebrate its tenth anniversary this year, when it will be held at the Grand Palais, Avenue des Champs Élysées, from September 6th to 17th. Though "international" by title, it will forbid the entry of the products of those countries which do not accord reciprocal treatment to French radio manufacturers.

Have You Tried It?

IN Penang, where the local wireless society has recently held a radio exhibition, the Daventry programme is received about 1/23rd of a second after being transmitted, according to the radio notes in the Exhibition Guide.

The writer advises listeners not to meddle with their receivers when a programme is coming through and adds: "If your hands are itching to twiddle the dials, take up knitting."

Transatlantic Feat on 150 m.

ONE of the most remarkable of amateur contacts of recent years has just been made by Mr. A. Forsyth, who operates station G6FO in Newport. It took place on the 2 m.c. band, where communication was effected with WIDBM of Cape Cod, U.S.A. This contact is remarkable for the fact that G6FO had only 9.7 watts input, against the 220 watts used by the American.

Mr. Forsyth attributes his success to the fact that, during February, conditions favoured east-to-west working.



MAJOR GLADSTONE MURRAY, the esteemed Chief of Information at Broadcasting House, who sailed last week for Canada to reorganise the Dominion broadcasting system on B.B.C. lines.

Luxembourg Testing

THE new 200-kW. station at Luxembourg is now testing with full power daily between 7 and 11 p.m. The wavelength is in the neighbourhood of 1,180 metres.

On Charge

FINED £5 5s. at Sutton Coldfield last week for fraudulently consuming electricity, a landscape gardener was said to have cut a hole in the plaster of the dividing wall between his attic and the next-door house and to have fixed flex to his neighbour's electrical cable. He then, it was stated, advertised that he could charge wireless accumulators.

By Special Request

FOLLOWING a reference in *The Wireless World* Club Reports column to a "steam pipe" loud speaker constructed by a member of the Croydon Radio Society, the secretary has been overwhelmed with enquiries from all over the country. To meet the demand for further information, a special meeting is being held on Friday next, March 31st, at 8 p.m. at "The Horse and Groom," Cherry Orchard Road, East Croydon.

President as Radio Dictator

THE American broadcasting stations have unanimously placed all their facilities at the command of President Roosevelt in order that he may be able to use the wires of all networks at any time during the period of national emergency. The broadcasting organisations have thus anticipated the law which enables the President of the United States to commandeer all wavelengths for national purposes.

Meanwhile the order has been relaxed requiring all broadcasting stations to make full use of the time allotted them.

On account of the economic situation certain transmitters have found it difficult to maintain programmes, certain regular clients being unable to pay for sponsored programmes.

Across Siberia

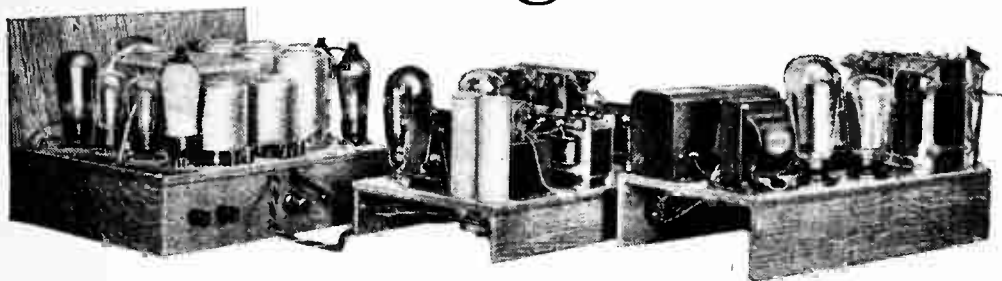
SUCCESSFUL tests on wavelengths of between 25 and 45 metres have been carried out between Moscow and Shanghai by the Radio Department of the Commissariat for Communications of the Soviet Government,

constructed an electric clock, frequency controlled from Greenwich, with a chime exactly like that of Big Ben himself.

Adding A.V.C. to the MO

Part II. Constructional

By W. T. COCKING



DETAILS of the alterations to the receiver chassis and the 2.5 watts power chassis have already been given, and it remains to treat the 5 watts chassis. This was originally described for the Modern Straight Five,¹ it will be remembered, but many constructors of the Monodial are using it instead of the power unit described specifically for that receiver. In this case, the conversion is considerably simpler, for there is a higher voltage available, and the speaker field can be retained in the positive H.T. lead, where it is fully effective in smoothing. No additional smoothing is thus required, and it is merely necessary to add the additional valveholder for the extra inter-unit cable, the small mains transformer, and to rearrange a few of the connections. The modified circuit diagram of this power chassis is shown in Fig. 3, and the other details will be clear from the drawings.

As in the original designs, it is assumed that the field winding of a moving-coil loud speaker will be energised from the power chassis. Where it is not desired to do this, however, a 2,500 ohms 10 watts resistance must be connected in place of the field in the case of the 2.5 watts chassis, and a 60H. 60ma. 2,500 ohms choke (suitable types are listed by Scott Sessions and Sound Sales), in the case of the 5 watts chassis. With this latter unit, it should be noted, sufficient power is available for energising dual type speakers. These should be each of 2,500 ohms field resistance, and one field should be connected to the usual points, while the other is used to replace R31.

Re-ganging

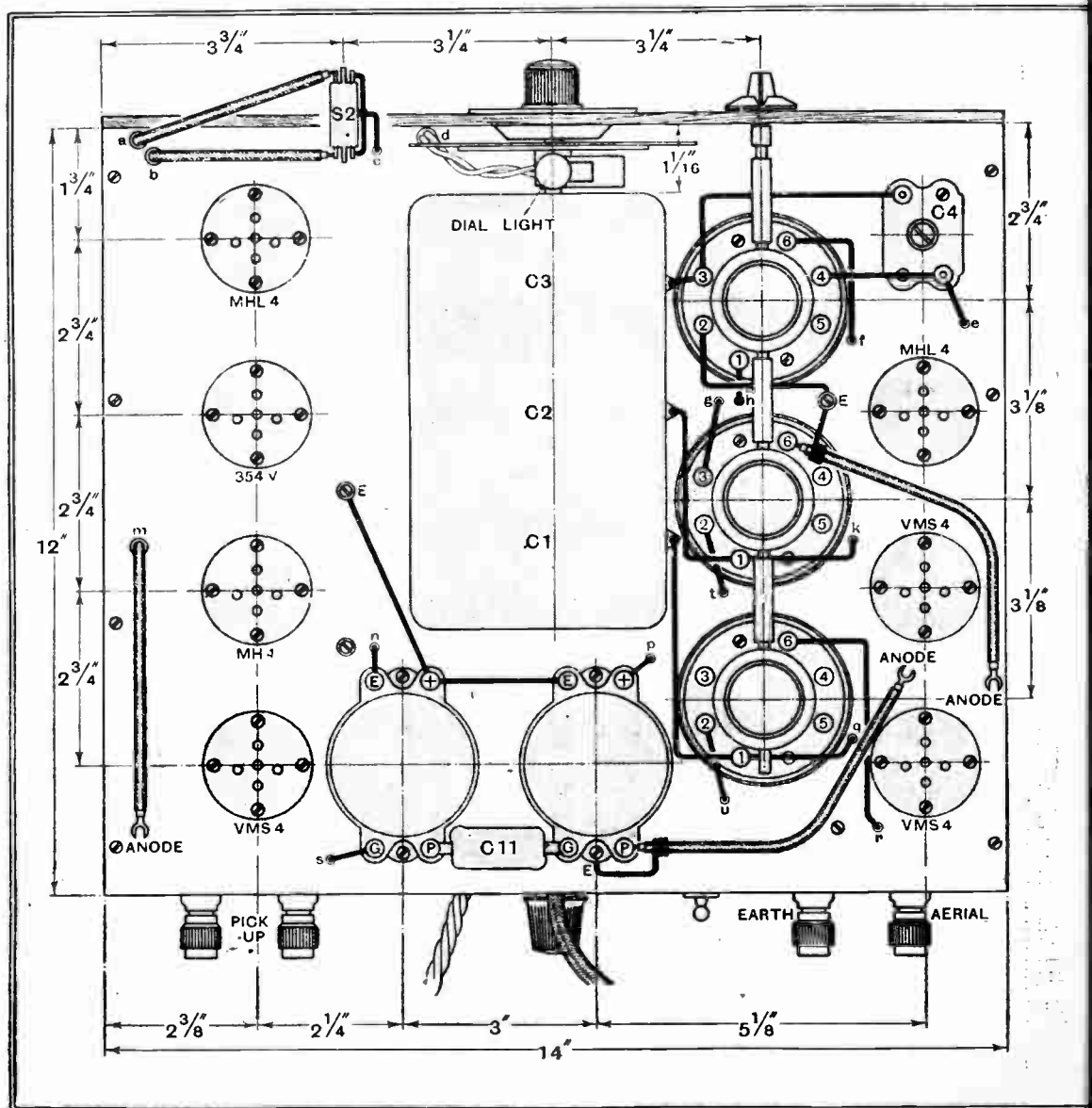
The operation of the set is the same whichever power chassis be employed, and it must always be remembered that there is a difference of potential of 125 volts between the receiver chassis and the power chassis. These must not be allowed to touch one another, therefore.

After the alterations have been made, it is highly probable that the receiver will require re-ganging; this must be done in the manner described in the original articles, but it will now be essential to include a millimeter as an indicator of signal strength. It is impossible to gang an

Concluded from page 210 of last week's issue.

IN the first part of this article, the author explained the circuit modifications necessary for adding A.V.C. to the Monodial. In this instalment constructional details are given together with some notes on the performance to be expected. The importance of A.V.C. in counter-acting fading cannot be too highly stressed.

A.V.C. set without a meter, for the ear can detect no change of volume on operating the trimmers, since this is taken up by the control. The meter used should have a full scale reading of about 10 mA., and be connected in the cathode lead of the I.F. valve at the point "X" of Fig. 1 (see last week's issue) to act as a tuning indicator. In the absence of a signal, it



Practical wiring above the baseboard of the receiver chassis.

¹ "The Modern Straight Five," *The Wireless World*, June 22nd and 29th, 1932.

NODIAL

Details and Operating Notes

will read nearly full scale—the normal anode current of this stage. When a signal is tuned in, however, it will drop back, and the stronger the signal the greater will be the drop; all trimming adjustments, therefore, must be carried out for a minimum reading on the meter, for this corresponds to maximum signal strength.

In its operation, the control may be relied upon to remove completely the effects of moderate distortionless fading, and, provided that the average modulation depth of the various transmitters is the same, it will hold the volume level approximately constant, regardless of whether the station is distant or a nearby local. The control will, of course, do nothing to remedy any distortion caused by fading, although it will still keep the volume at its normal level. When fading is very severe, it is accompanied by a rise in background noise, and the curious effect is obtained, not of a fading signal, but of a

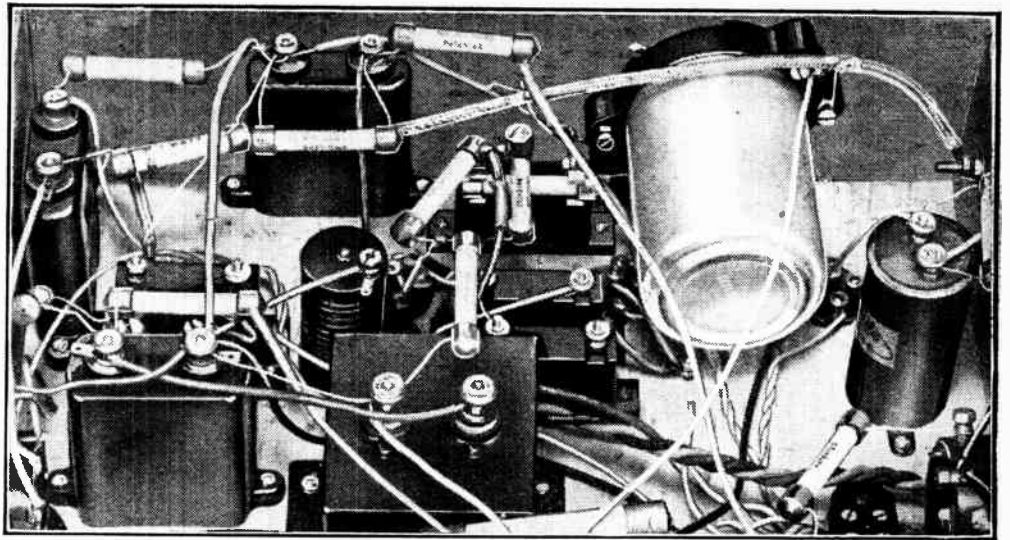
fading background. The control only functions within certain limits, of course, for if the fading be so bad that the field strength drops nearly to zero, the volume will also drop after the set has reached its maximum sensitivity. In general, however, the control may be said to remove 80 per cent. of the evil effects of fading.

It should be noted that fading may be followed on the needle of a meter used as a tuning indicator, for the weaker the signal strength the greater the meter reading. In fact, it will often be found that the needle fluctuates greatly without there being any audible indication of fading, such as would be found in an uncontrolled receiver.

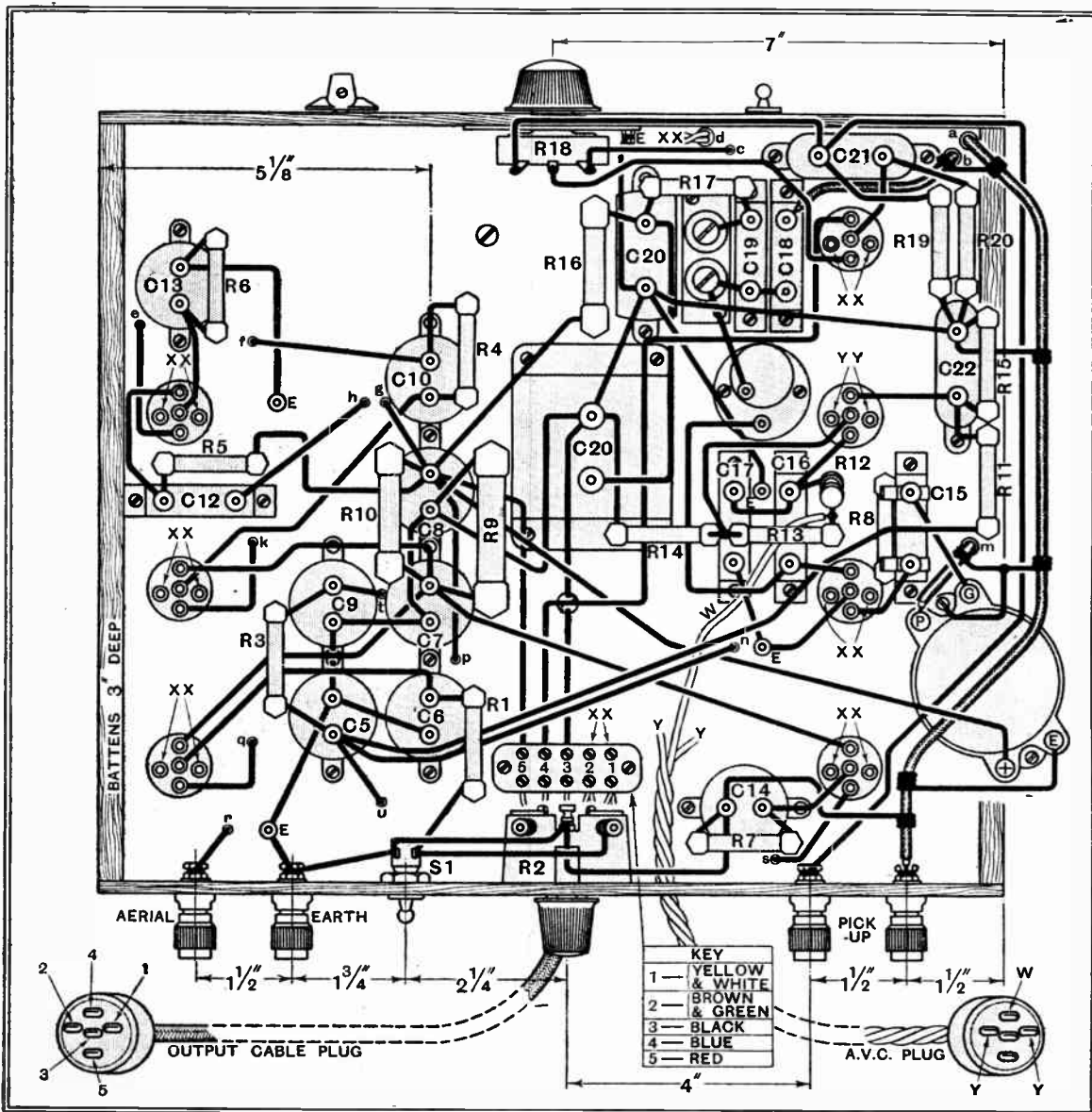
Avoiding Hum

A few words about valve types may be of interest. It is recommended that the V.M.S.4 be employed for the three variable- μ stages, and the 164v. or M.H.L.4 for the oscillator, although here it is often permissible to employ the 354v., M.H.4., or AC/HL as an alternative. The second detector can be a 354v., M.H.4., or AC/HL without affecting the results, but if the specified resistance values are to hold, it is important that the A.V.C. valve be a 354v. If the M.H.4 or AC/HL valves be used instead, it will probably be necessary to change the value of R13, determining the optimum value experimentally, since the current cut-off points of the valves are slightly different.

For the tone corrector, it is recommended that in most cases the M.H.L.4 be used. The exception is where the gramophone pick-up gives only a moderate output, and then the 354v., M.H.4., or AC/HL should be used without changing any circuit values. The amplification with these latter valves is nearly double, and as a result there is a greater

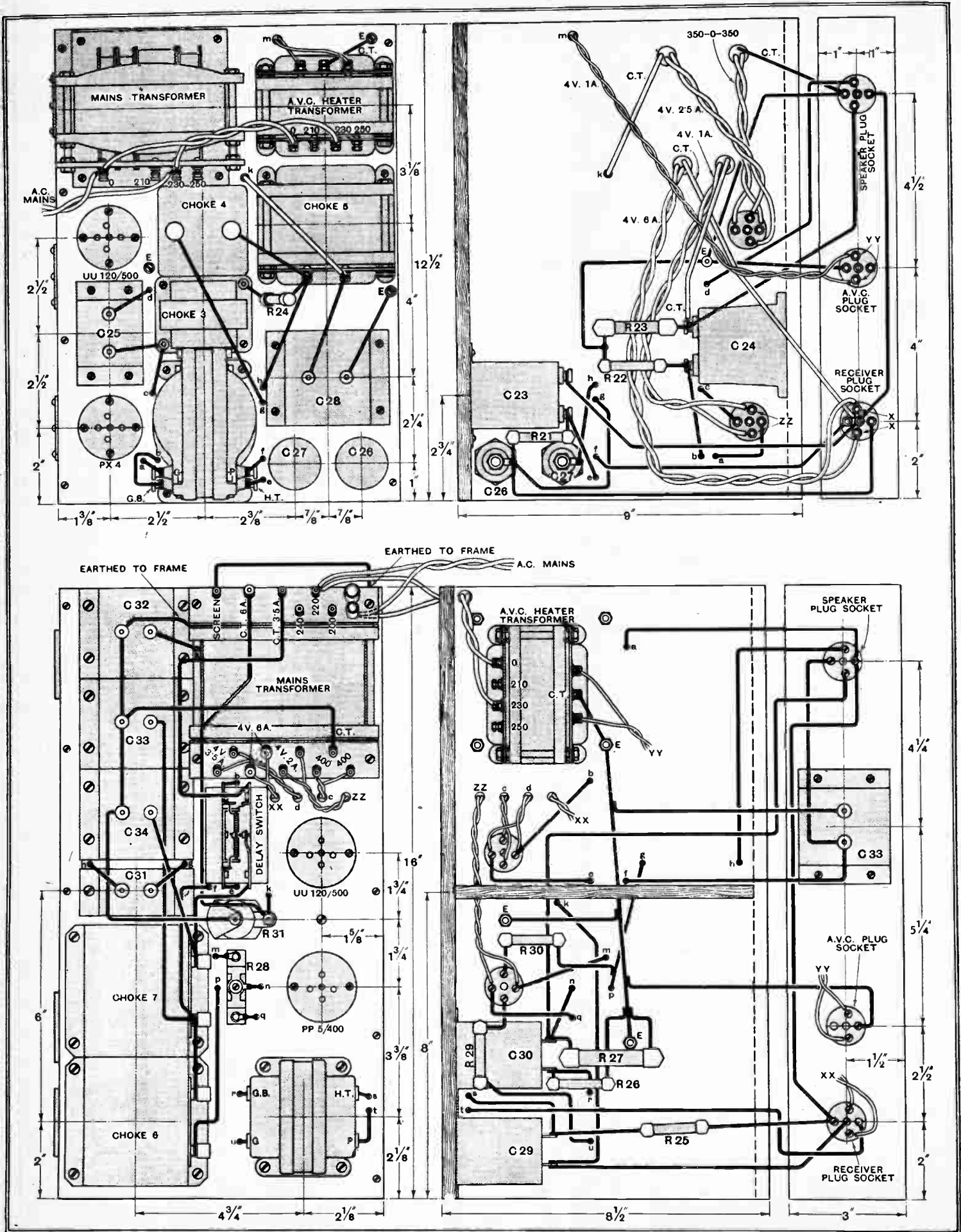


Underneath view of a portion of the receiver chassis showing the chief modifications.



The under-baseboard wiring of the receiver unit.

ALTERNATIVE MONODIAL POWER UNITS

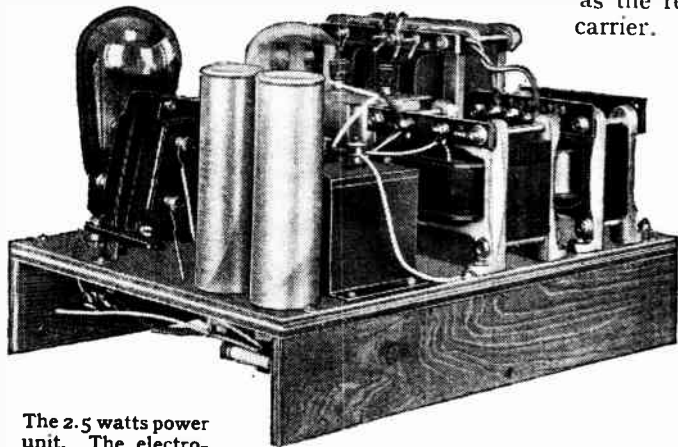


Practical wiring of the 2.5 watts (above) and the 5 watts (below) power chassis modified for A.V.C.

Adding A.V.C. to the Monodial

risk of hum, but no trouble from this was found in the experimental model. Little latitude is permissible in the power unit valves.

There is just one point in connection with A.V.C. which is worthy of men-

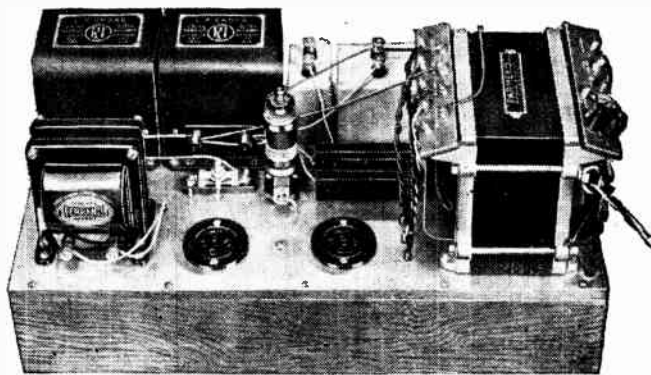


The 2.5 watts power unit. The electrolytic condensers can be seen in the foreground and the tilted transformer on the left.

tion. The level at which the second detector input is held depends upon the capacity of C17. If an incorrect value condenser be used at this point, therefore, or if the component be widely different from its rated value, the second detector input will be held at the wrong level. If it be found, therefore, that on all signals the second detector is overloaded, the probability is that C17 has too large a capacity. Conversely, if C17 be too small, the detector output will not be great enough for full volume. Any adjustment should be carried out on the local station, and the value selected should be such that on the strongest station the second detector is just not overloaded.

One result of fitting A.V.C. to the Monodial is to make the tuning appear flatter. It is not actually so, of course, for all the fundamental characteristics of sensitivity, selectivity and quality are unaltered. The effect is found in all A.V.C. sets, and is due to the rise in sensitivity as the receiver is mis-tuned from a carrier. It is, therefore, more difficult to tune the set accurately to resonance by ear, and it is usually necessary to tune, not for the loudest signals, but for the deepest quality of reproduction. There is no real difficulty in this, and the knack is soon learnt, but there is no doubt that a tuning indicator is a great help, and where the additional cost is not objected to, it is recommended that a meter be permanently wired in the I.F. cathode circuit for this purpose.

A specimen receiver, with its alternative amplifiers, is available for inspection at 116/117, Fleet Street, London, E.C.4.



The 5-watts power unit showing the thermal-delay switch.

Full-size blue prints of this receiver, with the 2.5 watt or the 5 watt amplifier, are available from the publishers at 2/-, post free. When ordering state which amplifier is required.

A Guide to Applied Voltages and Currents.

Valve.	Anode Screen	Grid	Anode Screen		
	Volts.	Volts.	Volts.	Current.	Current.
H.F.					
V.M.S.4 ..	210	74	1.6	7.4	0.6
1st Det.					
V.M.S.4 ..	210	74	8.5	2.6	0.8
Osc.					
M.H.L.4 ..	96	—	3.6	3.8	—
I.F.					
V.M.S.4 ..	210	74	1.6	7.4	0.6
2nd Det.					
M.H.4....	136	—	—	7	—
A.V.C.					
354v.	140	—	16	0	—
Tone Corr.					
M.H.L.4 ..	144	—	4.8	5.2	—

2.5 Watts Power Chassis.

Output					
P.X.4 ...	298	—	37	50.5	—

5 Watts Power Chassis.

Output					
P.P.5/400.	440	—	35	61	—

The above figures do not necessarily represent actual voltages, but measured values from the chassis with a 1,000 ohms per volt meter. They were taken with no signal input, so that the currents are maximum values. The mains voltage at the time of testing was 230 volts, and was connected to the 220/230 volts tapping on the transformer.

CLUB NEWS

Captain Eckersley on Free Speech

LIVELY remarks on broadcasting were made by Captain P. P. Eckersley, former Chief Engineer of the B.B.C., at a recent meeting of the Southend-on-Sea and District Radio Society. Captain Eckersley favoured free speech in broadcasting. He suggested that one set of our stations, say the Nationals, should remain as at present, while the Regionals adopted the American principle of free speech. Hon. Secretary: Mr. Fred Waller, 49, Ferry Road, Thorpe Bay, Essex.

Short Wave Reception in Public

MR. HALL, of Messrs. Philips Lamps, Ltd., recently surprised a public meeting of the Southall Radio Society with short-wave reception from such transmitters as Moscow, Drummondville (Canada), Rocky Point, and a station in Java. The lecturer explained the autodyne circuit used in Messrs. Philips' short-wave converter.

Hon. Secretary: Mr. H. C. Rayner, 114, North Road, Southall, Middlesex.

Loud Speaker Characteristics

THE Shotts (Lanarkshire) and District Radio Society is enjoying a successful season. Recent demonstrations by the General Electric Co., Ltd., and the British Thomson-Houston Company have aroused great interest. Mr. Cameron, of the G.E.C., demonstrated loud speaker characteristics on March 21st.

Hon. Secretary: Mr. E. M. Thomson, Cwm-bach, Shotts.

Glow Discharge Relays

A DEMONSTRATION of glow discharge relays was given before the Woodford and Leytonstone Radio Society on February 16th. Mr. Nixon, of the G.E.C., displaying the new G.T.1. He first described the G.V.I. rectifier from which this relay had been developed, proceeding to demonstrate the various applications of the gas-filled relay which, in conjunction with an Osram photo-electric cell, gave a fine control of a small electric motor by varying light values.

Hon. Secretaries: Mr. H. O. Crisp, 2, Ramsey Road, London, E.7, and Mr. W. H. Crown, 1, Thornton Road, London, E.11.

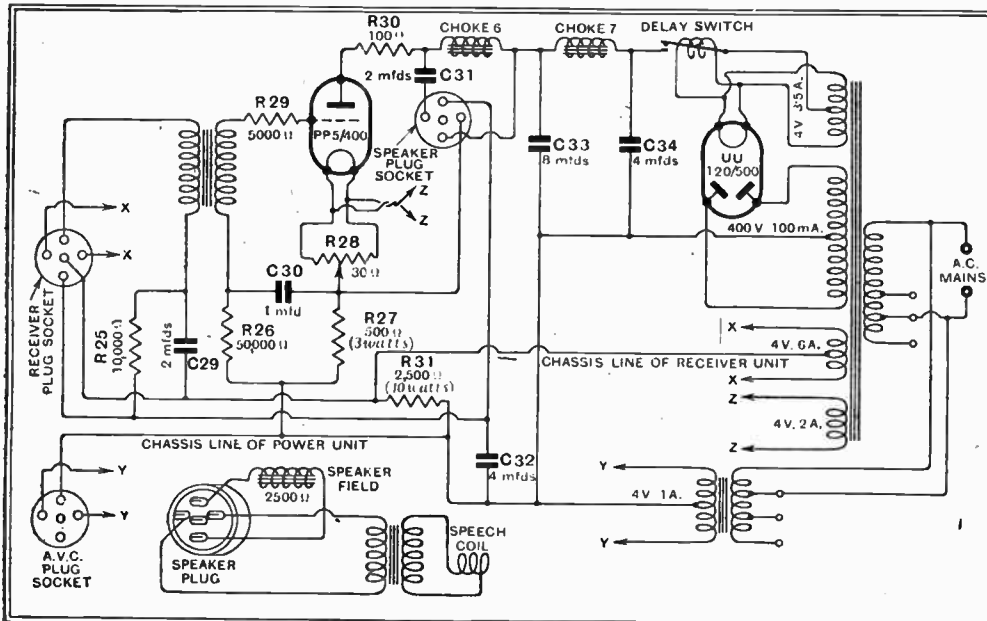


Fig. 3.—The complete circuit diagram of the modified 5-watt power chassis.

UNBIASED

'Phones for Film Fans

I WAS present the other day at the opening performance at an entirely new cinema in a well-known town in the West of England. It was the most up-to-date place of its kind that I have ever seen, and truly elaborate precautions had been taken to make the acoustic properties of the place as perfect as possible.

This was accomplished by the employment of "hollow walls" behind the usual exotic mural decorations. Heavy curtains mounted on rollers after the fashion of the ordinary roller-blind were let down into the "walls" when the place was fairly empty. There were several of these rolled-up curtains, more or fewer of which were used according to the number of people in the house. In this manner it was proposed to keep the acoustic conditions of the building the same, irrespective of the number of the audience.



Unrestrained emotion.

Such arrangements must, I think, be extremely expensive, and, at any rate, many years must pass before all the silent cinema palaces with their poor acoustic properties are demolished in favour of more modern buildings. I do not, however, see the slightest need for us to suffer from poor acoustics during the interim, and cannot for the life of me see why a pair of headphones complete with volume control and fed from the main amplifier cannot be hung at the back of each seat for those who desire to use them.

Apart from anything else, these headphones would be an immense boon to those who have the misfortune to be hard of hearing. Although I am not a great talkie patron, I would gladly welcome them, but in my case to shut out the conversation (?) and unrestrained emotion of the pestiferous females who seem to haunt these palaces of pleasure all day and every day.

Horrible and Blatant

I WAS interested to see a picture in *The Wireless World* the other week of a so-called electric violin in which the strings vibrate in front of the poles of electric magnets, their energy being thus conveyed electrically *via* an amplifier to a loud speaker. It will be remembered that a

By

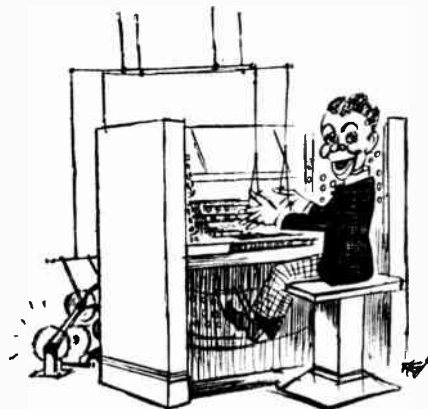
FREE GRID

correspondent questioned me about the feasibility of this scheme some twelve months ago (March 23rd, 1932), and I pointed out that it would be an excellent idea if it were not for the fact that feline viscera were not made of a magnetic substance.

One way to accomplish the trick would be to use steel strings, though, to my ears, nothing else can sound quite so horrible and blatant as a violin with strings of this sort. To appreciate this fully you have only to listen to the ghastly screechings of the violin wielded by the leader of the average restaurant orchestra. I believe that these individuals die young, worn out by the perpetual effort to make themselves heard above the din of the rest of the orchestra. They certainly succeed.

Curious Organs

THE enormous development of radio and its by-products during the past decade has been responsible for the employment of a very large number of people, but, on the other hand, it must be a matter of regret that its principal by-product, the talkies, has resulted in so many cinema musicians losing their employment. In fact, the only survivor is the ubiquitous organist, and now even he appears to be in grave danger. Indeed, he has already been replaced by a "dummy" in certain cinemas on the Continent, as I discovered recently when I dropped into a picture house with a Teutonic friend on my way home from the East.



Is it coming to this?

We found ourselves in close proximity to the organ console (the console and the immaculately marcelled organist being picked out by coloured flood lights; it was this fact that first drew my attention to the movement of the "organist's" hands).

While I don't profess to be a highbrow musician, it happened that the air that



You have only to listen.

the organ was bleating out was one which even I can knock off, and it did not take me long to see that his hands were playing several wrong notes, and yet, *mirabile dictu*, the organ behind the grille on our right gave no sign of this. More marvellous still, the player at times was not even in synchrony with the music, and his feet appeared to be doing an aimless stroll over the pedals.

My friend, laughing at my surprise, explained the phenomenon was a familiar one. Many cinema proprietors over there, it seems, have found it far cheaper to dismiss the organist and replace the hidden pipes by banks of loud speakers. The music is derived *via* the main talkie amplifier by simply running a "music only" film through the ordinary projector in the operating room. The console is, of course, merely a dummy, and so indeed is the organist, who is usually drawn from the ranks of unskilled labour and provided with a marcel wave and a manicure.

"Valves"

IT is well known that up till fairly recently wireless manufacturers and dealers have been describing the 1-V-1 type of A.C. set with its valve rectifier as a three-valve receiver, and have patiently explained to the enquiring layman the reason why they didn't call it a four-valve set when it obviously had four valves in it. Tiring of such explanations, these much-harassed gentry have latterly let the non-technical public have it their own way, and they now label such an instrument a four-valve set.

According to a letter which I received from a well-known dealer of my acquaintance an entirely new menace has now arisen to disturb their peace of mind in this matter, namely, the vacuum type of thermal-delay switch. This thing has, of course, four legs for fitting into the usual valve holder, and it is exactly the same shape as a valve. The fact that the electrodes don't look like those of a valve, however, simply doesn't wash with the uninitiated, according to my correspondent, as they insist on calling it a valve.

The curious part is that the public have never regarded the ordinary metal rectifier as a valve, although, of course, it actually is one, and, now that they have got something which is definitely not a valve, they insist on calling it one.

BROADCAST

By Our Special Correspondent

The New Organ

IF we hear the first chords on the new organ in Broadcasting House within the next six weeks I shall be surprised. Although most of the pipes have been assembled behind that mysterious-looking grille in the Concert Hall, and the console is in position, the final voicing of the pipes has got to be carried out—a task which will keep the builders busy for quite a long time.

An Official Organist?

Several famous organists are to be asked to give recitals, and among them will certainly be Sir Walter Alcock, organist of Salisbury Cathedral, who prepared the specification.

Whether there will be an official appointment of an "Organist to the B.B.C." is still doubtful; the feeling in Broadcasting House is that the holder of such a post should be Mr. Berkeley Mason, who so frequently plays the Queen's Hall organ at the "Proms" and other B.B.C. concerts.

Famous Foreigners

The B.B.C. will take special pride in the new organ, as it will enable them to invite celebrated foreign executants, such as Marcel Dupré and Gunther Ramin, to broadcast recitals on a fine instrument without the necessity of seeking one outside the Corporation premises.

Why Not?

Given the organ, there will be very few items which the B.B.C. cannot stage within the portals of Broadcasting House, from a cathedral service in the Concert Hall to an after-dinner speech in the canteen.

Football matches could be held on the roof, while the debates studio is always available for prize fights. All that the B.B.C. lacks is a cinema organ.

What about it, Dr. Boulton?

Saying It With Silver

IF you guessed that the note of unusual felicity in Henry Hall's voice during the anniversary broadcast last week was traceable to the fact that the "boys" had unexpectedly presented their leader with a silver dessert service, complete with bowl, nut-cracking implements, and bonbons, you were right.

Two hours before the broadcast Mr. Hall was switched over in person to the Langham Hotel, where the presentation took place amid appropriately festive surroundings.

Have You Heard West Regional?

THE new West Regional transmitter can already be heard testing o' nights, and early next month public reception tests will begin. The wavelength is, of course, 309.9 metres, the old Cardiff wavelength, which will be permanently allocated to West Regional.

Both transmitters, Regional and National, will be faded in in the same manner as their predecessors.

That Belfast Site

Never before has the B.B.C. been so lucky as to have a choice of four entirely suitable sites for a new Regional station. This is the case at Belfast, for, besides the Craigant-



THE FINISHING TOUCH. A *Wireless World* photograph of the striking and much-discussed group of statuary over the main entrance to Broadcasting House. The work, which has been executed by Mr. Eric Gill, represents Ariel and Prospero in "The Tempest." It was first exposed to public gaze on March 14th.

let site, to which I was able to give first exclusive mention a fortnight ago, three other localities have been tested and not found wanting. I fancy, however, that Craigantlet will be the final choice.

Innovation

THERE are artistes to be found in nearly all categories who made their public *début* before the broadcast microphone, but I fancy that Madame Adeline Genée must be the first to give the world good-bye through the same medium, as she did in the television programme on March 15th. Certainly no one has ever before said farewell by television.

News About News

I AM glad they propose finding a news editor for the Athlone station. The news bulletins have seemed the least attractive feature of the new Irish transmissions.

New Dance Record

CONGRATULATIONS to Ambrose. On Saturday last his versatile dance band completed five years of uninterrupted broadcasting on Saturday nights from the May Fair Hotel. I believe this is the longest period any band has broadcast.

BREVITIES

Chiefs of Information

MR. VAL. H. GOLDSMITH, who is deputising for Major Gladstone Murray as B.B.C. Information Chief during the latter's absence in Canada, is an Assistant Controller of the Corporation and virtually Secretary. Like Major Murray, he has never sought the limelight and is not known, even as a name, to the world of listeners.

Will Major Murray Return?

Officials at Broadcasting House deny that Major Murray will make the Canadian appointment a permanent one. Ostensibly his mission is simply to advise on the reorganisation of Canadian broadcasting on B.B.C. lines, but it will surprise many of his friends over here if the Canadians drop the pilot in a hurry.

The Churchill Speech

WILL Mr. Winston Churchill broadcast from the Connaught Rooms on April 24th? The occasion is the dinner of the Royal Society of St. George.

There seems to be some doubt even now as to whether the statesman, who has more than once crossed swords with the B.B.C., will be permitted an extempore broadcast from a place beyond the reach of the Corporation's schoolmasterly hand.

On Good Friday

THE B.B.C. will on April 14th follow the accepted custom by again relaying extracts from *Parsifal*, to be given by the B.B.C. Symphony Orchestra in the Queen's Hall. The soloists will be Oda Slobodskaya, Walter Widdop, Harold Williams, and Horace Stevens. As usual, Sir Henry Wood will conduct.

Time is Money

THE people who are pleading for a B.B.C. time signal at 7.30 or 8 a.m. may or may not have considered that the innovation would cost a lot of money. It would mean starting up the transmitters at least two hours earlier than at present.

Listeners, of course, may opine that no expenditure is wasted on a loyal public of more than five million licence holders.

Pity the Poor Engineers

It is not, I believe, the expense which worries the B.B.C., but the fact that any extension of the engineers' hours would involve an extra shift. At present the engineers' day lasts approximately fifteen hours, from 9 a.m. to 12 midnight, and this period can be comfortably split up into two shifts.

An earlier start, however, would apparently introduce complications immediately; all work and no play would make dull dogs even of the engineers, who are gay fellows as a class, despite present discontents over the salary question.

A Crumb of Comfort

The other day one of the senior engineers showed a titled lady over the Control Room. When the tour was finished the visitor pleasantly asked how long her guide had been on the engineers' staff.

"Seven years," he answered, not without pride.

"Fancy that!" was the rejoinder, "Never mind; you'll be promoted soon."



LETTERS TO the EDITOR

The Editor does not hold himself responsible for the opinions of his correspondents.

Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Tudor Street, E.C.4, and must be accompanied by the writer's name and address.

Empire Listeners and the Blattnerphone

I HAVE read with interest an item under the title "Empire Revolt" in Broadcast Brevities of your number dated December 30, 1932. It may perhaps be rather late at this time to pass any comments, but I must say I cannot agree with the view expressed.

It has been my experience, and others have told me they have made the same observations, that speech via Blattnerphone process is not as clear as speech given direct. The difference is noticeable, and I may say that if atmospheric conditions are none too good the difference may make the programme practically unintelligible.

Reception at four or five thousand miles may be quite good at times, but when it is not good then the Blattnerphone does not improve matters. J. A. MOORE.

Penang, Straits Settlements.

[Our Broadcasting correspondent, commenting on the use of the Blattnerphone for Empire broadcasting, wrote: "Reception is not so pure and clear-cut at two or three thousand miles that a listener can detect whether the programme is first hand or not." We fail to see what alternative method the B.B.C. can adopt for transmission outside normal broadcasting hours in this country. —ED.]

"Broadcast Headlines"

I SHOULD like to disagree with your proposal in a recent leader.

In the broadcast news bulletin, there are many items which, while being of great interest to some people, are considered to be of little importance by others. I imagine that announcers vary in their opinions as much as the rest of us, and I think that many listeners would be annoyed if it were the practice of announcers to give special emphasis to those items which happened to strike them personally as the most important. J. F. ISAAC.

Harpenden, Herts.

What Does the Public Want?

MAY I relate, in brief, my experience as a radio dealer and service engineer regarding "What Does the Public Want"? A few months ago I stocked up with ultra-short-wave components and adaptors in response to the publicity given by large manufacturers and by the technical Press. I did all in my power to interest people in this comparatively new side of radio reception. Maybe I was too truthful about it, but now I find that my energy was more or less wasted. In those few cases where I did succeed in selling a short-wave set or adaptor I find that the interest very soon fell off. Other radio dealers tell me the same

story. In this field, it appears, there seems to be a great amount of truth in your correspondent's letter, signed "Diagnostic."

Carlisle, Scotland. JAMES FRAME.

The Ferrocarril III

SOME time in November last I communicated with you about a three-valve A.C. wireless set, and you were kind enough to advise me to be patient for a little while as you were bringing out something extra good, and I now write to thank you for your advice as, having waited for the "Ferrocarril III," I feel more than repaid for my patience.

I have now, I think, completed all adjustments and feel I should like to let you know how superlatively good I find the result; sensitivity is, if anything, better than I anticipated from your own comments, and selectivity is, as you say, surpassed only by a good Super-Heterodyne, and the quality leaves nothing to be desired at all. It will give me great pleasure to demonstrate to a number of doubting acquaintances that it is possible to listen to foreign stations with a reasonably quiet background, and at a suitable volume.

One last word about the performance. My flat is in Earl's Court, and I have always considered that I am, if anything, slightly

obstruction, and I was somewhat astonished last night to hear Juan-les-Pins, reputedly operating on .8 kW., announced so loud that it was necessary to turn it down quite considerably on the volume control. This was followed a short time later by San Sebastian.

There is no doubt in my opinion that you have once again set a standard.

G. LESLIE CROSLAND.

London, S.W. 5.

Automatic Volume Control

I NOTICE that Mr. Scroggie is again (in your issue of March 10th) criticising the use of the term "Automatic Volume Control," on the ground that what is actually varied is the "gain"—i.e., the amplification. But surely this is just what the ordinary volume control does, whether it effects this by varying the grid bias or the screen volts, and yet Mr. Scroggie seems to take no exception to the use of the term "volume control" in this case. Further, he states that "volume control is used to vary the volume," as opposed to an A.V.C. whose function is "to keep the volume constant." Here I take issue with him. The ordinary listener uses his volume control to do exactly what an A.V.C. does, i.e., to maintain the volume from his loud speaker at what, in his room and to his ear, is the

correct volume, whether he is listening to a distant station or the local, and whether the station is on the crest or in the trough of a fade. Admittedly it is also used to increase the volume for dancing or to decrease it when the baby is going off to sleep, but that is not its normal function. If in the dim future we devise an A.V.C. which automatically reduces volume when the baby is being put to sleep, will Mr. Scroggie then acquiesce in the use of the word "volume," or will he insist on some such name as Automatic Gain and Volume control? Surely we control volume equally by

keeping it where it is as by increasing or decreasing it, and so long as we have such a straightforward, obvious and self-explanatory term as "Automatic Volume Control" for goodness sake let us stick to it.

Edinburgh,

J. S. BISSET.



PORTABLE RADIOGRAM. The novel feature in the Schaub radiogram exhibited at the Leipzig Fair is the incorporation of a nearly vertical turntable. The photograph shows the instrument in the playing position.

more masked than is usual even in London. I put this down, possibly quite incorrectly, to being immediately between Earl's Court Station and Olympia. My "Ferrocarril III" set, however, does not appear to take any notice of what I previously regarded as an

Practical HINTS AND TIPS

AIDS TO BETTER RECEPTION

NO wireless constructor should regard his outfit as complete unless it includes one or two medium-sized soft camel-hair brushes such as can be bought for a few pence. The hairs must be mounted in quill, celluloid, or other non-conducting material, and the handle made of wood and tapered at the end.

A Handy Accessory

Innumerable uses can be found for these handy little brushes. Dust and grits, for instance, which collect with alarming rapidity on all exposed surfaces and may eventually cause loss of signal strength and selectivity, will cling readily to the soft hairs, and can then be transferred to a soft duster without the slightest danger of short-circuits or displacing the internal wiring.

By holding the brush at the "wrong end," the handle is invaluable for retrieving nuts and terminal heads which have an uncanny habit of dropping out of reach into the "works" while adjustments to internal wiring are being made. All that is necessary to save time and temper is to use the brush to manoeuvre the loose nut into a convenient upright position, jab the tapered end of the brush firmly into its middle, and pull it out. When the time comes to replace it on the terminal shank, there it is, conveniently stuck on the end of the brush handle, ready to be screwed back into position in a few seconds, the handle being eventually released as the nut is screwed down on to the terminal shank and the connection finally tightened with a pair of pliers.

THE Power Radio-Gram. (*Wireless World*, January 27th and Feb. 3rd, 1932) is admirably suited for high-quality reception of the local stations; in fact, it was designed expressly and solely for this purpose. No H.F. amplification was included in the original receiver.

An H.F. Stage for the Power Radio-Gram.

Probably a number of readers are now desirous of using the receiver at greater ranges than was originally anticipated, or, through some local restriction, they are unable to erect an aerial of efficient type. In cases such as these the benefits of a stage of variable-mu H.F. amplification are considerable, and, further, it will enable a number of the more powerful Continental stations to be received.

Usually the addition of an H.F. stage to an existing receiver is a matter fraught with considerable difficulty, but the problem is greatly simplified by the adoption of a Radiopak unit. The arrangement

suggested for such an addition is shown in Fig. 2, and, beyond the Radiopak, only a few components are necessary. The by-pass condensers should be of the non-inductive type, and, except where otherwise indicated, the fixed resistances can be of 1 watt rating.

Some care should be exercised in the disposition of components, and it is recommended that the parts shown in Fig. 1 should all be built together as a unit, and the output joined to the input of the L.F. amplifier. This is likely to prove more satisfactory than an arrangement which keeps to the existing layout for the detector stage components. The reference numbers on the circuit diagram, it should be noted, refer to the original components of the Power Radio-Gram.

No difficulty should be met with in the power supply, since the existing equipment is quite capable of meeting the small extra demands upon it without any serious drop in voltage. Since the H.F. valve anode current varies greatly with the volume control setting, however, it is necessary to use ganged potentiometers in order to prevent an excessive rise in anode voltage at low volume settings. The sliders of the potentiometers should be arranged so that they move together in the manner indicated on the circuit; that

MANY sets, unknown to their owners, are operating with a detector valve in an almost chronically overloaded condition. In other words, the detector is being worked in such a way that the maximum undistorted output obtainable from it is insufficient to load the output valve. Distortion introduced in this way is insidious, for the

reason that it is of a type to which the ear soon becomes atrophied. The trouble is one to which receivers without an intermediate L.F. stage are particularly susceptible, and it is rather more likely to occur with a triode output valve than with a pentode.

The presence of detector overloading may be suspected when the set fails to respond readily to its sensitivity control—reaction, S.G. valve bias, etc.—after a certain point is reached. Signals that are initially very weak become stronger, but others, just below the intensity required for full output, do not respond to the control in the proper manner.

Apparent sharpness of tuning is also a good guide. If weak signals tune sharply, but strong ones, corresponding to approximately full volume, can be heard at the same strength over a much wider

Detector Overloading

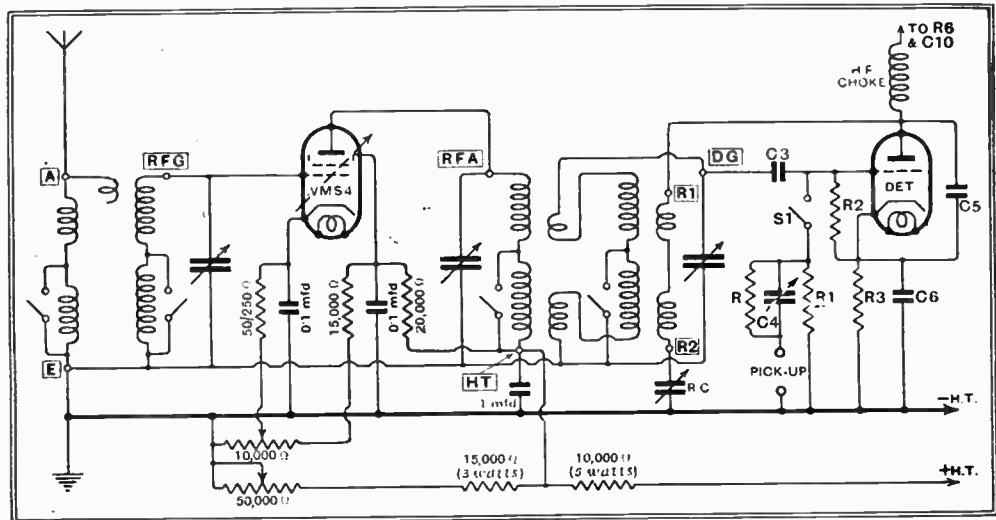


Fig. 1.—Adding an H.F. stage to the Power Radio-Gram. "Boxed" lettering refers to the terminals of the "Radiopak" unit.

is to say, so that they are both at the earth ends together.

The minimum bias resistance of the H.F. valve can be varied between 50 ohms and 250 ohms. Where only moderate amplification is needed the latter value can be used, and there should then be little risk of instability. Greater amplification will be with a 50-ohm limiting resistance, however, but more care must then be taken with the layout of components if instability troubles are to be avoided.

angular displacement of the tuning dial, it is reasonable to suspect that the detector is at fault.

Failing emission in a valve may be responsible for this trouble; if it is not an increase in detector H.T. voltage should be tried as a cure. If the maximum available H.T. voltage is already applied it may be possible to improve matters by reducing the value of the decoupling resistance; one often tends to be over-generous in these matters.

READERS' PROBLEMS

Anode Current Variations

A READER who is not quite satisfied with the behaviour of his receiver has noticed that the reading of a milliammeter, inserted in series with the anode of the detector valve, changes considerably as the pick-up volume control knob is rotated. A circuit diagram of the receiver is submitted, and we are asked to say whether these changes of anode current are indicative of a fault.

It seems just possible that the detector valve, when converted into an amplifier for gramophone reproduction, is being operated with insufficient negative bias. If grid current is flowing, a change in the grid circuit resistance, as brought about by rotation of the volume control, will produce a change in grid voltage, and so a corresponding variation in anode current will take place. A more likely explanation is that the detector valve is faulty; very probably it is "soft." A valve that is defective in this way will pass reversed grid current, and its effective grid potential will be altered by any variation of resistance in the grid circuit.

Due to the fact that the pick-up (see Fig. 1) is in shunt with the volume control

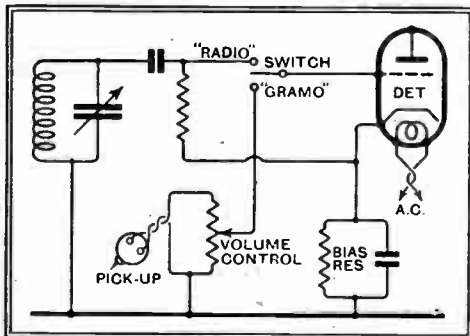


Fig. 1.—Operation of a pick-up potentiometer alters the amount of resistance in the grid circuit, and so, under incorrect conditions or with a faulty valve, may give rise to changes in anode current.

potentiometer, the variations in grid circuit resistance will be limited, but they may be quite sufficient to give rise to the effect under consideration.

The Trimming Condenser

IN all gang-controlled receivers it is natural that some of the circuits should tune more sharply than others, due to the fact that the amount of damping applied to each of them is apt to differ considerably. For instance, the grid circuit of an H.F. valve is usually lightly damped, and one would expect that the adjustment of the trimmer that controls this circuit would be comparatively sharp and well defined. But there is another aspect of the matter. The capacity change in a trimming condenser is by no means proportional to rotation of the adjusting screw. At low capacity settings, the change in capacity per turn is relatively small.

This, we think, accounts for the effect noticed by a correspondent, who is some-

what perturbed to find that H.F. grid circuit tuning is apparently not so sharp as he had expected. In asking our advice, he adds that the condenser in question is nearly "all out," and this, we think, helps to explain the matter.

A.V.C. with a Diode

A QUERIST, whose receiver includes a diode detector preceded by two H.F. stages, has realised that long-distance listening would be vastly more pleasant if some means of overcoming the effects of fading

leads would replace that of the condenser.

An experimental alteration in the value of the existing decoupling resistance R should be tried if the automatic control is found to act too slowly or too quickly. Apart from this, an abnormally high resistance may be necessary to prevent instability.

High-magnification Valves

ALTHOUGH he is quite satisfied with the performance of his H.F.-det.-L.F. A.C. receiver, a querist asks if its sens-

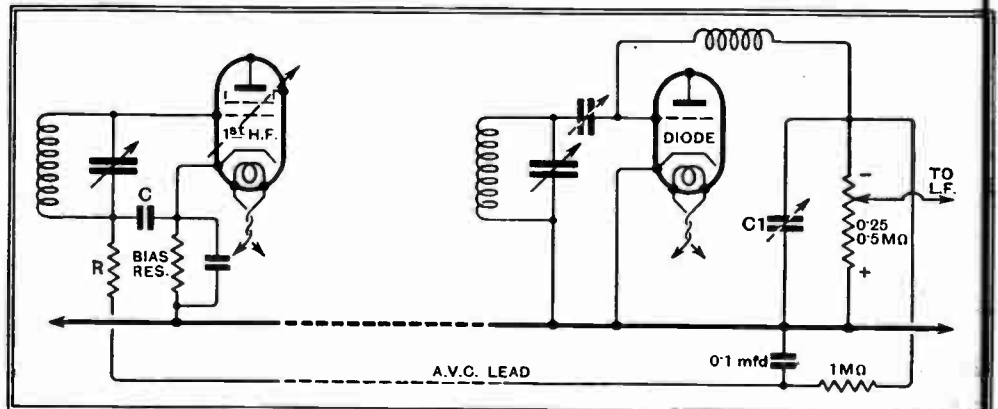


Fig. 2.—Automatic volume control is easy to apply to a "2-H.F." set with diode detection.

could be included. He asks us to suggest a simple way of fitting automatic volume control which will not necessitate any radical alterations in the receiver.

The fact that diode detection is included should simplify our correspondent's task, and it would appear that this receiver is particularly well suited for the addition of A.V.C. We suggest that he should adopt the circuit arrangement given in Fig. 2, and that the first H.F. valve only should be controlled.

Referring to our diagram, R and C represent the decoupling resistance and condenser, which we presume will already be included in the H.F. valve grid circuit. The condenser C_1 is the by-pass capacity normally associated with the diode load resistance; it might be permissible to omit this condenser entirely if it is found necessary to shield the A.V.C. leads in order to maintain stability. The capacity of screened

tivity could be improved to any appreciable extent by replacing the present detector valve by another having a much higher magnification factor; the A.C. resistance of the new valve is somewhat higher than that of the existing detector, and its mutual conductance about the same.

Our reader's set is controlled by a gang condenser, and we think it likely that, as a result of making the proposed substitution he may find that the stray capacity across the detector grid circuit will become excessive; this is because the input capacity of the valve he thinks of using is high. Otherwise there is no great objection to the change, but we are inclined to think that the result of making it will be disappointing.

Resistance-coupled Amplifiers

WHEN anything goes wrong in a resistance-coupled amplifier, one is always inclined to suspect either the coupling condensers or the grid leaks. A correspondent tells us that his receiver, which includes this form of L.F. amplification, has worked well for some time, but of late quality has deteriorated; reproduction has become unpleasantly shrill, low notes are entirely lacking, and the general volume level is greatly reduced.

This effect would be readily accounted for by the development of an internal disconnection in one of the coupling condensers—a fault that, though rare, is by no means unknown. If this fault exists, impulse would be transferred to the succeeding circuit only by virtue of stray capacity, and this capacity would have such a low value that the lower audible frequencies would not be passed on to any appreciable extent.

The Wireless World INFORMATION BUREAU

THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Tudor Street, E.C.4, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which brief particulars, with the fee charged, are to be found at the foot of this page.

NATIONAL PHYSICAL LABORATORY'S REPORT ON

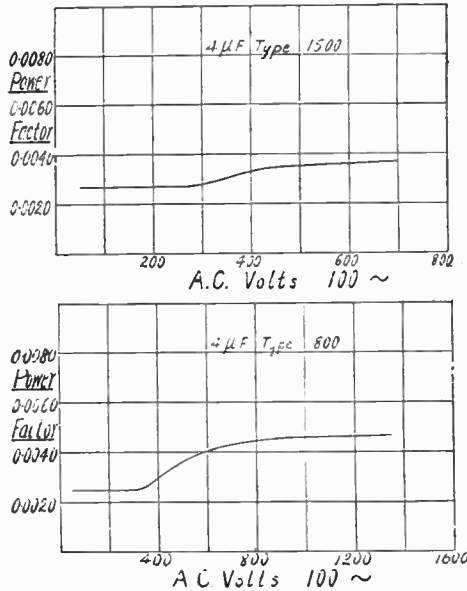
PEAK CONDENSERS

SPECIFIED FOR THE
A.V.C. MONODIAL

Power Factor is a measure of the goodness of a Condenser.
Wilburn & Co., lead by publishing the following significant figures.

Write for Lists.

Curves plotted from adjoining figures
Condenser A = 4 mfd Type 1500
Condenser B = 4 mfd Type 800



CONTINUATION of Report on: MEASUREMENTS OF POWER FACTOR OF 4 μF. CONDENSERS

(A) Marked "1 500 volt D.C. test."
(B) Marked "800 volt Working."

-2-

TABLE.

Voltage	Frequency: cycles per second.	Temperature: °C.	Power Factor.	
			Condenser A.	Condenser B.
50	100	20	0.0027	0.0025
100			0.0027	0.0025
200			0.0027	0.0025
300			0.0028	0.0025
400			0.0033	
600			0.0035	0.0036
700			0.0036	
1 000			0.0037	0.0043
1 500				0.0046
				0.0047

Date: 8th March, 1933.
Reference: E: 246,140.

N.B. Pyper
P.P. Director.

REPORT.

MEASUREMENTS OF POWER FACTOR OF 4 μF. CONDENSERS.

(A) Marked "1 500 volt D.C. Test."
(B) Marked "800 volt Working."

TESTED FOR:- WILBURN & CO., 23, BRIDE LANE, LINDSAY CLAYDON, E.C.4.
REFERENCE:- ORDER NO. 1722 DATED 11.2.33.

The Power Factors of the Condensers were determined at the various voltages specified below, using alternating voltages of sine wave form at a frequency of 100 cycles per second. The measurements were made after the maximum voltage proper to each condenser had been applied. The power factors were measured a number of times at each voltage with both rising and falling voltages and the mean of the values so obtained are given in the Table below and on the attached curve. The maximum variation observed from the mean values was 0.0001 for condenser A and 0.0002 for condenser B.

TABLE

Date: 8th March, 1933.
Reference: E: 246,140.

N.B. Pyper
P.P. Director.

WILBURN & Co. 21 & 23, Bride Lane, London, E.C.4. Telephone - - - - - Central 6994. Northern Distributors: W. Andrew Bryce & Co., Bury, Lancs. Export Agent: W. R. Everett, 63, Queen Victoria St., E.C.4.

A NEW VOLUME CONTROL

Of course there are plenty of other volume controls, but that fact in itself is proof that the new Rotor Ohm *must* be good. It would not have been marketed unless we were sure that it was better than anything else. Try one and see for yourself.

Wirewound. 2,000 ohms to 25,000 ohms, 3/6; with switch, 4/6. 50,000 ohms, 4/-; with switch, 5/-.

Synthetic. 2,000 ohms to 5 megohms, 3/6; with switch, 4/6. Ganging 9d. a unit extra.

"Manufactured in the British Commonwealth, produced in England."

ROTOR OHM VOLUME CONTROL
Rotor Electric Ltd.,
Spencer House, South Place, E.C.2.
Telephone: National 5734

Illustration shows the Davenset Ltd. No. 101 smoothing choke Inductance 30 Henrys at 53 Ma. List Price 18/6 complete with instrument screwdriver as illustrated.

Ensure the success of your set with

DAVENSET TRANSFORMERS

THE "Wireless World" Laboratory has tested DAVENSET Transformers and finds them "well above the average in performance and exceptionally well made." Such unbiased judgment is the best guarantee to home set constructors, and others, that DAVENSET Transformers will make a material contribution to the success of their sets.

WRITE FOR a copy of "Mains Transformers and Power Smoothing Chokes for Radio and Industrial Purposes."

Davenset Transformers are manufactured to your own individual requirements, whilst our Technical Department is at your service to advise and suggest the simplest and yet most practical schemes for overcoming your Transformer or Rectification problem.

PARTRIDGE, WILSON & CO.
Dept. 29, Davenset Works, Leicester.
Scottish Branch: 200, St. Vincent Street, Glasgow, G.2.

ENSURE A VASTLY IMPROVED RECEPTION!

Electro Dynamic

ROTRARY CONVERTERS

THE LEADING MACHINES ON THE MARKET

FROM D.C. TO A.C.

FREE FROM INTERFERENCE. SUBSTANTIALLY mounted in sound-proof cabinet and equipped with highly efficient filter unit, the Electro Dynamic Converter enables any A.C. Receiver or Radiogram to be run off D.C. with Guaranteed Reliable Service.

ELECTRO DYNAMIC CONSTRUCTION CO. LTD.
DEVONSHIRE GROVE, LONDON, S.E.15
Telephone: NEW Cross 4972 (4 lines).

WRITE for fully illustrated leaflet.

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

THE CHARGE FOR ADVERTISEMENTS in these columns is

12 words or less, 3/- and 3d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

SERIES DISCOUNTS are allowed to Trade Advertisers as follows on orders for consecutive insertions, provided a contract is placed in advance, and in the absence of fresh instructions the entire "copy" is repeated from the previous issue: 13 consecutive insertions 5%; 26 consecutive, 10%; 52 consecutive, 15%.

ADVERTISEMENTS for these columns are accepted up to **FIRST POST** on **MONDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Tudor Street, London, E.C.4, or on **SATURDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 260, Deansgate, Manchester, 3; 26a, Renfield Street, Glasgow, C.2.

Advertisements that arrive too late for a particular issue will automatically be inserted in the following issue unless accompanied by instructions to the contrary. All advertisements in this section must be strictly prepaid.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to **LLIFFE & SONS Ltd.**, and crossed **& Co.** Notes being untraceable if lost in transit should not be sent as remittances.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

RECEIVERS FOR SALE.

AERO American 5-valve A.C. Midget Sets, 3 screen grid pentode output, with minus energised M.C. speaker, complete all valves, £5/10; also few ditto, require slight servicing, at £4/10 each; several other sets and chassis at bargain prices.—W. Burns and Co., 287, City Rd., London, E.C.1. Clerkenwell 4604. [2186]

QUIESCENT Push-pull Two, complete 1/10 A.F.11(C) Ferranti, new valves, Amplion M.C.22, Q.P.P. batteries, exact specification; e.o.d. £7.—Box 6434, c/o *The Wireless World*. [2225]

CLEARANCE Lines in Main Receivers; stamp brings list—Wood's Radio, Holcombe Brook, near Bury. [2217]

£4/10.—"W.W." single dial Super, less valves; D.C. Magnavox, 110/190V., 22/6.—"St. Clare," Altwold Bailey, Maidentead. [2214]

REGENTONE 2-valve A.C. Sets; list £6/15, £3/15, new, perfect.—62, Great Cambridge St., Shoreditch, London. [2213]

A.C. Monodial, 5.9W. output, Rola speaker; £16/16.—7, Pond Rd., Blackheath, S.E.3. [2209]

"W.W." Modern Straight Five, with valves and speaker, 5-watt output, exactly as specified, finished in grey cellulose; offers.—Conner, Ethel St., Northampton. [2208]

PHILIPS 2534, listed 15 guineas, for sale, 5 guineas; ditto 2531, listed 23 guineas, for sale, 8 guineas; both perfect, including valves.—Hoare, Combedene, Hindhead. [2204]

MANUFACTURER'S Surplus, guaranteed new and unused.—All mains A.C. 3 valve (S.G., Det. Pen.) receivers, Rola M.C. speaker, walnut cabinet, complete with valves; £7/10; carriage paid.—Partridge, King's Buildings, Smith St., S.W.1. [2202]

NEW Century Superhet, with valves, without cabinet, author's specification, selectivity and volume; £8.—Box 6420, c/o *The Wireless World*. [2201]

PHILIPS Model 630A 5-valve Receiver, complete A.C., practically brand new; cost 23 guineas; bargain, 16 guineas.—16, Broad St., Bath. [2193]

AMPLIFIER, undistorted output 12 watts (2PX25), 2-stage R.C. Marconi P.U. auto stop, 2 R.K. speakers, quality superb, cost £43, used only 3 times; willing to entertain any reasonable offer; suitable cafe, club, holiday camp, etc.; also if required, electro dynamic D.C. converter.—G. Alderson, Manor Rd., Dorrige, Birmingham. [2194]

MACNAMARA Golden Voice 3-valve A.C. Set, complete with moving coil loud speaker, in white cabinet, list price 15 guineas; in original packing, unopened; 7 guineas; c.o.d., carriage paid.—Kay, 167, City Rd., Finsbury, London, E.C.1. [2254]

APPLEBY'S, Central London Office, 46, Bloomsbury St., New Oxford St., London, W.C.1. Museum 8195. [1833]

SMALL Quantity 2-valve A.C. All-electric Receivers, oak or walnut, moving coil, complete; £3/17/6.

SMALL Quantity 2-valve, as above, less valves and speaker; £2/12/6.

SMALL Quantity 2-valve A.C. Chassis, complete, less valves; 3/2.

SMALL Quantity A.C. Eliminators, 15 m.a. 22/-, 20 m.a. 27/-, 25 m.a. 32/6.

SMALL Quantity D.C. 20 m.a. Eliminators; 10/6.

CARRIAGE Extra; all above brand new.—Victor Electrical Co., London Rd., West Thurrock, Grays, Essex. [2233]

SCOTT SESSIONS

INTERPRETATIONS of "WIRELESS WORLD" MONODIALS

Supreme for **WORKMANSHIP FINE TONE—SENSITIVITY SELECTIVITY AND VALUE**

Specially Recommended:
"W.W." MONODIAL with **AUTOMATIC VOLUME CONTROL** and 5-Watt (A.C.) Output assembled with de luxe workmanship, tested and adjusted by experts, including Royalties and delivery **FREE** in Gt. Britain. **£42-0-0** (or 1st deposit of £5 5 0; balance over 12 months).

The ULTIMATE RADIO-GRAMOPHONE for the Connoisseur.
"W.W." MONODIAL with **AUTOMATIC VOLUME CONTROL** and 5-Watt (A.C.) Output with **GARRARD AUTOMATIC RECORD CHANGER** and **FERRANTI M.I. Speaker**, in very handsome hand-polished walnut, oak or mahogany radio-gramophone cabinet. Individually built, assembled and tested by experts throughout. Inclusive of all Royalties. Delivery free in Gt. Britain. **£75-0-0** (or 1st deposit of £9 7 6; balance over 12 months).

ORIGINAL "W.W." MONODIAL with 5-Watt Output (no A.V.C.), including Valves and Royalties. **£34-0-0** (or 1st deposit of £4 5 0; balance over 12 months).

ORIGINAL "W.W." MONODIAL with 2.5-Watt Output (no A.V.C.), including Valves and Royalties. **£28-15-0** (or 1st deposit of £3 11 10; balance over 12 months).

"W.W." BATTERY ALL-WAVE MONODIAL with Valves, Royalties, fully assembled and ganged. **£23-8-6** (or 1st deposit of £2 18 6; balance over 12 months).

EXISTING MONODIALS CONVERTED TO A.V.C. Send for Quotation.

TRADE ENQUIRIES INVITED.

The following testimonial from a prominent London business man is typical of many which we have received from satisfied customers:—
Ref. S. 2333.



"I should like to place on record my appreciation of the excellent job you have made of the "Monodial" Superhet Set which I recently ordered from you. Results have been most pleasing, and I am highly satisfied with the whole outfit, and with the reproduction it gives.

I have also been very pleased with the excellent "Service" which you have given, and I shall have the greatest pleasure in recommending your Firm to any of my friends who may be in need of the services of a competent firm of Radio Engineers."

IMPORTANT SERVICE TO ALL READERS:
Thousands of "W.W." readers in the past 7 years have sent us their sets for repair, adjustment and rebuilding, with finest workmanship, modernising of obsolete apparatus, etc. This service is available to YOU... Whatever parts you used, and no matter who assembled your set, send it to us now if you have any work that can be done by experts that will give you better results! Our Service Department is formed solely to help you and your friends in doing those jobs that take your valuable time and trouble. Our skilled staff and equipment are at your disposal. **SCOTT SESSIONS** original and best **FIELD REPLACEMENT CHOKE**, 2,500 16/- ohms, 60 henries (as specified) each

SCOTT SESSIONS & CO. RADIO ENGINEERS,

MUSWELL HILL, LONDON, N.10

Telephone No.: **Tudor 5326.**

Contractors to H.M. Government Departments, Crown Agents for the Colonies, Electricity Corporations, etc.

NUMBERED ADDRESSES.

For the convenience of private advertisers, letters may be addressed to numbers at "The Wireless World" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Wireless World." All replies should be addressed to the Box number shown in the advertisement, c/o "The Wireless World," Dorset House, Tudor Street, London, E.C.4. Readers who reply to Box No. advertisements are warned against sending remittance through the post except in registered envelopes; in all such cases the use of the Deposit System is recommended, and the envelope should be clearly marked "Deposit Department."

DEPOSIT SYSTEM.

Readers who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Wireless World," both parties are advised of its receipt.

The time allowed for decision is three days, counting from receipt of goods, after which period, if buyer decides not to retain goods, they must be returned to sender. If a sale is effected, buyer instructs us to remit amount to seller, but if not, seller instructs us to return amount to depositor. Carriage is paid by the buyer, but in the event of no sale, and subject to there being no different arrangement between buyer and seller, each pays carriage one way. The seller takes the risk of loss or damage in transit, for which we take no responsibility. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50, 5/-. All deposit matters are dealt with at Dorset House, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Liffé & Sons Limited.

SPECIAL NOTE.—Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post. When sending remittances direct to an advertiser, stamp for return should also be included for use in the event of the application proving unsuccessful.

Receivers for Sale.—Contd.

SALE.—A number of radio sets of well-known makes, all-electric and battery, also speakers and components; end of season clearance at amazingly low prices; all sets guaranteed.—Write, stating requirements, Radio-X-Change, 4a, Bangalore House, Newton St., W.C.1. [2247]

MICHAELI, 5-valve Suitcase Portable, excellent condition, £4 15; R.I. pickup and tracking arm, 12/6; G.E.C. pickup, 5/-;—Kyles, Grove Park Rd., Hove. [2245]

8-VALVE 1932 All-electric Radio Receiver, 48G., push-pull output, M.C. speaker, tone control, gramophone switch, long short waves, beautiful 3ft. 6in. walnut cabinet, as new; £12/10; after 7.—57, Clarissa St., Haggerston, E.8. [2235]

AMPLIFIERS. 4-stage (Radiolab), 100-250 A.C., 3 watts, undistorted output, in black metal case, with provision for I.T. and H.T. for radio stage; £5/10 complete, or, less valves, £4/10 each.—W. Burns and Co., 287, City Rd., E.C.1. [2249]

CHARGERS AND ELIMINATORS.

TRICKLE Chargers, 1/2 amp., with Westinghouse rectifiers, complete, 2-6v., 11/9; trickle chargers, 1 1/4 amps., ditto, 19/11.

TRICKLE Chargers, with Tantalum rectifiers, 7/6; 7 days' approval; postage 6d.—Arden Agency, Wollaton, Wellingborough. [2207]

TANTALUM for A.C. Chargers, H.T. and I.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [2239]

A.C. or D.C. Chargers for 2 to 200 cells at Low Prices; state requirements; dynamo and rotaries in stock; all sizes. Brown's Generator battery superseders for H.T. for 2v. or 6v. input, 37/6 and 52/6; television and sewing machine universal motors, 25/-; lists.—Electradix Radios, 218, Upper Thames St., E.C.4. [2098]

DEMON Transformers for Best Regulation, best materials, best results, and best value.

DEMON Model D.A., 250-0-250, 60 m.a., 4v. 2a., 4v. a., all C.T., tagged leads; 11/6.

DEMON Model D.B., 350-0-350, 60 m.a., 4v. 2a., 4v. a., all C.T., tagged leads; 13/6.

DEMON Model D.C., 350-0-350, 120 m.a., 4v. 2a., 4v. 4a., 4v. 2a., all C.T.; 16/6.

DEMON Model D.E., 400-0-400, or 500-0-500, 120 m.a., any I.T. up to 40 watts to specification; 18/6; weighs 9 lb.

DEMON Model D/C.K.1, I.F. chokes, 25h., 120 m.a., 250 ohms resistance; 8/6; weighs 3 1/2 lb.

DEMON Model D/C.K.2, choke, 40h., 60 m.a., 250 ohms resistance, 8/6; field replacement choke, 2,500 ohms, carry 60 m.a., 10/6.

DEMON Build Models to Specification at Equivalent Rates; all above transformers are for 50c. mains; 25c. models 40% extra.

DEMON.—Look for the Demon trade mark; carriage extra.—Demon Radio Products, 8, Fishponds Rd., Upper Tooting, S.W.17. Phone and Telegrams: Stratham 8209. All goods guaranteed 24 months. [2290]

CONVERTER Electro Dynamic, D.C. input, 24 volts, A.C. output 200 watts; cost £22, accept any reasonable offer.—G. Alderson, Manor Rd., Dorrige, Birmingham. [2195]

POWER Packs.—250v., 60m. 4v. 4a., Westinghouse specification, guaranteed; £3/3, carriage paid.—Foster, 41, Upper Valley Rd., Sheffield. [2291]

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

RADIO BY MAIL

A.C. MONODIAL SUPER

KIT "A" Author's Kit of FIRST SPECIFIED Components for Set only including Ready Drilled Polished Oak Panel, Ready Assembled and Drilled PLYMAX Set Chassis, screws, wire and sleeving but excluding Eliminator Components, Valves and Cabinet.

Cash or C.O.D. **£11. 10. 6**
Carriage Paid.

or Deposit £1-10-6 and 11 monthly payments of £1

ELIMINATOR KIT COMPLETE KIT

Includes all FIRST SPECIFIED Components for 2.5 Watt Power Chassis with ready drilled and assembled Plymax Chassis with screws, wire and sleeving but less Valves, Cash or C.O.D. Carriage Paid. **£26-18-0**, or Deposit **£4-18-0** and 11 monthly payments of **15/2**.

Includes all FIRST SPECIFIED Components for Set and Eliminator with Valves. Cash or C.O.D. Carriage Paid. **£26-18-0**, or Deposit **£4-18-0** and 11 monthly payments of **£2-4-0**.

FERROCART III

KIT "A" Author's Kit of FIRST specified Parts complete down to the last screw, including READY DRILLED Peto-Scott Panel with assembled and drilled Peto-Scott PLYMAX CHASSIS but less Valves and Cabinet. Cash or C.O.D. Carriage Paid.

12 GNS. or 12 monthly payments of **23/-** Set of 4 Specified Components for Valves **£3. 7. 6** or add **6/2** to each Kit "A" monthly payment.

DELIVERY PER RETURN

By special arrangement with Messrs. Colvern Ltd., we hold stocks of their FERROCART COILS for immediate delivery.

Set of 3 coils, ganged and mounted on metal chassis, as specified: CASH or C.O.D. Carriage Paid **£2.10.0**

or 12 monthly payments of **4/7**. Any item supplied separately. If value over 10s., sent Cash or C.O.D. Carriage Paid.

PETO-SCOTT CO. LTD.
77, CITY ROAD, LONDON, E.C.1.

Telephone: Clerkenwell 9306/7.
West End Showrooms: 62, High Holborn, London, W.C.1.

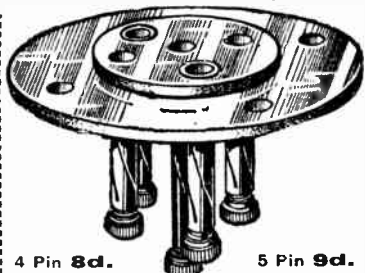
A.C. MONODIAL SUPER

depends on CLIX

Previous experience has proved to the designers of this receiver the wisdom of using CLIX Valveholders, particularly in Mains Sets. Not only do the Turned Resilient Sockets guarantee fuel-surface contact (without fear of collapse) with any valve pin—solid or otherwise—but they also entirely prevent arcing between the pin and socket. These sockets also have a lateral movement which makes insertion of the valve much easier. And of course the very sturdy construction, low-loss design and "easy-connection" terminals and other very good reasons why designers usually specify

CLIX

Chassis Mounting VALVEHOLDER



Write for CLIX Leaflet W/24
4 Pin 8d. 5 Pin 9d.
From all Dealers.



LECTRO LINX, 79a, ROCHESTER ROW, S.W.1

Chargers and Eliminators.—Contd.

McDANIEL and Co.—500-0-500 at 120 m.a. 4v. 5a., 4v. 2.5a., 4v. 2a., 20/-; 350-0-350 at 120 m.a. 4v. 5a., 4v. 2.5a., 4v. 2a., 17/-; 250-0-250 at 60 m.a., 4v. 3a., 4v. 1a., 4v. 1a., 11/-; all screened primary, quite new; mains chokes for the above, 20h. at 120 m.a., 8/6; 50h. at 60 m.a., 7/6; 30h. at 60 m.a., 6/-; only a few; post free, manufacturer's surplus. 154, Hainault Rd., Romford, Essex. [2199]

SURPLUS Material—In order to clear our stocks ready for new season's goods, we are making up a limited number of mains transformers for the

A.V.C. Monodial, 2 1/2 watt chassis, for the remarkable 12 months' guarantee; genuine Bryve production, with

SECURE Your Bargain New Before Stocks Run Out from Surplus Dept., W. Andrew Bruce and Co., Woodfield Works, Bury, Lancs. Phone: 1251. [2221]

SERADEX Battery Chargers are Reduced; list for stamp.

SERADEX Rectifying Units are Reduced; list for stamp.

SERADEX Chokes are Reduced; new list ready.

SERADEX Mains Transformers, from 12/-; list for stamp.

SERADEX Resistance and Condensers; list.

SERADEX Milliameters, from 5/11; list for stamp.

SERADEX Alternatives for the Monodial A.V.C. Model; let us quote you and save you pounds.

TREVOR PEPPER, 48, Wake Green Rd., Moseley, Birmingham. [2227]

N.P. Battery Chargers for A.C. Mains; stamp for trade list and photographs.

N.P. Range of Chargers for all purposes; 44 models from which to select; prices from 65/- to £32.

N.P. Have a Few Slightly Soiled Instruments; bargains; list for 15d. stamp.

N.P. with Westinghouse Metal Rectification for A.C. Mains; also cheaper models with valve rectification.

N.P. Senior Two, 105/-, will do one to thirty 2v. batteries; also H.T. variable resistance, 1/2-3 amps., guaranteed.

N.P. for All Chargers, A.C. or D.C. mains; hire purchase terms arranged, quarter down, balance six or nine months; trade list for stamp.—Nash Products, Ltd., Stetchford, Birmingham. [2256]

BROWN and SALTER, Vortexion, Wimbledon, for the finest transformers made regardless of price; all models guaranteed 12 months, tested on full load and 2,000 volts between windings before despatch; all finished in cast aluminium frames or shroudings.

VORTEXION Model Specified for the Modern A.C. Quality Amplifier, 400-0-400, 110 milliamps, 4v. 3a C.T., 4v. 2a., 4v. 1a. C.T., any input, 50c., insulated terminal type, 24/-.

VORTEXION Model for the Ferrocart III, 350-0-350v. 60 m.a., 4v. 2.5 C.T., 4v. 3.5 C.T., screened primary open type, 13/6; shrouded, 16/-.

VORTEXION—W5, 6, or 7 for Westinghouse H.T.5, 6, or 7 with 4v. 1-4a., C.T.; 11/6.

VORTEXION—W8, 9, or 10 for Westinghouse H.T.8, 9, or 10, with 4v. 1-2a., C.T., 4v. 2-5a., tagged leads, shrouded; 16/6.

VORTEXION—W11 for Westinghouse H.T.11, with 4v. 1-2, 4v. 1-6a., all C.T., shrouded; 40/-.

VORTEXION—250-0-250, 60 m.a., 4v. 1-2, 4v. 2-4a., all C.T., open type tagged leads; 11/6.

VORTEXION—350-0-350, 120 m.a., 4v. 2-5, 4v. 1-5, 4v. 2-4, all C.T., shrouded type tagged leads; 16/6.

VORTEXION—400-0-400 or 450 or 500-0-500, 120 m.a., open types, 4v. 2-4a., 4v. 2-5a., 4v. 2-5a., all C.T.; 19/-; tagged leads.

VORTEXION—500-0-500, 150 m.a., or 450-0-450, 160 m.a., or 400-0-400, 190 m.a., 4v. 2-5a., 4v. 4a., 4v. 2a., 4v. 2a., 4v. 2a., all centre tapped, any input, 50 C., beautifully shrouded, core size, 2 1/4 x 1 1/4, screened primary, and strips, a £5 model, 35/-.

VORTEXION—30h. 50 m.a. chokes, 5/6; 20h. 120 m.a., 8/6; 15h. 350 m.a., excellent for rough D.C., shrouded, 15/-.

VORTEXION for Helsing Condensers, 750 D.C. working, 6 mid.; 6/6, list price 21/6.

VORTEXION—Transformers made to your specification.

VORTEXION—Brown and Salter, 182, The Broadway, Wimbledon. Tel.: Liberty 2814. [2034]

ADD an Extra 50/- Weekly to Your Income by Charging Radio Accumulators in Your Spare Time, no experience necessary.

WRITE for Full Particulars of Complete Equipment for Charging 105 Accumulators Weekly; price £4/5, A.C. only.—Victor Electrical Co., London Rd., West Thurrock, Grays, Essex. [2234]

CABINETS.

RADIO-GRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1686]

WE Can Supply Brand New Complete Gramophones, London made cabinets, at less than the cost of cabinets; ideal for converting to radiograms; 28 models to choose from; 52/6 to £10; illustrated list free.—Radley's, Ltd., Canal Rd., Bradford. [1786]

TRANSPORTABLE Cabinets, oak Orgola Three, walnut three-valve cabinets, all at 5/-; radiogram cabinets, £1.—Radio Supplies, 131, Lee Rd., Blackheath, London, S.E.3. [2212]

HANDSOME Radiogram Cabinets, in beautiful figured walnut or mahogany, exclusive design, £7/7 model, to clear £3/15; also table models, 16/-.—Rochester Cabinet Co., 9, Witches Place, Rochester Mews, N.W.1. Phone: Gulliver 2594. [2238]

DYNAMOS, ETC.

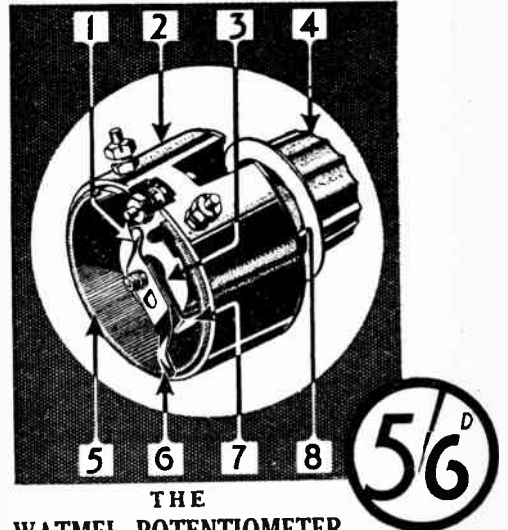
CONVERTER, 230 D.C. output, 150v. 3/4 amp. A.C. coupled M-L 400v. 200 m.a., 6v. 6a., on C.I. base, filter starting relay; would split; £6/10.—Kingswood, Bellfield Av., Harrow Weald. [2185]

REGENTONE Unit, converting D.C. Eliminator to A.C.; cost £4/10.—Offers to Hughes, 7, Grange Rd., St. Annes-on-Sea. [2203]

BUY WATMEL

SPECIALISTS IN POTENTIOMETERS AND VOLUME CONTROLS

Our policy this year is to specialise in Potentiometers and Volume Controls of all types. You can, therefore, be certain when purchasing a Watmel Potentiometer, that you are obtaining the very best from a firm that is concentrating on this type of component.



THE WATMEL POTENTIOMETER (Type 1)

This resistance is wound on a special non-shrinkable former, which gives perfect contact. Note the points:—

- 1 Back self-cleaning contact.
- 2 Bakelite case, protects winding.
- 3 Large contact plate.
- 4 Polished easy grip knob.
- 5 Wire wound former (not compound with wire contacts).
- 6 Contact finger, phosphor bronze
- 7 Positive stop.
- 8 One hole fixing, brass bearing bush, resulting in perfect bearing

Any resistance up to 50,000 ohms **5/6**

If you cannot get this component from your local dealer, write to us and we will send what you require within 24 hours. Write for Catalogue.



WATMEL WIRELESS CO., LTD.,
IMPERIAL WORKS,
HIGH STREET, EDGWARE.
Telephone: Edgware 0323.

GRAMOPHONES, PICK-UPS, ETC.

TURNABLE B.T.H. Senior pick-up and Garrard D.S. Motor, 30/-; M.C. speaker with 7 1/2 lb. magnet, 30/-; 26" Outwoods Drive, Loughborough. [2211]
NEW B.T.H. Golden Disc Gramophone Motor, A.C. 200-250, auto-start, auto-stop; 45/-; Wilson, 16, New Brown St., Manchester 4. [2231]

LOUD-SPEAKERS.

B.T.H. R.K. Moving Coil Speakers, guaranteed new, un-used, manufacturers' surplus, original price 5 guineas, highly sensitive and wonderful tone response, will handle up to 10 watts output, available for 6v., 100v., 200v., 30v.; also A.C. models, £2/10; carriage paid, e.o.d., or cash with order; send for list of other unused bargains.—Seekamp, 46, Farringdon St., London, E.C.4. [1425]

CHAL-ELECTRIC Offers Brand New Set Manufacturers Surplus, Rola's British (20 in all left), all models, 16, 7 1/2 in. cone, list 35/-, 18/-; P.7, 9 in. cone, list 46/6, 25/- (state voltage required); permanent magnets, P.6 P.M., list 49/6, at 28/-; P.7, P.M., list 43/-, at 32/-; all with transformers or dual compensated; state requirements.

NOTE.—Mail orders only this address, all carriage paid; cash with order or e.o.d.—Chal-Electric, 6, Conduit St., London, W.1. [2261]

18/9 snip.—W type P.M. moving coil speaker, reputable manufacturers' new surplus, modern and guaranteed; Magnet weighs over 4lb., cone 8 1/4 in. dia. overall, complete with tapped transformer; originally 49/6, most genuine bargain ever offered; cash with order, returnable within 7 days, carriage paid.—Streete, 84, Riversdale Rd., N.5. [2127]

MAGNAVOX, model 145, with 11 in. cone, 2,500 ohms, with output transformer, boxed, as new; 38/- each.—W. Burns and Co., 287, City Rd., E.C.1. [2248]

SUPER Bargains.—Magnavox D.C. 144, power or pentode transformer, 2,500 ohms, 14/6; Utility condensers, complete in box with S.M. dial knob, etc., 2-gang 8/6, 3-gang 11/6; Pye shrouded chokes, 32 Henry, 4/-; all brand new; satisfaction guaranteed.—102, Torrington Park, N.12. [2252]

BAKER'S 220v. D.C. cost 95/-, now and perfect condition; sell 60/-; Box 6441, c/o The Wireless World. [2253]

30/-—11 B.T.H. R.K. moving coil speakers, 6 in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; weight 30lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.

27/6—6v. D.C. speaker, as above; £2/7/6, speaker as above, for 100-250 A.C.

CARRIAGE Paid, cash with order, or e.o.d.—Ward, 12, Tredgar Rd., Bow, E.3. [2241]

NEW W.B. P.M.1 Moving Coil Speaker; £5.—James, 14, Factory Lane, Doncaster. [2232]

VALVES.

NEW Large Purchase of a Set Manufacturer's Stock of Valves, guaranteed as new, all latest types, and any value differing from the maker's characteristic exchanged free.

210H.L.s, 210H.P.s, 210L.F.s, P.M.H.F.s, P.M.L.F.s, H.L.210s, H.210, D.E.H.210s, L210s, 3/9; 215P.s, 220P.s, L.P.2s, P.215s, D.E.P.215s, P.M.2s, P.220s, P.M.2A., 4/9; D.H.s, 41M.H.L.s, 41M.H.s, M.H.4s, A.C./H.L.s, A.C./2H.L.s, 35V.s, 90V.s, D.C.3/H.L., 7/-; 41M.P.s, M.L.4s, A.C.P.s, 7/6; P.T.4, P.T.41, P.E.N.4V., M.P./P.E.N.s, 12/-; latest metallised S.4V.B.s, M.S.4B.s, M.S.4/H.A.s, A.C./S.G.s, 9/-; Coso M.V.S.G., 12/-; 442B.V., 18/7s, 7/9; 1821s, 7/-; 6201s, 15/-.

2,000 Valves are Always in Stock for Immediate Dispatch, prompt attention, for cash or e.o.d.—Newman, 309, Roman Rd., E.3. [1659]

DOUBLE-GRID Mullard and Osram 2 volt, boxed, as new, 4/6 each; also Mullard 054, 6/9, emission guaranteed; Marconi D.A.60, 30/-;—W. Burns and Co., 287, City Rd., E.C.1. [2250]

THE Following Valves are Guaranteed as New, and any value differing from the makers' characteristics will be exchanged; all latest types.

A.C. Pens., A.C.S.1/V.M.s., M.P.T.4s, D.C.2/Pens., V.M.4V.s, Pen.4V.s, D.C.2S.G., V.M.s, 11/-; M.S.4s, M.S.4B.s, A.C./S.G.s, S.4V.A.s, M.S.G./L.A.s, D.S.B.s, A.C.044s, A.C.064s, A.C.S./2s, D.C.2 S.G.s, 9/6.

M.L.4s, A.C.P.s, 41M.P.s, P.M.24s, 8/-; A.C.H.L.s, M.H.L.4s, A.C.2/H.L.s, 35V.s, 41M.H.L.s, U.10, U.F.60/250s, M.H.4s, 7/6; P.T.2s, V.S.2s, 2158/G.s, 9/-; 442B.U.s, 6/6; D.C.3/H.L.s, D.W.3s, 8/-.

ALL Types of Brand New American Valves in Stock; 247s, 235s, 224s, 235s, 237s, 12/-, 227s, 242s, 226s, 280s, 245s, 232s, 10/6.

U.X.250s, 7 watts output, 16/-; for quickest delivery send telegraph money order.

OVER 2,000 Valves are Always in Stock for Immediate Dispatch; carriage paid, cash with order, or e.o.d.—Ward, 12, Tredgar Rd., Bow, E.3. [2242]

COMPONENTS, ETC., FOR SALE.

CONDENSER Blocks 6d. per mfd., 650-volt test, in blocks of 6 mfd. upwards, wired in 2 mfd. units; 2 years' guarantee; send by return of post on 7 days approval; cash with order.—Butlers Radio, Ltd., 191, Forest Rd., Walthamstow, E.17. Phone: 3134. [10395]

RADIOPAK, never used, owner building superb; £2/3.—1, Ashdown Rd., Heaton Moor, Stockport. [2184]

ORIGINAL (N. and K.) Farrand Inductor Speaker, listed £2, price 30/-; Rola 49/6 model, permanent magnet, moving coil, 32/6; 2-volt Eta (H.F.) valves, new, 2/6.—Radio Supplies, 131, Lee Rd., Blackheath, London, S.E.3. [2246]

A.F.7 Ferranti Transformer, J.B. 0.00004 Condenser, 6 Varley resistances and holders, all new; 17/6 lot.—124, Claremont Rd., Forest Gate. [2236]

SINGLE DIAL Super Kit, 30/-; O.P.M.1C, 14/-; Parmeko-Hydra 500v. 120 m.a. unit, £6; wanted, O.P.M.6C.—70, Thornton Lane, Bradford [2237]

H.P.11, 21/-; Polar Star 3-gang, 14/-; A.F.5, 15/-; Telsen 1.75/1, 5/6; K.G.C., 3/-.—Lapin Radio, 49, Clifton Rd., Liverpool, 6. [2240]

for "SOUND" EQUIPMENT

Special P.A. Speakers suitable for all outputs. Power Amplifiers suitable for DANCE HALLS, SPORTS MEETINGS, FETES, ETC. The most up-to-date apparatus for outdoor or indoor sound reproduction and Radio reception.

TANNOY PRODUCTS DALTON ST., WEST NORWOOD, S.E.27 Manchester Branch:— 2, Whitworth Street West, Deansgate, Manchester Scottish Agents:— Messrs. Spensers (Scotland) Ltd., 119, George Street, Edinburgh

FUSES and FUSE-HOLDERS

An exceptionally neat and compact Fuse-holder to take 1 1/2 in. fuses, Heavy gauge phosphor bronze clips, color coding tags and terminals, Complete with 1 amp. fuse.



No. 1031 Price 9d. each Space Fuses, all ratings and sizes, 6d. each.

Write for complete list.

BELLING-LEE FOR EVERY RADIO CONNECTION

Cambridge Arterial Road, Enfield, Mdx.

BURTON FOUR POSITION ROTARY SWITCH

(Patent pending) A component which meets most switching requirements of modern Receivers. Will short three coils for long or short waves, operate gramophone pick-up, and 'On' and 'Off' at mains voltage. Maintains firm uniform pressure between surfaces. Ask your dealer for it.



6/- EACH C. F. & H. BURTON PROGRESS WORKS, WALSALL, ENG.

Components, etc., for Sale.—Contd.

PEPPER'S Radio Clearance.

ALL Goods Sold under Money Back Guarantee; valve tested before dispatch; cash or e.o.d.; carriage paid over £2.

VALVES, as new.—P.M.24a, D.C. Pen., D.P.T., D.C./S.G. A.C./S.G., etc., 9/11; P.M.2, P215, 4/11; P240, 5/11; P414, Dario 4 volt S.P. and power, 3/-; P.m.6d., P.M. P.M.3d.x., L410, etc., 11s.5a, D.E.5a, 2/3; Cosmos bus A.C./P1's, 5/-; boxed Osram P.T.25's, 4/18/6; U8 10/6.

L.P. Transformers.—Mullard Permacore, 5/6; Nicel 4/11; Nicore 11, 6/6; Marconi Ideal, 4/1, 6/6; ditto, Popular, 3/6; Pilot, 3/11; R.I., 7/1, 5/6; Foto Premier, Stal, Formo, British General Triumph, R.I. Brunet, etc., 2/11; Pye latest, 6/6; Telsen Ace, 2/3; ditto, Grand, 3/3; B.T.H. 1:1, 2:1, 4:1, 4/6 each.

OUTPUT Transformers.—R.I. Pentam, 9/11; O.P.4c 9/11; B.T.H., 5/11; Marconi, universal type, 6/11.

RADIOPAKS, complete, as new; listed £3. 4/16/6.

COILS.—British General aerial tuners, 6/6; ditto, band pass units, aerial or anode types, 6/6; ditto, inter valve coils, 3/6; Colvera M.M.3 Star dual wave, 2/11; Bulgin multi coils, 2/11; T2R and R2P's, 3/11 each; T.G.S.C. and cans, 4/11; Lewcos, B.R.F., B.P.F./G.R. 6/6; T.O.S., G.R., 4/9; P.V.1, P.V.2, 6d.; D.B.A., 2/11.

6D. Each.—Dubilier toroids, 6-pin bases, 6-pin coils, plug in coils, variable condensers, 20ft. connecting wire.

DIALS.—Ready Radio, Telsen dials, 2/-; Ormond friction dials, 2/6; Barnetup, Utility Microdials, 3/3; small Indigraphs, Ormond, Astra, etc., small types, 1/6.

METERS.—G.E.C., large type moving iron meter, 8in. dia., 0.250v., 12/6; portable meter, 0.300 volts, 12/6; switchboard, 0-10 volts, 6/6; Weston panel ammeter, 25-0 25, 5/-; Siam 3 range pocket type, 5/-.

PICK-UPS, etc.—Bluespot, latest, 63/- type, 28/6; Zono phone, 8/11, above boxed; B.P.H., alt. type, 15/6; Harlie, 32/6 type, 15/3; Marconi, old type, similar to Woodruffe, with transformer, 10/6; Apollo £5 universal D.C. or A.C. gramophone motors, new, boxed, £2.2.

VOLUME Controls.—Sovereign, R.I., etc., 50,000 ohms and 10,000, 3/11; A.E.D. Inders, 5/-.

WHERE-WOUND Resistors, Ferranti, Mullard, Varley, etc., 1/6; Spaghetis, etc., 4d.; grid leaks, 3d.

VARIABLE Condensers.—Polar, Lotus, J.B., Formo, Ormond No. 4, etc., Lissen, 2/3; Formo, Ormond S.M. types, also Astra, etc., 3/3; J.B. tiny S.M., J.B. Popular Log S.M., G.E.C., S.M., etc., 4/6; G.E.C., Bakelite, 0.0005 with disc drive, 2/3; Read-rad, Brookmans condensers, 1/6; Presets, 9d.; differentials, various, from 1/6; neutralising condensers, 1/-; Polar Ideal, S.M. and J.B., with drum drives, 0.0005, only 4/6.

ANGED Condensers.—Polar Tub 2 gang, 8/6; ditto, Unitone, 10/6; Ormond 2-gangs, 7/-; J.B. dual-drum types, 5/6; Utility 2-gangs, unscreened, 4/6; B.A.T. Lyons 4-gangs, boxed, 13/6; J.B. 3-gang chassis-mounts, 10/6, or with drives, 12/6; Oulton extenders, 3-gang, 0.0005s only, drum type, boxed, 17/6; disc type, as new, 22/6; H.M.V. 2-gangs, with trimmers, similar to Radiophone, new, 5/9.

I.F. Chokes.—Pye 2Ch., 32h., 6/3; R.I. Pentomite, 9/11; Ferranti Ba, R.I. Dux, 4/3; Lissen 20h., 5/-; Nichoke H. 7/3; Pentode Nichoke, 6/3; few Serrax 50h. Pentode chokes, shop sold, 10/6; Telsen, 100h., 3/9; Lissen, ditto, 2/-.

ELIMINATOR Kits (A.C.).—Heavy duty model, output 550 volts at 120 m.a., complete, £3 5/-; Westinghouse rectified kits, with metal cases, giving 250v. 80 m.a., with lower tappings and 4v. L.T. winding, £3/5; power packs, giving 200 v. 50 m.a., metal rectified, £2/7/6; full details for stamp.

MAINS Transformers.—Challis for L.V.2 or 4, 11/6; Marconi 400-0-400 for U5 or U8, 10/6; lists of others for stamp.

SUNDRIES.—Varley Anti-mobos, 2/9; Harlie, 10/6; Leno controls, 3/3; aluminium screens, 1/-; valve screens, 1/3; Lotus relays, 4/6; Linsom's Galvo, 4/6; Silver Marshall 3-valve S.G. set, adapted for British valves, £1/5.

LOUD-SPEAKERS.—Epech 66, 6-volt field, £1/5/6; Rola F7, ditto, new, £1/5; W.B. P.M. speaker, 45 type, 45/-; Magnavox D.C.144s, 2,500 ohms, boxed, £1/5; Ormond 12/6 units, 6/9; 8/6 type, 4/9; Wals unit and chassis, 16/6; Lamplugh inductor, £1/2/6.

FIXED Condensers.—Hydra 2mfd., 2,000v. test, 3/6; T.C.C., 2 mfd., 750v. test, 1/9; T.C.C., 4 mfd., 3/-; Telsen Dubilier, etc., 0.01, 0.04, 0.3, 0.1, 0.5 mfd., 9d.

BATTERY Chargers.—Ferranti, 1/2 amp., 22/6; few new 28.0 volt 1.3 amp., complete, £2; few ditto, 12 volt, metal rectified, 1 amp., £1/9/6.

8-PAGE Bargain List for Stamp; order now and avoid disappointment.

TREVOR PEPPER, 48, Wake Green Rd., Birmingham. [2226]

MARCONI M.C. 6v. Pot. 17/6; Magnavox M.C. 6v. Pot. 15/-; Baker M.C. 6v. Pot. 12/6.

SONOCHORDE Standard P.M. M.C. Speaker, with universal transformer, unused; 22/6, list 35/-.

SONOCHORDE D.C. Speaker, 2,500 ohms, with universal transformer, unused; 17/6.

LOTUS 0.0005 Slow Motion Condenser, new; 3/-, list 6/6.

J.B. Unitone, with disc drive, fully screened, unused, 10/6; J.B. Single Nugent, unused, 6/6; Ferranti A.F.5, 15/-; Ferranti A.F.11/C, 26/-; Ferranti O.P.M. 11/C, 20/-.

WESTINGHOUSE Metal Rectifier, 300v. at 60 m.a., unused, 13/6; 350v. at 65 m.a., 15/-.

ALL Goods Guaranteed Perfect, sent on seven days approval against cash or e.o.d.; we allow 50% off the list price on your surplus goods, in part exchange for new.

W. B. MACKIE, 61, Dartmouth Rd., Forest Hill, S.E.23. Phone: Sydenham 6741. [2255]

EPOCH 99 1/2 G. A.C. Moving Coil Speaker, multi ratio transformer O.T.D.B., Vibrant baffle, together cost £8/10; take £4/10; Ekco A.C.25 eliminator, cost £3/17/6; take £2/5; Varley D.P.12 choke, 8/6; A.C./H.L., 6/-; A.C./S.G., 2/-; V.M.S.4s, 9/- each.—Cunningham, 18, Latham Rd., E.6. [2207]

UTILITY 3-gang Super-het. Condensers, 19/-; Wearite I.F., 7/6 each; K.53 for Baby Super, 6/3; nearest offers.—Parker, 49, Toronto Rd., Exeter. [2206]

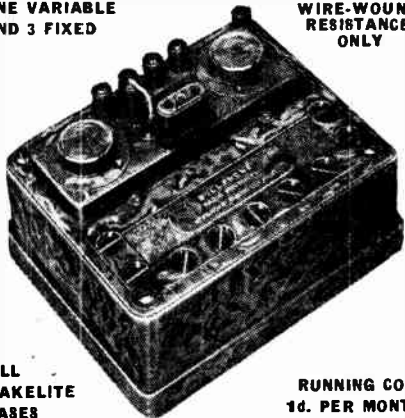
THE WORLD'S BEST

20 MA AT 120V AC MAINS 200-250. 45'

50% CHEAPER 25% BETTER
than any other make.

ONE VARIABLE AND 3 FIXED

WIRE-WOUND RESISTANCES ONLY



ALL BAKELITE CASES

RUNNING COST 1d. PER MONTH

OTHER MODELS

A.C.2	Same as A.C.1, but with Trickle Charger.	60/-
A.C.3	150v. 30mA. 4v. Raw A.C.	60/-
A.C.4	Same as A.C.3, but with Trickle Charger.	75/-
A.C.5	200v. 50mA. 4v. Raw A.C.	70/-
D.C.2	140v. 35mA. One Variable, three Fixed.	35/-

WESTINGHOUSE METAL RECTIFIERS

D.C.1	25mA. OUTPUT For 150v. or 230v. Mains.	22/6
--------------	--	-------------

10/- Deposit and balance monthly, will secure any Bullphone Eliminator. Ask your local dealer for particulars, or write direct to address below.

UNSOLICITED TESTIMONY.

14, Stamford Close, Southall, Middlesex.
Dear Sir,—I have received the A.C.2 Eliminator quite safely. It is very satisfactory and the Trickle Charger works excellently. It has made a big difference to my Set, and is good value for my money. I thank you for the attention you gave my order and will recommend my friends to use Bullphone Products in the future. I might add that there is no trace of Hum in the Unit. Thanking you, I remain, yours sincerely, W. Lounfon.

43, Portland Street, Norwich, Norfolk.
Dear Sirs,—I purchased one of your Eliminators, model A.C.1, to run my S.T.400 Set, and I have yet to hear a smoother and better Eliminator even at double the price. Four tappings and enough power to work a large power valve is a splendid example of real value for money. Thanking you, I remain, E. J. Parkinson.

31, Squires Road, Shepperton Green, Middlesex.
Dear Sirs,—I feel I must write to express my full appreciation for the Bullphone A.C.2, recently supplied by you. I have no hesitation in giving recommendation for such a thoroughly reliable and efficient piece of apparatus. Absence of hum and ease of use is well worth my opinion that this is the finest value in Eliminators.—Yours truly, W. G. Goff.

11, Aldborough Street, Blyth, Northumberland.
Dear Sirs.—The A.C. H.T. Eliminator arrived intact, and having fixed up on my 3-valve set find it in good order. It has done all that you claim for it, very smooth and silent with ample reserve power. Thank you for an excellent unit.—Yours faithfully, R. Budd.

Radio experts highly recommend Bullphone Eliminators and components for all the latest circuits. Don't be put off with any other make. There is no other as good, not at double the price. If your dealer cannot supply, send direct.

BULLPHONE RADIO
NEW NORTH RD. BARKING, ESSEX
PHONE CHT0WELL 162

Components, etc., for Sale.—Contd.

PREMIER SUPPLY STORES Offer the Following Brand New Goods at a Fraction of the Original Cost; all goods guaranteed perfect; carriage paid over 5s., under 5s. postage 6d. extra (Ireland carriage forward), e.o.d. charges extra.

SPECIAL Offer of Mains Transformers, manufacturers' type, any input, output 250-0-250 volts 60 milliamps, 4 volts 1 amp. (c.t.), 4 volts 3 amps. (c.t.), 8/6; 180-0-180 volts 40 milliamps, 4 volts 1 amp., 4 volts 2 amps., 4/6; 175 volts 50 milliamps, 4 volts 4 amps., 4 volts 1 amp., 5/6; H.T.R. with 4 volts 3-4 amps., 8/6; with rectifier, 18/6.

MULTI-RATIO Output Transformers, 6 taps giving 15 different ratios, 7/6; Pyc chokes, 20 or 32 henries, 4/-.

PREMIER Chokes, 40 milliamps 25 henrys, 4/-; 65 milliamps 30 henrys, 6/-; 150 milliamps 30 henrys, 10/6.

SMOOTHING Chokes for Series Connected Filaments from D.C. Mains, carry 1 amp., 7/6; H.M.V. 110 henry chokes (100,000 ohms resistance, carry 10 m.a.), 3/6.

AMPLION High Inductance Chokes, resistance 2,500 ohms, 80 henrys, 60 m.a.; 5/6.

PREMIER Eliminators, input 200-250 volts, 40-100 cycles A.C., incorporating Westinghouse metal rectifiers, output 250 volts at 60 milliamps, 80 and 120 volt taps, 42/6; with 4 volts 4 amps. L.T. (c.t.), 7/6 extra.

PREMIER Eliminators, output 150 volts at 30 milliamps, 80 and 100 volt taps, with 4 volts 3-4 amps. (c.t.), L.T. 37/6; with trickle charger, 42/6.

PREMIER Eliminators, output 120 volts at 20 milliamps, 80 and 100 volt taps, 27/6; with L.T. trickle charger incorporated, 35/-.

D.C. Eliminators, output 120 volts at 20 milliamps, 80 and 100 volt taps, 15/-; larger model, output 200 volts 50 milliamps, 80 and 120 volt taps, 25/-.

ACCUMULATOR Chargers, 200-250 volts A.C., all incorporating Westinghouse rectifiers, 2, 4 and 6 volts at 1/2 amp., 17/6; 2, 4 and 6 volts at 1 amp., 22/6; up to 12 volts at 1 amp., 27/6; up to 6 volts at 2 amps., 35/-; up to 6 volts 3 amps., 47/6; charger with 3 12-volt 1-amp. circuits, 75/-.

PREMIER Mains Transformers, all guaranteed, terminal connections, input 200-250 volts, 40-100 cycles, output 135 volts 80 milliamps, for voltage doubling, 8/6; 4 volts 4 amps., centre-tapped, L.T. 2/- extra; Westinghouse rectifier for above, giving 180 volts at 30 milliamps, 8/6.

PREMIER Mains Transformers, output 250-0-250 volts at 60 milliamps, 4 volts 1 amp., 4 volts 2 amps., and 4 volts 3-4 amps. (all c.t.), with screened primary, 15/-.

PREMIER Mains Transformers, output 400-0-400 volts at 100 milliamp., 4 volt 4 amp., and 4 volt 2.5 amp.; 18/6.

H.T.R. Transformers, with 4 volts 3-5 amps. L.T. (c.t.), with screened primary, 15/-; with Westinghouse rectifier, 25/-.

H.T.9 Transformers, output 230 volts 200 milliamps, with 4 volts 4 amp. (c.t.), with screened primary, 15/-; with Westinghouse rectifier, 26/-.

H.T.10 Transformers, with 4 volts 4 amps L.T., 15/-; with rectifier, 27/- (smoother output 200 volts at 100 milliamps).

PREMIER Mains Transformers, 12 volts 1 amp., 7/6; 9 volts 1 amp., 7/6; 4 volts 4 amp., and 4 volts 2 amp., 8/6; 14 volts 4 amp., 12/6; 4 volts 3 amp., 7/6; 4 volts 5 amp., 8/6; 22 volts 1 amp., 10/-; 6 volts 2 amp., 7/6.

MAINS Transformers, output 350-0-350 volts 90 milliamps, 4 volts 3 amps. (c.t.), 4 volts 2 amps. (c.t.), 12/6.

AMPLION Mains Transformers, input 100-250 volts, output 350-0-350 volts 120 milliamps, 4 volts 5 amps., 4 volts 2 amps., and 6 volts 1 amp. (all c.t.); 17/6.

T.C.C. Condensers, 250 volts working, 4x4x1 mfd., 5/-; 350 volts working, 4x4x2x2x2 mfd., 7/-; 375 volts working, 6x4x2x2x2 mfd., 10/-; 300 volts working, 4x4x2x1 mfd., 6/-.

400 Volts Working, 3 separate 4 mfd. condensers, 8/6; with 2 separate 1 mfd. condensers, 2/- extra.

WESTERN ELECTRIC, 400 volts working, 0.01x0.01 mfd. 1/-; blocks 4x2x2x2x1x0.09 mfd., 400 volts working, 6/-.

FERRANTI Condenser Blocks, 300 volts working, 4x4x2x2 mfd., all entirely separate; 10/-.

T.C.C. Condensers, 750 volts working, 2 mfd., 4/-; 750 volts working 4 mfd., 6/-; 4 mfd, 400 volts D.C. working (300 volts A.C. working), 4/-; 4 mfd. electrolytic condensers, 440 volts working, 3/-; 8 mfd., 3/3.

WESTERN ELECTRIC Condensers, 250 volts working, 1 mfd. 6d., 2 mfd. 1/-; 400 volts working, 1 mfd. 1/-, 2 mfd. 2/-.

POLAR 3-gang Variable Condensers, tub type, fully screened, split end vanes and disc drive, 0.0005; 10/-.

ORMOND All-brass 2-gang Condensers, semi shielded, 0.0005, 5/-; Amco 3-gang 0.0005 condenser, with trimmers (listed 30/-), our price 7/6; Polar 0.0005 and 0.00035 Bakelite dielectric condensers, with knob, 1/-.

BRITISH RADIOPHONE 4-gang Condensers, with trimmers, 12/6; fully screened, 16/-.

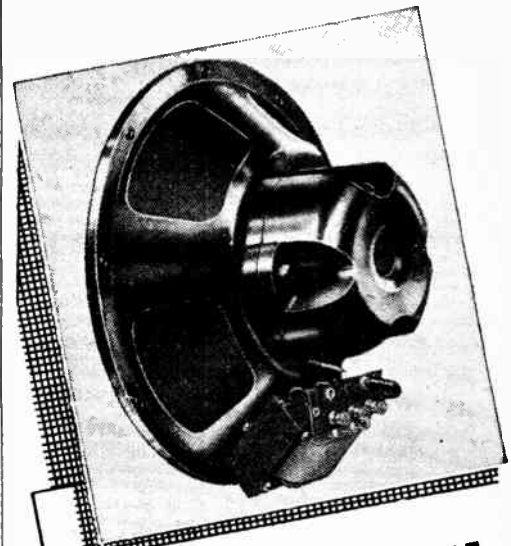
SPECIAL Offer of Wire Wound Resistances, 4 watts, any value up to 10,000 ohms, 1/-; 8 watts, any value up to 15,000 ohms, 1/6; 15 watts, any value up to 50,000 ohms, 2/6; 25 watts, any value up to 50,000 ohms, 3/6; 50 watts, any value up to 50,000 ohms, 5/-.

WIRE Wound Potentiometers, 15,000 ohms, 1/6; Centralab potentiometer volume controls, 50,000 ohms, 2/-; Colverstats, logarithmically wound potentiometers, 6,000 ohms, 1/9.

HEAVY Duty Variable Resistances, slider type, wound on porcelain, 2,000 ohms, 1-4-amp., 5/-; 500 ohms, 1-2-amp., 5/-.

ROLA 2,000 and 6,500 ohms, type F6, 17/6; Rola F5P.M. permanent magnet, 20/-; F6P.M. permanent magnet, 31/- (all with pentode output transformers).

(This advertisement continued on next page.)



CELESTION SUPREMACY

Speakers for Specialised output conditions.

A Celestion Speaker was specified for the first Q.P.P. Receiver ever designed in this country. Since that date Celestion have introduced a complete range of speakers specifically designed for Q.P.P. amplification.

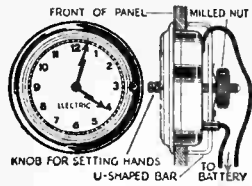
Now—Celestion are again ready with speakers to suit class B output valves which will shortly be available. Watch for future announcements.

The speaker illustrated above is the O.P.P. 19A, for use with Mazda Pen/220A and equivalent valves in Quiescent Push-Pull. Price 50/-. including special transformer. Other models from 30/-.

CELESTION LTD., LONDON RD., KINGSTON-ON-THAMES.
London Showrooms: 106, Victoria St., S.W.1

CELESTION
The Very Soul of Music

FOREMOST NAME IN SOUND REPRODUCTION



FIT THIS ELECTRIC CLOCK TO YOUR SET! NO MAINS NEEDED! KEEPS CORRECT TIME! NO WINDING!

Works off small battery lasting 12 months or can be plugged into G.B. Battery without affecting reception. Uses practically no current. Fits into hole 3 1/2" dia. in any panel up to 1 1/2" thick. Easy to fix—no screws required. Only 1/2" from front of panel to back of case. Swiss movement. Hands set from front. Nickel plated bezel. Useful addition to any set.



RIVERSIDE MFG. CO., LTD., Dept. 20, Crisp Rd., Hammersmith, W.6. Telephone: Riverside 6392.

EPOCH MOVING COIL SPEAKERS
The Finest in The World in Each of Their Price-classes.
Ask your dealer or call for a demonstration at Exmouth House.
Send for New Booklet W.S.5a. It is free.
EPOCH RADIO MANUFACTURING Co. Ltd. Exmouth House, Exmouth St., London, E.C.1
At the junction of Rosebery Avenue and Farringdon Road. Phone: Clerkenwell 6666 (4 lines)

WHAT IS "ENGINEERING OPPORTUNITIES"?
"ENGINEERING OPPORTUNITIES" is a 250 Page Handbook that has been prepared after years of patient search into the possibilities of various Engineering careers. It shows clearly and definitely the way in which you may carve out a successful career in your chosen branch of Engineering, irrespective of your age, education or experience.
Among a host of other things it outlines Home Study Courses in all branches of Civil, Mech., Elec., Motor, Aero., Wireless and "Talkie" Engineering, and shows the easiest way to pass A.M.I.C.E., A.M.I.Mech.E., I.E.E., A.M.I.A.E., M.I.M.T., G.P.O., Matriculation, Civil Service and other Examinations.
"ENGINEERING OPPORTUNITIES" is a unique Handbook that you should most certainly read. Send for your copy to-day—FREE of any cost.
BRITISH INSTITUTE OF ENGINEERING TECHNOLOGY, 387, Shakespeare House, 29/31, Oxford Street, London, W.1.

THE BRITISH RADIO INSTITUTION
Founded 1930; membership steadily increasing. Objectives: closer technical co-operation between, and subsequent advancement of, its members. Office bearers honorary and elective. Association by examination or approved qualifications. Subscription Membership open to all at 5/- per annum (plus 2/6 on entrance). Balance Sheet published annually. Explanatory brochure post free from Hon. Sec.—J. D. Fox, 25 Kingswood Drive, King's Park, Cathcart, Glasgow. London Branch Chairman, J. J. Denton, 25 Lisburne Road, Hampstead, N.W.3. Read its chief organ,
The British Radio Annual, 1932,
Contents: Heaviside's layers, band-pass filters, tone correction, i.f. amplification, frequency multipliers, sound-film operation, echo sounding, writing technical articles, etc. Price 2/- net obtainable through W. H. Smith & Son, Ltd. (England), John Menzies & Son, Ltd. (Scotland), or direct from the Hon. Sec. Order now.

EASY TERMS PROMPT DELIVERY
Any Amplion, Blue Spot, Baker, Celestion, Epoch, R. & A. Rola, Sonochorde, or W.B. Moving Coil Speaker supplied
Send 5/- only
and pay the balance by monthly instalments. No references. Entirely private and confidential.
KITS, PARTS, SETS, ELECTRIC CLOCKS ON EASY TERMS.
Write for Catalogue and details to:
TURNADGE & PARTNERS, LTD.
111, Fleet Street, London, E.C.4
Telephone: Central 1903

Components, etc., for Sale.—Contd.
(This advertisement continued from previous page.)
AMPLION Moving Coil Speakers, type E.M.644, dual field 2,500 and 5,000 ohms (100-250 volts), with output transformer, 12/6; ditto, 200-250 volts A.C., 22/6.
B.T.H. Induction Type (A.C. only) Electric Gramophone Motors, 100-250 volts, 30 - complete; double spring gramophone motors, with 12in. turntable, 15/- complete.
SPECIAL Offer of Kolster Brandes Electric Gramophone Motors all complete with turntables, list price £5; No. 1 Super A.C. 100-250 volts, 35/-; No. 2 Super Universal, 100-250 volts A.C. or D.C., £2.
E.K.O. Microphones, complete with transformer, a really fine job, 18/6; wire wound Clarostat potentiometer, 50,000 ohms, 2/6.
WESTINGHOUSE Metal Rectifiers, 120 volts at 20 milliamps, 6/6; 180 volts at 30 milliamps, 8/6; 8 volts at 0.5 amp, 6/6; 250 volts at 60 milliamps, 10/-; 6 volts at 1 amp, 9/6; 120 volts at 1 amp, 12/6; 6 volts at 2 amps, 20/-; 200 volt at 100 milliamps, 11/6.
A.L. The Following Lines, 6d. each, or 5/- per dozen assorted: Tuning condensers, shielded S.G. or pentode leads, Polymer 0.01 condensers, 2H. lengths of screened wire, 5-pin valve holders, Crabtree sunk 5-amp. switches.
AMPLION Six Receivers, listed £21, complete with valves, 200-250 volts A.C.; 5 guineas.
FOR Sellers Only—The following valves, guaranteed as new, at half list price: D.C.Pen., D.C.28.G., U.U.120/350, A.C.P., V.D.S., D.C.S.G., A.C.P.1, 410PT., D.H., M.V.S.G., P.T.41, A.C.S.G.
A.L. Orders to 2022, High St., Clapham, S.W.4. (Maeculay 2188. Closed 1 o'clock Wednesday. Open to 3 o'clock Saturdays. Nearest Station, Clapham North Underground. [2172
COSMIC RADIO SERVICE, 23, Water St., Liverpool.—Philips 366 charger, 1-7 coils at 5-6 amps, 210v. (with resistance for 250v.), £3; Philips H.T. (G.B. unit 300/5, less valves, 230v.), £1 10/-; Ekco 1V.20, A.C./H.T. unit, £1 1/-; Colven K21, K22, K23, ganged, £1; 2 K.B.L.C. and K.G.R. ganged, 15/-; Ferranti M3 chassis, £1; R.L. 30 20H. 50 m.a. chokes, 5/-; postage extra.— [2198
A.F.7. A.F.50'S., O.P.M.6C.; what offers?—Verney, Rumsan, Barnstable. [2197
FERRANTI A.F.5, 15/-; A.F.3, 12/6; Atlas Pentode choke, 10/-; Savage 2040 heavy choke, 6/-; set Edystone S.W. coils, 10/-; chassismount 3-gang, 7/6; P.C. 4 ind., 800v. test, 4/-; 0.05 mica, 2/6; J. H. Balleny, 11, Hildwell Rd., Edgbaston, Birmingham. [2196
MOVING Coil Milli-Ammeters, 0.50, 10/6 each; 2 milliamps and 120v., 17/6 each; other ranges in stock; alterations, repairs of every description. The Victa Electrical Co., 47, High St., Battersea, S.W.11. [0355
PILOT Author Kit of the Universal All-Mains Two, suitable for A.C. or D.C. mains, 200-240 volts; listed at £6/10, our price 49/6; parts as specified below.
PANEL, baseboard, 3 W.B. valve holders, Ormond 0.0005 slow motion, R.L. L.F. transformer, Lewros 50,000 ohm potentiometer, Formo bank condenser, Dublier 1 and 2 volt resistances, Keystone fixed condensers, Ashley smoothing condensers, terminals and all small accessories; complete with 3 Ostar Ganz valves, mains choke, complete new and boxed.
MOVING Coil Speakers, S.G. Brown, 2,500 ohm field, with universal transformer, 15/-; Magnavox model 142, 2,500 ohm field with pentode transformer, 25/-; Rola model K, 2,500 ohm field with pentode transformer, 16/-.
CONDENSERS—All T.P.C.: 0.1 mfd., 250 volts A.C. working, 6d.; type 65, 250 D.C. working, 0.5. 8d.; 1 mfd., 10; 2 mfd., 1/4; 8 mfd. aqueous type 440 volt H.C. working, 3/9; 4 mfd., 3/3; 0.002, type 8, 4d.; 0.00025, type M, 4d.; 4 x 4 x 2 1/2, separately earthed, 250 volts D.C. working, 2/9.
UTILITY 2-gang 0.0005, each half air spaced, external trimmer for front section, complete with disc drive, pilot lamp holder and fixing template, 10/6; Mine drum dial, complete with 0.0005 tuning condenser, dielectric type, 2/6; one only British Radiophone 0.0005 3-gang, complete with Utility horizontal disc drive, £1.
ONE Only, J.B. Breadthout 3-gang, 0.0005, with disc drive, 15/-; various coils as follows: 2 Colvodynes, 6/- each; intermediate transformers, 4/6 each; Varley H.P. inductive, 5/-; Colven K21 and 22, on base, 10/6; K.G.R., K61 and 62, on base, 15/6; K61, 2 and 3, on base, 15/6; K21, K22, K23, 5/- each.
LOEWE Vacuum Condensers and Resistances, 3d. each, 2/- per dozen; special prices for quantities; 10,000, 15,000, 25,000, 50,000, 100,000, and 3,000 ohms; 1/2, 1, 2 and 2 meg., 0.0003 and 0.005 condensers.
A.L. Valves Following are for Sellers Only, manufacturers surplus, emission guaranteed; Eta type 624, American base S.G., 6/-; P2 B, 7/6; P.M.12 and P.M.22a, 11/6; D.P.T., M.P.T.4, 11/6 each; D.S., D.S.B., V.D.S., S.4V.a, V.M.S.4, M.S.4b, M.S.G.1.A., A.C.S.G., 10/6 each; 41M.P., A.C.P.1, A.C.D.D., U14, 9/6 each; M.L.4, 244V, and A.C.H.L., 7/6 each; the following have been used for test purposes only, P.M.24a, P625a, 5/6 each; B12, L.S.5, and American base pentodes, types 47, 250 and 281, 3/- each; any of the above will be posted at customers risk.
MAINS Transformers, input 100-240 volts, 250-0-250 60 milliamps, 4 volts C.T., 4 amps, 4 volts 2 amps, C.T., 9/6; 350-0-350 60 milliamps, 4 volts 4 amps, C.T., 4 volts 2-3 amps, C.T., 11/6; 350-0-350 100 milliamps, 4 volts 4 amps, C.T., 4 volts 2-3 amps, 11/6; all brand new and unused, and a thoroughly sound job; Philips mains transformers 3 models, 196, 240 and 253 volts input, outputs 200-0-200 40 milliamps, 4 volts 2 amps., and 4 volts 1 amp., all models 3/- each.
MODERN Radio Mains Transformers, input 200-240, output for H.T. 7 and 4 volts 2 amps, C.T., 4 volts 1 amp, C.T., 8/6; 230 volts 50 milliamps, half wave, 4 volts 2 amps, C.T., 4 volts 1 amp, C.T., 7/6; output for H.T.5 and 4 volts 2 amps., 6/6; 150 volts 30 milliamps, half wave, and 4 volts 0.5 amp., 6/-; one only, Westinghouse rectifier, type A4, 18/6; twin H.P. chokes, high inductance, 1/4 each; W.B. 5-pin sub-panel valve holders, 3d. each; Zenite resistances for heavy power work, 50,000 ohms, carry 0.05 amps., 4/- each.
MODERN RADIO, 25, York Terrace, Clapham, S.W.4. Nearest Tube Clapham North. Phone: Maeculay 3409. [2228

A set is as good as its components

When you incorporate a BURTON TRANSFORMER in your set you are using a component of the highest efficiency, which will reveal itself in the tonal purity and volume of your set.
Ask your dealer for BURTON.
Wound in ratios of 3-1 and 5-1
PRICE 5/9
Made by
C. F. & H. BURTON, Walsall.
BUILD A BETTER SET WITH BURTON COMPONENTS

Electradix

PARCELS of useful oddments for the Experimenter who wants a junk-box of Coils, Magnets, Wire, Chokes, Condensers, Switches, etc., mostly ex W.D., parts worth a lot more than 10 lbs. 7/-, or 7 lbs. for 5/-, post free. British Isles only.

FROM L.T. TO H.T.
BATTERY SUPERSEDER

Get a GENEROMETER
BATTERY SUPERSEDER. No H.T. Batteries needed for your set even if you are not on the mains. An H.T. battery, run down to 30 volts, is useless and has to be thrown away. Yet you pay for the wasted volts. The Generometer makes H.T. from your L.T. 2-volt battery, rectified and smoothed, gives 3 tappings and lasts indefinitely. A boon and blessing to all using H.T. Reduced from £3 15s. New and Guaranteed. From us only. PRICE 37/6
Write for latest Catalogue.
ELECTRADIX RADIOS
218 Upper Thames Street, E.C.4

PARIMA SELENIUM CELLS
FOR ALL PURPOSES.
Parima Light-Sensitive Resistances are constant mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months. 5/-
Prices from
PARIMA MANUFACTURING CO.
21, BROMLEY ROAD, S.E.6
Hither Green 3829

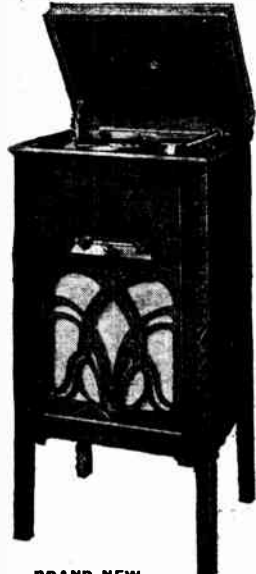
SERADEX BATTERY CHARGERS
Type VR1326, for mains 200 to 250v. 50c.
Will charge up to 20 cells at 1.3 amps.
Guaranteed for one year.
Price £215.0
Full details and list of others for stamp.
TREVOR PEPPER, Wake Green Rd., BIRMINGHAM.

WRITE FOR OUR ALLOWANCE
for your surplus apparatus when buying a new set. Our long experience in Part Exchange and Mail Order and our steady connection with satisfied customers is your guarantee. A perfected system and highly trained staff mean rapid attention, prompt deliveries and courteous dealings.
CORADIO
Dept. W.2, 54, Malden Road, London, N.W.5.

BOOKS on WIRELESS
Write for complete list to
ILIFFE & SONS LTD.,
Dorset House, Tudor St., London, E.C.4. w.w.1

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

SPECIAL BARGAIN MARCONIPHONE RADIOGRAM MODEL 330



LIST PRICE

~~32~~ GNS

OUR PRICE

19 GNS.

or 24 monthly payments of **18/7**

CARRIAGE PAID.

S.G. H.F., Detector, Pentode and Rectifier Valves, Band-pass Tuning, Full size moving coil speaker, unique tuning system. Connections for Mains Aerial and extra speaker. Latest Marconiphone pick-up, synchronous Induction Motor (on A.C.) with Automatic stop, felt-lined lid, superb performance on Radio or Record. **Secure your model now while stocks last.**

BRAND NEW

4 valves (including Rectifier) in handsome dark oak cabinet 41" high. Complete ready to play. For A.C. Mains operation.

Send by Post or Call. Telephone: Clerkenwell 9406/7

PETO-SCOTT CO. LTD.
77, CITY ROAD, LONDON, E.C.1.
West End Showrooms: 62, High Holborn, London, W.C.1

MAINS TRANSFORMERS

FOR THE A.C. MONODIAL SUPER WITH A.V.C.

For 2.5 watt A.V.C. Power Chassis.
Mains Transformer: 350-350 v. 100 m/A, 4 v. 6 amps. centre-tapped, 4 v. 2.5 amps. centre-tapped, and twice 4 v. 1 amp. centre-tapped with screened primary. Standard type, Price **37/6**. Manufacturers' type, Price **33/-**.

For 5 watt A.V.C. Power Chassis.
Mains Transformer: Primary with earthed screen, secondary windings 400-0-400, 120 m/A, 4 v. 6 amps. c.t., 4 v. 3.5 amps., 4 v. 2 amps., 4 v. 1 amp. c.t. Standard type, Price **50/-**. Manufacturers' type, Price **45/-**.

FOR THE FERROCART III
Mains Transformer to exact W.W. specification, type F.C.3. Price **22/-**.
Speaker field replacement choke, type X37D. Manufacturers' type, Price **16/-**. Standard type, Price **18/-**.

SAVAGE

MAINS EQUIPMENT
W. BRYAN SAVAGE
56/58, CLERKENWELL ROAD, E.C.1.
Phone: Clerkenwell 3068.

Components, etc., for Sale.—Contd.

PARTRIDGE, B.Sc. (Eng.), A.M.I.E.E., A.I.Rad.E., radio mains apparatus specialist and manufacturer; trade enquiries invited.

PARTRIDGE Transformers, guaranteed 12 months; primaries 200-250v., 50 cycles; all L.T.s C.T.

PARTRIDGE Mains Transformers for W.W. circuits, exact to specification; prices carriage paid.

A.V.C. Monodial 2½ Watt Chassis, 20/-; 5 watt chassis, 24/-; Ferrocart III, 15/-; quality amplifier, 22/-; Monodial A.V.C. conversion, 4v. 1a., 8/-.

PARTRIDGE Popular Specifications.—250.0-250v. 60 m.a., 4v. 1a., 4v. 3a., 12/-; 350.0-350v., 120 m.a., 4v. 2½a., 4v. 4a., 4v. 1a., 18/6; 500.0-500v., 120 m.a., 4v. 2½a., 4v. 5a., 4v. 1a., 23/-.

PARTRIDGE Transformers Wound to Any Specification, delivery 3 days; technical advice free.

PARTRIDGE Chokes.—10 H. 200 m.a., 120 ohms, 10/6; 20 H. 120 m.a., 250 ohms, 11/-; 50 H. 60 m.a., 650 ohms, 10/-; 20 H. 60 m.a., 450 ohms, 7/3.

If You Can Afford Expensive Components Buy Them; if not, purchase with caution; mains are dangerous!

PARTRIDGE Products Consist of the Finest Materials, handled by skilled labour, backed by scientific design.

PARTRIDGE, B.Sc. (Eng.), A.M.I.E.E., A.I.Rad.E., King's Buildings, Dean Stanley St., London, S.W.1. Phone: Victoria 5035. [2159]

MILDMAY RADIO EXCHANGE Offers the Following, sound and perfect.

FERRANTI Triple Range Meter, 0.10-0.250v. 0.100 m.a., 40/-; 0.5 m.a., 20/-; 0.150 m.a., 20/-; 0.20 amps., 0.10 volts, 14/-.

ELLIOTT Moving Coil Meters, 0.2 m.a., 20/-; 0.100 m.a., 20/-; Weston type 506, 0.10v., 0.20 amps., 10/- each.

VOMETER, sound and perfect, but requires new battery, £4/10; Pitco De Luxe meter, listed 42/-, 25/-.

VARLEY Square Peak Coils, 7/6; H.P. coils, 4/6; Colvern, pair K.B.L.C.s and K.G.R., 18/6 set; Colverdynes, 110 kc., 6/6; T.D. coils, 5/6 each; S.T. 400 coils, 7/- pair.

RADIOPHONE 4-gangs, complete, with Drives, 16/6; 2-gang type, 10/-; superhet 2-gang, 12/6; Polar 2-gang, 10/-; Ormond 2-gang, 9/-; J.B. Unitune 3-gangs, 15/-.

MARCONI Latest Type Pick-up, 27/6; Oil type, 22/6; Varley 120 watt transformer, 27/6.

R.I. Pentomite Chokes, 9/- each; Varley P.P. input, 14/-; output, 10/-.

FERRANTI S4V., 14/-; A.F.5, 17/6; A.F.5C., 19/6; O.P.M.I.C., 14/-; A.F.3C., 14/-; A.F.3, 10/-.

DEIHL Aristocrat A.C. Induction Motors, complete, auto stop, 35/-.

PHILIPS 5-valve A.C. Mains Type 2534 Receivers, with valves, £5/15.

CLIMAX Table Type Radiograms, listed £23/2, complete, Rola M.C. speaker, Collaro motor, pick-up and valves; £10.

SIX-SIXTY Chassis kits, A.C. mains, with valves; 65/-.

ULTRA 2-valve Sets, A.C. or D.C. mains, with valves and speaker; £4.

MULLARD Valves, S4V.A., S4V.B., 9/-; 354, 154, 244, 904V., 7/- each; P.M.24A., 10/-; P.M.24M., 11/-.

MAZDA A.C./S.G., 9/-; A.C./H.L., 7/-.

MARCONI M.L4, M.H.L., M.H.L4, 7/-; M.S4, 9/-; V.M.S4, 12/-; P.T.625, 9/-; P.T4, 11/-.

ALL Post Paid.—24, Mildmay Grove, London, N.1. [2229]

HOYNE'S Transformers and Chokes.

250-0-250 v. 60 m.a., 4 v. 1.2 a. C.T., 4 v. 2.3 a. C.T., 10/-, post 9d.

250-0-250 v. 60 m.a., 4 v. 1.2 a. C.T., 4 v. 2.3 a. C.T., 4 v. 1.2 a. C.T., 12/6, post 1/-.

350-0-350 v. 60.70 m.a., 4v. 2.3 a. C.T., 4 v. 3.4 a. C.T., Ferrocart III model, 12/6, post 1/-.

350-0-350 v. 120 m.a., 4v. 2.3 a. C.T., 4 v. 4.6 a. C.T., 4 v. 1.2 a. C.T., 16/-, post 1/3.

450-0-450 v. 150 m.a., 4 v. 2.4 a. C.T., 4 v. 2.6 a. C.T., 4 v. 2 a. C.T., 4 v. 2 a. C.T., 25/-, post 1/3.

500-0-500 v. 140 m.a., 4 v. 2.4 a. C.T., 4 v. 2.6 a. C.T., 4 v. 2 a. C.T., 4 v. 2 a. C.T., 27/6, post 1/3.

WESTINGHOUSE Model 150, 200, 240 v. 300 m.a., 4 v. 1.2 a. C.T., 4 v. 2.6 a. C.T., suitable for H.T.3, H.T.9, H.T.10, 15/-, post 1/3.

LINE Transformers (auto wound), 0-100, 110, 200, 220, 240 v. 60 watts, 7/9; 120 watts, 11/-; post 1/-; 180 watts, 15/- post 1/3.

CHOKES, 30 henry 150 m.a., 12/-, post 1/-; 20 henry 120 m.a., 8/6, post 1/-; 30 henry 60 m.a., 6/-, post 6d.; 20 henry 30 m.a., 3/6, post 6d.

HOYNE'S Transformers are Guaranteed for One Year.

HOYNE'S Transformers.—All primaries are tapped and screened, clamped in aluminium frames, and fitted with clearly marked terminal strips; any model can be obtained with screw terminals and engraved terminal strips at 2/6 extra.

HOYNE'S Transformers for Reliability.

HOYNE'S for the Best Components and Quickest Service.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., Wimbledon, S.W.19. Tel.: Liberty 3303. [2220]

ELEX Short Wave Converter, mains type, with valve, new condition, with makers' full instructions; £2.—Mead, 6, Macaulay Rd., S.W.4. [2215]

ROTARY Converter, 12 volts in, 200-300 ont, 50/-; Westinghouse B.O.T. A.C. wattmeter, cost £9, 25/-; A.C. charging board, 40 volts, 6 amperes, £6/6; Supremus De Luxe D.C. eliminator, 3 outputs, 50 m.a., cost 67/6, 18/6; limit De Luxe pick-ups, cost £1/13/6, 16/6; R.I. Band-pass coil, 4/6.—Jersey, Cumnor Hill, Oxford. [2175]

GUARANTEED—D.P.T., 10/-; A.F.3, 9/-; Pentam, 8/-; Parneck intervalve, 10/-; Ferranti 20 amp-meter, 12/6.—Coppin, 385, Durnsford Rd., S.W.19. [2205]

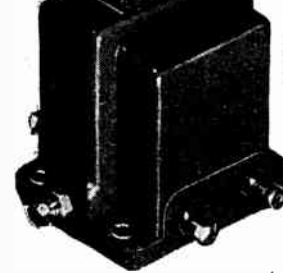
The Ultimate form of Amplification— "CLASS B."

The Ultimate Transformer SOUND SALES

The secret of success in the Sound Sales Transformer is a special form of winding which reduces self-capacity and makes possible an ultra-low D.C. resistance of only 200 ohms. Special alloy core providing adequate inductance. Note: Appearance similar to the Quiescent Model. **Price 9/-** Now Available.

First in Every New Development

SPECIFIED by "The Wireless World" for QUIESCENT PUSH-PULL



Sound Sales produced the first Quiescent Transformer to be specified for Quiescent Push-Pull by "The Wireless World."

Special 9-1 Ratio TRANSFORMER Primary Inductance 30 Henry at 2 m/s. **15/-**

UNIVERSAL CHOKE Ratios 1-1, 2-1 and 3-1. **10/6**

Specified by the Experts

SPECIFIED by "The Wireless World" for the FERROCART III A.C. RECEIVER.

SOUND SALES Speaker Field Replacement Choke PRICE **16/-** Super-Shielded type Mains Transformer to specification **32/6**

MAINS TRANSFORMERS

SPECIFIED by "The Wireless World" for the MONODIAL RECEIVERS

also exclusively Specified for the AUTOMATIC VOLUME CONTROL MODEL.

1 special 4 v. 1 amp. MAINS TRANSFORMER 12/6 For 2.5 and 5 watt chassis

A.C. Model—110-Henry CHOKES, 15/- M A I N S TRANSFORMER to specification, 36/- D.C. Model—210-Henry CHOKES, D.C.H.F. Chokes, 3/6 per pair.

Here's an example showing our 5 Watt Power Chassis type as specified for MONODIAL

MODEL M.5 **55/-**

Of special interest: Our New Super-Shielded Models



To cut out trouble cut out Coupon and post to-day.

Please send me illustrated catalogue of all Sound Sales Products.

Mr. _____ Address _____ SOUND SALES LTD., Tremlett Grove Hitchgate, London, N.19. Telephone: _____ Archway 1061-2.

How to save H.T. Battery Expenses

A Standard in use 8 years

FREE BOOKLET TELLS HOW EASY IT IS TO INSTAL

"I have been using your Standard battery eight years with every satisfaction. The extra trouble of putting together to begin with, repays by the service you get from it."

C. H., Bedford.

Any man or woman can fix up a Standard battery, simply and easily, and get PERMANENT service, BETTER reception, and TRUE economy. A little more trouble, perhaps, than buying a dry battery over the counter, but think of the money you save! The Standard RECHARGES ITSELF when the set is shut down, being a special adaptation of the Leclanché principle, and the eventual replacement is just changing the cartridges at 3d. each. We sell direct to GUARANTEE your satisfaction, so take the first step to end battery expense by writing for the STANDARD FREE BOOKLET Now.

Model H.5

126 VOLT STANDARD BATTERY

No. 3 size. 84 cells, 12,500 milliamp capacity.

Cash Price **37/8** Easy deferred terms available in England, Scotland and Wales.

STANDARD BATTERY Co., Dept. W.W.
184-188 Shaftesbury Avenue, London, W.C.2



BURNE-JONES "STENODE"

These high quality instruments are now available as Radiogramophones and Radio Receivers.

A fully descriptive brochure is now ready and free on application.

BURNE-JONES & CO. LTD.,

"Magnum House," 296, BOROUGH HIGH ST., LONDON, S.E.1. Telephone:—1101; 6257 & 6258.

Scottish Agent:—**Mr. ROSS WALLACE, 54, Gordon Street, Glasgow, C.1**

Components, etc., for Sale.—Contd.

R. SELECTED Parts for Sale, as new, any cond. or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take risk of damage in transit to customers; goods tested for callers and guaranteed.

A M P L I O N P o t s , 2.500 ohm, 5 6 ; Parmeko 250v, 75 m.a. transformer, 4v, 2 amp, 4v, 4 amp, 15 ; new Exide R.M.P.6 accumulator, 9 ; R.I. hypercore chokes, 10/6 ; R.I. Hypernu transformers, 9/- ; R.I. 7/14H choke, 10/6.

V A R L E Y Square Peak Coils, 7/- ; H.F. ditto, 5/- ; set Colvern single dial super, 18/- ; Colvern T.G.S.C. coils, 3/6 ; cans, 1/6 ; set Varley Monodial coils, 20/- ; Colvern intermediates, 8/- ; new; Radiophone 3-gang superb, 18/6, with cover; Burndept needle armature pick-ups, 25/-.

C O L L A R O No. 32 Induction Motor, 32/- ; Blue Spot 99P.M. speaker, 36/- ; Bulgin D.C. resistance B, 10/- ; Formo 6 m.f. blocks, 3/6 ; Westinghouse H.T.1. with Foster transformer, 35/- ; Westinghouse A3, with R. & B. transformer, 20/- ; Hayberd 8.5v, 1.6 amp. transformer, 6/6 ; Parmeko mains transformers, input, 200-250, output 14v, 1 amp, 10/6.

S A V A G E Massicore Output Transformer, 20/26.1, 40H, at 30 m.a., 12/6 ; Igranic dual impedance couplers, I.F., 4/- ; Weirite frame aerial, 12/6 ; Nuvelion P.M. speaker, 13/6 ; Epoch M.M. P.M. speaker, 16/- ; Magnavox 2,500 ohm speaker, 10m, cone type, D.C., 143 lapped transformer, 30/- ; Celestion P.P.M. speaker 18/6 ; Hamilton Wilson 300 m.a. transformers, two 101 secondaries, 10/6.

B T H Universal Senior Gramophone Motors, A.C. or D.C. brand new, complete with auto stop and all fittings, 55/- ; Radiophone 4-gang condensers, 12/6 ; Kolster-Brandes A.C. or D.C. motors, new, complete, 30/-.

T R A N S F O R M E R S . — Ferranti A.F.5, 18/6 ; A.F.4, 8/6 ; A.F.6, 13/6 ; O.P.M.1c, 16/6 ; O.P.M.2, 15/6 ; O.P.M.4, 14/6 ; Igranic 7.1, G type, 7/6 ; R.I. Pentomite choke, 10/- ; B.I. choke, new, 14/6 ; P.M.4c, 16/-.

R Y A L L ' S R A D I O O f f e r R e l i a b l e R e s i s t a n c e s , 1 watt, suitable for all "Wireless World" sets where a 1 watt resistance is specified, in values 100, 1,000, 2,000, 5,000, 6,000, 10,000, 25,000, 30,000, 75,000, 150,000, 250,000, 20,000, all values stated in ohms, 6d. each, guaranteed one year, wire ends, new goods.

C O W E Y D.S. Motor, 15/- ; set 4 Varley coils, B.P. and 2 H.P., 20/- ; P.T.625 valves, for callers only, 8/- ; Varley 2,500 ohm power pots, variable, 5/- ; Varley R.C.C. units, 4/6 ; Mullard R.C.C. units, 4/-.

E D I S O N B E L L , new, 50H, choke, 100 m.a., massive job, 12/- ; Varley impedance matching transformer, 10/6 ; pair Varley P.P. transformers, separate G.B., 27/6 ; R. and B. Eliso choke, 22/6.

H E A Y B E R D 4v, 10 amp. Transformer, 13/6 ; Lissen super 251 output transformer, 7/6.

B R O W N Vee Cone Units, new, 9/- ; R.I. mains transformer, 375v., 7.5v., 5.5v., 1.5v. ; Colbyn 4-gang, 15/- ; H.T.3. with Hayberd transformer, 13/-.

T C C 2,000 m.f. Electrolytic, 12v. working, 9/- ; Polar Star 3-gang condensers, new, 15/- ; with drive, 17/6 ; Radiophone 2-gang 0.0005, with cover and disc drive, new, 12/6.

B T H D.C. Speaker, 2,500 ohm, 14/- ; Colvern Four K.B.L.C. K.G.C. 24/- ; Lotus 4-gang condensers, new, shielded, and trimmers, 17/6 ; "Wireless World" Super Five, with 2v. ring valves, perfect, £6 ; Ryall's S.T.400 coils, 5/- ; S.T.300, 5/- ; Lewcos and Weirite superb, coils, 5/- each.

V A L V E S . — M.S.4, 7/6 ; M.S.4B, 9/- ; A.C. S.G., 9/- ; A.C./Pom, 12/- ; A.C./P, 8/6 ; Marconi P.P.2, 8/6 ; D.N.B., 10/6 ; A.C./S2, 11/6 ; A.C.2 H.L., 8/- ; Mazda P.P.3/425, 8/6 ; D.A./60, for callers, 25/-.

S P E A K E R S . — D.C.C. Amphion, 2,500 power or pentode, 14/6, new; Kolster-Brandes, new, 4v., J.L.R., 9/6.

R Y A L L ' S R A D I O , 33, Chancery Lane, London, W.C.2 (nearest Tube, Chancery Lane, 3 bus 67 passes door or train to Savoy St.), Holborn 3529. Open Saturday afternoon. Close 7 p.m., Thursdays 1 o'clock, Saturday 6 p.m.

R. [2222

S O U T H E R N R A D I O ' S Guaranteed Wireless Bargains.—Set manufacturers' new surplus: Ready Radio Meteor 3-valve screen grid new battery kits, in original sealed cartons, with three Mullard valves (P.M. 12a., P.M. 21X., P.M.2), £2/10/6; without valves, 27/6 (listed £5/7/6); Meteor 3-valve screen grid Model A kit, complete with Celestion moving coil speaker and cabinet and three Mullard valves, £4/7/6; without valves, £3 2/6, brand new, in original cartons (listed £8/17/6); Ready Radio 303 3-valve battery kits, new, in original cartons, with three Mullard valves, 37/6; without valves, 21/- (listed £3/10); Mullard Radio for Million 3-valve A.C. kits, in original cartons, with Mullard valves, P.K.N.V., 354V., 84V., £3/12/6 (listed £6/10); 3-valve battery sets, complete with valves, Drydex batteries and accumulator incorporating Columbia speaker, contained in polished dome shaped cabinet, £2, in original cartons (listed £5/19/6); Radiophone volume controls, with switch, 3/9 (listed 10/6); H.M.V. volume controls, 3/- each; dual gang variable condensers, 0.0005 (H.M.V.), with trimmers and shrouded, 6/- (listed 29/6); Cylon 3-gang condensers, 0.0005, fully shrouded and trimmers, 8/9 each (listed 32/-); genuine Amphion loud speaker units, 2/9 each (listed 12/6); screened chokes (H.M.V.), 1/- each, 9/- dozen; S.G. Brown A.C. moving coil speakers, incorporating Igranic Elcon tweeters, 12in, cone, 35/- each, brand new, in original cartons (listed £8/10); mains transformers, 250-0-250, 60 m.a. 4 volts, 1 amp, 4 volts, 3 amps, 10 3 each; every capacity mains transformer in stock and specials quoted for; condensers, 4 mid., 2 6 ; 2 mid., 1 9 ; 1 mid., 1/- each, all 750 volts test; every article sold by us is fully guaranteed and carriage paid.—Southern Radio, 323, Euston Rd., London, N.W.1 (near Warren St. Tube). 'Phone: Museum 6324. [2219

S U P E R H E T Owners Definitely Need the Rejotostat Aerial: price 45/—R. E. Blakey, A.B.R.I., Bull's Head Chambers, Manchester. [2218

E V E R Y T H I N G for Movies and Talks.—Phone, write or, better still, call and inspect immense stock of bargains.

I L L U S T R A E N T E R P R I S E S , 159, Wardour St., London, W.1. Tel.: 6889 Gerard. [1621

50 W A T T 3-stage High Quality A.C. Amplifier, cost £25, £12/10; Marconi-Reiss microphone and 2-stage corrected amplifier, £6; modified Hi Novotone, £3.—Sound Engineer, Regent Cinema, Castle St., Bristol. [2251

Write for Illustrated Catalogue of RADIO - GRAMPHONE CABINETS

of exclusive modern design, made by craftsmen, in highly figured Oak, Walnut or Mahogany, post free

REMARKABLE VALUES.

Cabinets made to order a speciality.

Maker, under license, of the

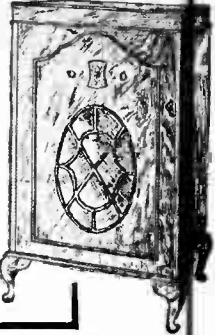
HOWE BOX BAFFLE.

Recommended by the B.B.C. Full details on request.

GILBERT

Cabinet Maker - - SWINDON

Est. 1868



To the TRADE

It will pay you handsomely!

our remarkable

H.T. BATTERY

HIRE SERVICE SCHEME

Write for Particulars

ACCUMULATORS ELITE Hebble Mills, Salterhepple, HALIFAX

CRESSALL RESISTANCES

"Cressall" Asbestos-Wire Woven Resistance Nets for voltage absorbing on D.C. Mains. Receivers. Mica - Wound Resistance Units. Sliding Resistances. Resistance Wires.

Please write for Lists.

CRESSALL MANUFACTURING COMPANY, 31-32, TOWER STREET, BIRMINGHAM.

GRIPSO
INDOOR AERIAL
HOOK INSULATORS
SUPPORTS WIRE
AWAY FROM WALL
6^{DOZEN}
THE GRIPSO COY.
28 VICTORIA ST. LONDON, W.1.

JUNIT SYNCHRONOUS ELECTRIC CLOCKS

Write for the new Complete Catalogue including models to match Pye, Ultra etc., radio receivers
Junit Mfg. Co., Ltd.
Junit Works, Steele Rd. Chiswick, London, W.4

ERIE
THE RADIO RESISTOR CO
1, Golden Sq., Piccadilly Circus, London, W.1
Write for NEW Technical Brochure

Hear PERFECT radio through a PERMAC REPRODUCER
CHASSIS ONLY 38/6
CABINET MODEL 49/6
Ask your dealer to write to:
BAKER'S SELHURST RADIO
75 & 77, Sussex Road, Croydon.
'Phone: Croydon 3441/2.

EVERY PART FOR LEONARD HEYS BLACKPOOL
WHOLESALE DEPOT
For all standard makes of COMPONENTS, KITS OF PARTS etc., as advertised in this JOURNAL and elsewhere. All usual Sundries. Personal Attention to all Orders. SPEEDY & PAINSTAKING SERVICE. Write for Cat. enclosing trade card (Wholesale Traders only).
LEONARD HEYS: FARADAY HOUSE
HENRY STREET, BLACKPOOL.
ELEVEN YEARS EXPERIENCE IN THE WIRELESS TRADE

IGRANIC COMPONENTS

WILL TELL YOU HOW GOOD THEY ARE

Components, etc., for Sale.—Contd.

MAINS RADIO'S Usual Guaranteed Set Manufacturers' Surplus, as new, carriage paid or call.
T.C.C. Blocks, 8x2x2x1x1, 250v. working, 6/-; 12 mfd., 450v. working electrolytics, 2/4.

MARCONIPHONE Pick-ups, 27/-; Paraflex transformers, 2/2; Formo screened 3-gang coils, hand-pass and I.F.F., 13/6 per set.

VALVES, as new.—A.C./P.I.s, A.C.P.s, 6/6; P.N.s, 3/-; M.P.T.s, 9/6; M.H.s, P.M.24.s, 5/3.—Mains Radio Development Co., 4-6, Muswell Hill Rd., London, N.6. [2210]

CHAL-ELECTRIC Offers Brand New Guaranteed Set Manufacturers Surplus, all carriage paid; cash with order or c.o.d.

CONDENSER Banks, 1,500 test, 20 mfd., consisting (2) 4 mfd., (6) 2 mfd., (1) 1 mfd., 11/-; 11 mfd. block (1) 4 mfd., (3) 2 mfd., (1) 1 mfd., 6/9.

VARIABLE Condensers.—J.B. Nugang, fully screened, dust cover, right-hand trimmer, disc drive, with esutheon plate knob, etc., 14/-; as above, 2-gang, 10/5.

ROTARY Converters.—Watts, with filter unit and silence cabinet, 180 Watt output, 230 D.C. input, £9.

MOVING Coil Speakers.—Rola's (S type U.S.A.), complete with transformer, 7 1/2 cone, 90-130 volts (2,500 ohms), or 200/240 volts (6,500 ohms), 17/6 each; Sentis models, 9in. cone, 23/-. (Please note mail orders only this address).—Chal-Electric, 6, Conduit St., London, W.1. [2260]

LISSEN Skyscraper, unopen kit with valves, 69/6, below; A.C. Monodial, new specified kit, for disposal, cheap; would separate. Write particulars, Aldridge, 29, Chatterton Rd., London, N.4. [2230]

MARCONI A17 Power Unit, bargain, new, £2; Telsco latest screened coils, Ormond ganged condensers, Collaro heavy D.S. gramophone motors, fittings, all cheap; stamp, reply.—EXL Products, 210, Stoney Lane, Yardley, Birmingham. [2239]

WEST END RADIO STORES' Final Clearance of Bankrupt Stock: Heavybird mains transformers, 200-250 output, 350-0-350/60 m.a., 4v. 4a., 4v. 2a. Magnavox M.C. speakers, 2,500 ohms, 18/6; 7,500 ohms, £1; model 144, 7/11.

T.C.C. Wet Electrolytic Condensers, 8 mfd. and 4 mfd., 440v. working, 2/9; T.C.C. 6.5 mfd. block condensers, tapped, 230 working, 3/6.

UTILITY 2-gang 0.0005 Condensers, 10/-; ditto, 3-gang, 12/6; Polar 0.0005, slow motion, 0.0005, 3/11 (with dials).

PYE 20 Henry L.T. Chokes, 3/9; Collaro induction gramophone motors, 100-260v., with auto-stop, 36/- (£23 model).

2-VALVE D.C. Mains Classis, 25/-; 2-valve A.C., 35/-, all new; 2-valve A.C. sets, £5; 2-valve D.C., £4/10.

LARGE Stock of Set, speaker, and radio-gram. cabinets and hundreds of other bargains for callers; postage extra on all orders.

WEST END RADIO STORES, 14, Lisle St., Leicester Sq., London, W.C.2, and at 382, Coldharbour Lane, Brixton, S.W. [2244]

NEWIES Offer Brand New Set Manufacturers' Surplus.

MAINS Transformers.—Note: These are manufacturers' current lines, guaranteed 12 months, all tapped and screened, primary L.T. windings, C.T., 500-0-500 at 120 m.a., 21/-; 450-0-450 at 120 m.a., 20/-; 350-0-350 at 120 m.a., 19/-; the above series have L.T. windings, 4v. 2.5a., 4v. 5a., 4v. 2a.; 350-0-350 at 60 m.a., 4v. 2.5a., 4v. 4a., 14/-; 325-0-325 at 80 m.a., 4v. 2.5a., 4v. 4a., 12/-; 250-0-250 at 60 m.a., 4 volts 1 amp., 4 volts 4 amps., 11/6; another, 4v. 5 amps., 14/-; for Westinghouse rectifiers, H.T.H., 200 volts 200 m.a., 4v. 3a., 12/-; another, with 4v. 5a., 14/-; for H.T.9, 240 volts, 200 m.a., 4v. 4a., 15/-. [2244]

SMOOTHING Chokes, 20 Henry 30 m.a. (400 ohms), 7/-; 20 Henry 50 m.a. (480 ohms), 7/-; 30 Henry 60 m.a. (ohms 300), 7/-.

CONDENSERS.—G.E.C. non-inductive, 750 test, 1 mfd., 1/1; 2 mfd., 1/9; 4 mfd., 2/6; 1,500 test, 1 mfd., 1/8; 2 mfd., 2/4; 4 mfd., 4/-; Multiple Banks, 1,500 test, 20 mfd. (separate tappings), consisting 4+4+2+2+2+2+2+1, 11/-; 11 mfd. block, 4+2+2+2+1, 6/9.

VALVES.—Pew only, B.U.442, U.12, M.P.T.4, A.C.S.G. V.N.1, 10/-.

ROTARY Converters (one only, demonstration model), electro dynamic, complete with filter unit and silence cabinet, 90-watt model; list £14, at £8.

MOVING Coil Speakers.—Rola's (U.S.A.), 7 1/2 cone, manufacturer's type, with hum bucking coils, power and pentode transformers, 6-10 volts, 110-175 volts (2,000 ohms), 90-130 volts (2,500 ohms), 150-200 volts (4,700 ohms), or 200-250 volts (6,500 ohms), all 17/6 each; senior models, 9in. cones, villages as above, 24/- each; permanent magnets, 7 1/2 cone, 26/-; senior, 9in. cone, 30/-; ask for quotation; dual matched speakers mounted on baffles.

H.P. Chokes (H.M.V.), screened, 50-60 m.a., 100,000 microhenrys, 1/- each; all goods carriage paid; c.o.d. or call.—Newby's Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [2223]

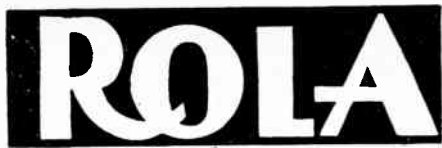
MISCELLANEOUS.

EASY Payments.—We supply, by easy payments, components, accessories, and sets, any make; 10% down, balance spread over 11 months.—Send list of requirements to London Radio Supply Co., 11, Oat Lane, London, E.C.2. [0337]

ENGINEERS and Technical Workers of All Kinds.—A proper training by post in your spare time will take you through your right examination, then employment is waiting. Our advice on all careers free.—Dept. 92, The Bennett College, Ltd., Sheffield. [0295]

AMBITIOUS Men.—Qualify for a well-paid post by studying at home with "The T.I.G.B. Write-to-day for "The Engineer's Guide to Success." 144 pages, free, which contains the widest selection of engineering and wireless courses in the world, and shows you how to become A.M.I.E.E., A.M.I.Mech.E., A.Rad.A., etc.—State branch, post or qualification that interests you.—The Technological Institute of Great Britain, 82, Temple Bar House, London, E.C.4. (Founded 1917, 19,000 Successes.) [1997]

NO Cash.—We will accept your old set or apparatus as deposit for new set or apparatus, balance by 12 monthly payments; first payment not due until one month after delivery of new goods.—Bostock and Stomhill, 1, Westbourne Terrace, S.E.23. [2257]



the World's Finest Reproducers

The best set is dependent upon its speaker for the quality of its reproduction. If you want the best results from your



"Wireless World" FERROCART THREE

USE ROLA Model F6 - P2500 (Price 35/-) and save the cost of the speaker field replacement choke.

Because of the acknowledged superiority of their realistic reproduction, Rola Speakers are used by the large majority of Radio Manufacturers, and specially recommended by the designers of the following "Constructor Sets":
"WIRELESS WORLD" RECEIVERS.
MODERN A.C. QUALITY AMPLIFIER.

Rola Dual Balanced Pair, consisting of one F6-2500 and one F7-2500 Speaker with 00B Transformer £4 5s.
A.C. MONODIAL SUPER.

Rola Type F6-2500 35s.
 or Dual Balanced Pair F6-2500 and F7-PM with Class 00B Transformer £4 12s. 6d.
MODERN STRAIGHT FIVE AMPLIFIER.

Same as A.C. Monodial Super.
BABY SUPER.
 Rola Type F6-P2500 35s.

"WIRELESS CONSTRUCTOR" RECEIVERS.
A.C. S.T.400.
 Rola Special Model F6-S.T.400 35s.

NEW SCOTT-TAGGART PUSH-PUSH FIVE.
 (Described in May issue.)
 Rola Type F6-PM-Q.P.P.220A 52s.

"WIRELESS MAGAZINE" RECEIVERS.
WORDS AND MUSIC RADIOGRAM DE LUXE.
 Rola Type F5-PM 32s. 6d.

A.C. QUALITY GEM.
 Rola Type F6-P2000 35s.
WORDS AND MUSIC Q.P.P. RADIOGRAM.
 Rola Type F5-PM 32s. 6d.

"AMATEUR WIRELESS" RECEIVERS.
PUSH-PUSH AMPLIFIER.
 Rola Type F6-PM-QPP-22A 49s. 6d.

JAMES PUSH-PUSH 3.
 Rola Type F6-PM 49s. 6d.

EVERYBODY'S HOME RADIOGRAM.
 Rola Type F6-PM-1 49s. 6d.

HOME STATION A.C.2.
 Rola Type F5-PMP 32s. 6d.

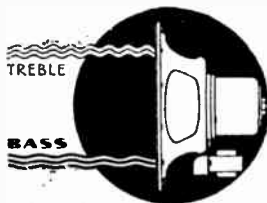
NEW CENTURY SUPER.
 Rola Type F5-PM 32s. 6d.

"SUNDAY EXPRESS" S.G.2 RADIOGRAM.
 Rola Type F6-PM-1 49s. 6d.

Write to-day for the Rola Folder.

THE BRITISH ROLA CO., LTD.
 Brondesbury Works, 179, High Road, Kilburn, N.W.6.
 Telephone: MAIDA VALE 5017-8-9.

ROLA SPEAKERS
for better Radio Reception



PATENT AGENTS.

PATENTS and Trade Marks, British and foreign.—Geo and Co. (H. T. P. Gee, Member R.S.G.B. and A.M.I.E.E.), 51-52, Chancery Lane, London, W.C.2. Phone: Holborn 1525. [0001]

KING'S PATENT AGENCY, Ltd., 146a, Queen Victoria St., London, E.C.4. Phone: Central 0682. 45 years' experience. Advice Handbook free. [0581]

A. MATHISEN, B.Sc. (Elect. Eng.), specialist, patents for radio inventions.—First Avenue House, High Holborn, London. [1632]

REPAIRS.

REPAIRS to Loud-speakers, transformers and headphones, 4/- each; Blue Spots or Wudu's, 5/-; mains eliminators, etc., quoted for; prompt service; satisfaction guaranteed, terms to trade.—Loud-Speaker Repair Works, 2, Shipka Rd., Balham, London, Streatham 6618. [0394]

CONSULT Alexander Bloke about Set Repairs.—55, Ebury St., S.W.1. Sloane 1655. [0397]

GUARANTEED R-pairs by Experts; specialists for repairs to S.G. Brown and Amplion radio apparatus, also loud-speakers, headphones, pick-ups, Blue Spots, any type rewound, re-adjusted and adjusted; 4/-; post free; mains transformer repairs; terms to trade.—Howell, 91, Morley Hill, Enfield, Middlesex. [9716]

LOUND-SPEAKERS, headphones any type, rewound and overhauled, 3/6; Blue Spots, 4/-; post free; 24 hours' service guaranteed; terms to trade, Devon Radio and Loud-speaker Repair Dept, 57, Treville St., Plymouth. [2105]

EXCHANGE.

SEE Details of Our New Scheme under "Miscellaneous," Bostock and Stomhill. [2258]

FINANCIAL PARTNERSHIPS.

£1,000 buys Partnership in Progressive Wireless Business, knowledge of same not essential; would prefer a person with book-keeping and office routine methods; the strictest of investigation welcome.—Write Box 6445, c/o The Wireless World. [2259]

WANTED.

NEW or Second-hand Wireless Parts Wanted for Cash, any amount, any condition; send yours, stating reasonable price; cash by return; top prices paid for 1932 parts; also meters, etc.; will call London districts.—Military Radio Exchange, 24, Midway Grove, London, N.1. [1637]

SPOT Cash for Components, etc.—Economic Radio Co., 96-98, South Lambeth Rd., S.W.8. [1923]

A.C. Mains Energised M.C. Speakers and Valves, S.G. Det. P.N., twin and triple gang condensers screened, L.F. chokes and transformers, urgently required in part exchange for new receivers and components; allow 60-80% on reputable goods; acceptable up to one-third of order.—Wood's Radio, Holcombe Brook, near Bury. [2216]

WANTED, all types of A.C. D.C., and battery valves; also A.C. and D.C. receivers, and any other components, in quantities for spot cash.—Ward, 12, Tredegar Rd., Bow, E.3. [2245]

ELEEX A Converter, sectional mast, unused, Mazda 220A, Pentode.—BM/NNKK, London. [2192]

SITUATIONS VACANT.

IF You Wish to Enter the Wireless Profession with a Thorough Training, or if you wish to improve your present position, you will need the certificate issued by Britain's leading wireless college. This is not a correspondence college. Apparatus of all leading makes installed for instructional purposes. Boarders accepted. Training fee can be paid after appointment. Prospectus free.—Wireless College, Colwyn Bay. [0588]

AMBITIOUS Men Should Apply for Free Particulars of Training or Appointments in Radio or Talkie Engineering; valuable introductions.—Radio Training Institute, St John St., Newcastle-on-Tyne. [1907]

RADIO Engineers Required for Investigational Work; applicants should have a University education, research experience of radio circuits and measurements, and an up-to-date knowledge of circuit design.—Send full particulars, age, and salary required, to Box 6413, c/o The Wireless World. [2187]

TECHNICAL Assistants Required for Radio Circuit Development; applicants should be graduates and have some radio research experience.—Send full particulars to Box 6414, c/o The Wireless World. [2188]

WIRELESS Consultant Requires Pupil-Assistant, 16-19 years; public school; apply by letter.—Alexander Black, 55, Ebury St., S.W.1. [2224]

RADIO Engineer Wanted by a Firm of Radio Manufacturers; only men less than 30 years of age who have had actual experience in receiver development departments of mass production manufacturers need apply.—Box 6419, c/o The Wireless World. [2200]

SITUATIONS WANTED.

DO You Want Skilled, Certified Service Engineers and Salesmen? Then consult the Principal, The Wireless College, Colwyn Bay. Phone: 2407. [0592]

RADIO Engineer, first class C. and G., radio communicative, experienced servicing and design, seeks post.—Box 6418, c/o The Wireless World. [2189]

BOOKS, INSTRUCTIONS, ETC.

RELAY—All who operate (or contemplate operating) "Wired Wireless" or relay installations should read the "Radio Relay Review."—Obtainable to order from newsgate or direct from "Radio Relay Review," Smithy-gate Mill, Padham, Lanes. 4d. monthly, subscription 4/- per annum. [2180]

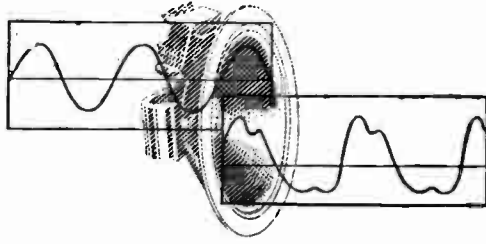
HETERODYNE WHISTLE FILTERS SCREENED H.F. CHOKES



SHORT WAVE CHOKES & TONE CORRECTOR. COILS. Enclose stamp for Lists. POSTLETHWAITE BROS., KINVER, STOURBRIDGE.

AVOID HARMONIC DISTORTION

A fundamental sine-wave curve (i.e. the fundamental note without harmonics).



The complex wave-form of the fundamental combined with the 2nd and 3rd harmonics.

Speaker transformer design is extremely important, particularly when the Q.P.P. or Class "B" types of output stage are used. The non-linear characteristics of these types of output render the accurate adjustment of load impedance absolutely necessary. If the impedance is too low, excessive 2nd harmonics are produced: similarly, impedance above a critical figure causes distortion of the 3rd harmonics.

Again, the current in the speaker transformer is constantly changing under the influence of the varying signal-frequency voltages applied to the valve grids. The d.c. resistance of the transformer primary must, therefore, be low, otherwise the changing currents will be restricted with consequent distortion and inefficiency.

Every transformer fitted to a Goodman speaker is of accurate design and specially matched to the output for which it is intended.

FIT A GOODMAN AND AVOID ANY DISTORTION
Goodman's have specialised in loudspeaker manufacture since 1926

GOODMANS Scientific Speakers
69, St. John Street, London, E.C.1
Clerkenwell 3838-9

P.M. TYPES.

"DREADNOUGHT" Chassis Model (Complete with auxiliary battle)..... **39/6**
"DREADNOUGHT" Cabinet Speaker (Real walnut cabinet) **59/6**

"RENOVN" Chassis Model **27/6**

"RENOVN" Cabinet Speaker (Real walnut cabinet) ... **42/-**

FOR Q.P.P.

5/- extra each model.
[We regret the prices for our speakers for Q.P.P. were given wrongly in our advert. of March 3rd.]

HAVE YOU SENT FOR OUR LEAFLET YET? IF NOT,

DO IT NOW!

The leaflet is fully illustrated and FREE.

FOR BEST RESULTS-USE THE BEST WANDER PLUG

A wander plug may be a small thing, but a bad one can cause a deal of trouble and annoyance. The Lisenin Positive Grip Wander Plug ensures perfect contact and therefore perfect reception. It has a two-point contact which grips firmly in any battery socket no matter what the variation in size. **Wobble, jumping, loss of current are gone for ever.** The famous cone grip also ensures permanent connections to the leads. Supplied in Red, Black, Blue, Green, Yellow, White, Mahogany.

RETAIL PRICE 2d. EACH.



LISENIN
WIRELESS COMPANY
66, Newman Street, London, W.1.

Get them from your Dealer
-If any difficulty write to us.

The ELEMENTARY PRINCIPLES of WIRELESS TELEGRAPHY and TELEPHONY

Third Edition
(1930) Revised by
O.F. Brown, B.Sc.

by R. D. BANGAY

The standard book of instruction for wireless students. Deals thoroughly with modern developments. Leaflet with full particulars and synopsis of chapters sent on request.

PRICE
7/6 by post 8/-

From all leading Booksellers or direct from the Publishers

ILIFFE & SONS LTD., Dorset House, Tudor St., LONDON, E.C.4

W.W.67

COLLARO COMBINED PICK-UP AND MOTOR UNIT

A complete self-contained unit comprising "32" model Induction Motor, suitable for 100-130 Volts and 200-260 Volts, 40-60 Cycles. (Can also be supplied for 25-40 and 60-100 Cycles.)

Automatic start and stop, combined with "Collaro" Pick-up; all that is required for the Gramophone side of a Radio-Gram.

The "Collaro" Pick-up can be used in conjunction with all receiving sets and amplifiers. The built-in wire wound Volume Control will show no signs of deterioration or crackling in use.

The Pick-up base, head and arm are Bakelite mouldings and the general outline is designed to harmonise with the clean lines of the modern Radio-Gramophone.

Obtainable from all Radio Factors and Dealers.
COLLARO LIMITED.



PRICE
76/-

WITH BUILT-IN VOLUME CONTROL
80/-

Starts automatically
Stops automatically



INDEX TO ADVERTISEMENTS.

Accumulators Elite	PAGE 10
Alton Battery Co., Ltd.	Back Cover
Atwater-Kent (G. A. Britain, Ltd.) ..	Inside Front Cover
Baker's Selhurst Radio	10
Barber & Colman, Ltd.	6
Belling & Lee, Ltd.	6
Birmingham Sound Reproducers, Ltd.	8
Britannia Batteries, Ltd.	v.
British Institute of Eng. Technology	8
British Pix Co., Ltd.	v.
British Radio Institution	8
British Radiophone Co., Ltd.	Back Cover
British Rola Co., Ltd.	11
Bryce, W. Andrew & Co.	7
Bulphonic Radio	7
Bulgin, A. F. & Co., Ltd.	10
Burne-Jones & Co., Ltd. (Magnum)	10
Burton, C. F. & H.	6, 8
Celestion, Ltd.	7
Clarke, H. & Co. (N/er.), Ltd.	12
Cole, E. K., Ltd.	Front Cover
Collaro, Ltd.	12
Columbia Gramophone Co., Ltd.	12
Colvern, Ltd.	Front Cover
Coradio	8
Cosser, A. C., Ltd.	8
Crossall Manfg. Co.	10

Dubilier Condenser Co. (1925), Ltd.	PAGE 1
Edison Swan Electric Co., Ltd.	1
Electradix Radios	8
Electro Dynamic Construction Co., Ltd.	3
Epoch Radio Manfg. Co., Ltd.	8
Garrard Engineering and Manfg. Co., Ltd.	v.
Gilbert, J. C.	10
Goodmans	12
Gramophone Co., Ltd.	2
Gripso Co.	10
Heys, Leonard	10
Igranie Electric Co., Ltd.	10
Janit Manfg. Co., Ltd.	10
Lectro Linx, Ltd.	5
Lisenin Wireless Co.	12
London Radio Supply Co.	12
Longley Radio Manfg. Co.	12
Lyons, Claude, Ltd.	Inside Back Cover
Parina Manfg. Co.	8
Partridge, Wilson & Co.	3
Pepper, Trevor (Seradex)	8
Peto-Scott Co., Ltd.	5 & 9
Postlethwaite Bros.	11

Radio Resistor Co.	PAGE 10
Reproducers & Amplifiers, Ltd.	12
Rich & Bundy, Ltd.	Inside Front Cover
Riverside Manufacturing Co., Ltd.	8
Rotax, Ltd. (M-L Equipment)	3
Rotor Electric, Ltd.	3
Savage, W. Bryan	9
Scott Sessions & Co.	4
Siemens Electric Lamps & Supplies, Ltd.	vi.
Simpsons Electricals, Ltd.	10
Smythwaite, F. W. & Co.	10
Sonorhorde Reproducers, Ltd.	9
Sound Sales, Ltd.	9
Standard Battery Co.	10
Tannoy Products	6
Telegraph Condenser Co., Ltd.	Front Cover
Telson Electric Co., Ltd.	Front Cover
The 362 Radio Valve Co., Ltd.	Inside Front Cover
Turnadge & Partners, Ltd.	8
V.G. Manufacturing Co., Ltd.	10
Watmel Wireless Co., Ltd.	5
Westinghouse Brake & Saxby Signal Co., Ltd.	5
Wilburn & Co.	Inside Back Cover

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

WEDNESDAY

MARCH THE TWENTY-NINTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON Regional North
WEST Regional Scottish
BELFAST Regional
 Symphony concert from Queen's Hall, London. Instrumental concert.
 Choral and orchestral concert.
 Orchestral concert from the National Museum of Wales.
 Instrumental and vocal concert from Coatbridge.

ABROAD

BARI 7.35 p.m. Chamber music.
BERLIN 8.35 p.m. The Kreutzer Sonata (Beethoven), by Martha Linz and Luise Gmüner.
BERO-MUNSTER 7.35 p.m. Opera: "L'avietta e Tracollo" (Pergolesi), from Basle.
BRUSSELS 7 p.m. Concert from the Norwegian Church, Antwerp.
BUCHAREST 7.45 p.m. Pianoforte recital by Dagobert Buchholtz.
COPENHAGEN 7 p.m. Act 1 of Opera, "Schwanda the Piper" (Weinberger).
EIFFEL TOWER 7.30 p.m. Opera: "The Damnation of Faust" (Berlioz).
HEILSBURG 9.30 p.m. Hugo Wolf Commemoration concert.
HUIZEN 7.40 p.m. The Haarlem Orchestra, conducted by F. Schuurman.
RADIO-PARIS 8 p.m. Lamoureux concert from the Salle Gaveau.
REYKJAVIK 10 p.m. Opera: "La Tosca" (Puccini).
WARSAW 8 p.m. Pianoforte recital by B. Wojtowicz.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.0 p.m., Topical Talk. 6.10, Talk: The Times of To-day. 6.55, Announcements. 7.0, Orchestral Concert; Conductor, Bruno Seidler-Winkler; Overture, The Taming of the Shrew (Goetz); Suite, Aus Thüringen (Raff); In the Steppes of Central Asia (Boccardi); Symphonic Fairy Tale Suite (Lobertz); Piece from Carnaval à Paris (Svendsen); Waltz from Little Ida's Flowers (Kleman); Overture, Hunyadi László (Erkel). 8.30, Pianoforte Concerto in C Minor (Mozart), by Romald Wikarski. 9.0, Weather, News, and Sports Notes. 9.30, Hugo Kaun Concert by the Station Choir; Soloist, Maria Kaun (Contralto); Zum Schellen; Der Igel; Maria am Rosenstranch; Wellen; Wunder überall. 10.30, Dance Music by the Jörg Zinne Orchestra. 11.0 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.
BEROMUNSTER.—See Schweizerischer Landessender.
BODEN.—See Stockholm.
BODO.—See Oslo.

BORDEAUX-LAFAYETTE

(PTT), 986 kc/s, 304 metres; 13 kW.—6.5 p.m., News Bulletin. 6.15, Tourist Talk. 6.30, Lottery Results. 6.35, Agricultural Talk. 6.50, News Bulletin. 7.30 (approx.), See Paris (Eiffel Tower).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—4.45 p.m., Polish Lesson. 5.0, Hungarian Programme: A Play in Three Acts (Novák). 6.0, See Prague. 6.10, See Brno. 6.25, See Prague. 7.40, See Brno. 8.40, Song Recital by Frano Devinsky. 9.0, See Prague. 9.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 352 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—12.15 p.m., Weather for Farmers. 12.10, Sound Film Music on Gramophone Records. 12.45, Time, Weather, News and Exchange. 1.5, Old Dance Music on Gramophone Records. Old English Dances from Shakespeare's Time; Sergei Rachmaninov (Pianoforte); Sarabande (Bach); Andrej Segovia (Guitar); Courante (Bach); The New York Philharmonic Orchestra, conducted by Willem Mengelberg; Gavotte, Sarabande, Minuet, Gavotte and Tambourin (Handel); The Budapest String Quartet; Minuet from the Quartet, No. 6 (v. Dittersdorf); The Madami Mandoline Quartet; (a) Gavotte (Scarlatini), (b) Danse (Durante); The Berlin Philharmonic Orchestra, conducted by Fritz Zweig; Minuet from the Symphony in E Flat (Mozart). 1.45, Pro-

gramme arranged by the Post Office with Gramophone Records. 2.10, Agricultural Prices. 3.0, Talk: Expedition and Adventure Films. 3.30, Joseph Heas Song Recital by Johanna Thidmann; Six Poems from Gesänge an Gott (Jakob Knipf); Lassst aus diesem engen Haus; O Stimme des Weltalls; Des weis ich und hab' es erlebt; Mitten in der Nacht; In dieser Abendstunde; Wenn einst die Türen des Himmels aufgehen. 4.0, Review of Emil Wittling's Books. 4.15, Reading: Seltik du Hadenjunge (Emler). 4.30, Agricultural Prices, followed by Talk; Schabitzki's Marionette Plays. 4.50, Talk on Mark-manship. 5.10, Talk: The Countryside in Spring. 5.30, Orchestral Concert: Overture, Liebe schlaft Rat (Folras); Gavotte, Aus galanter Zeit (Meyer-Helmund); Selection from I Pagliacci (Leoncavallo); Waltz, Wiener Fäseling (Kockmann); Selection from The Merry Peasant (Fall); March, Jugendfrühling (Blankenburg). 6.25, Weather for Farmers and Meat Market Prices. 6.30, See Stuttgart. 7.10, Zeit auf Flaschen—Comely (Friedrich Freefa). 8.50, Time, Weather, News, Sports Notes and Programme Announcements. 9.20, See Stuttgart. 11.0 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW. 5.25 p.m., German Transmission: News, Report for Workers, Talk, Programme for Children, and a Talk on Spring. 6.0, See Prague. 6.10, Psychological Talk. 6.25, See Prague. 7.40, Must the Mandarin die?—Radio Play (F. Fleiselman), with Music by Marcel Poot. 8.40, Sonata for Violin (Biatny). 9.0, See Prague. 9.15 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—11.0 a.m., Concert relayed from the Grand Hotel, Antwerp. 12 Noon, Journal Parlé. 12.10, Concert of Light Music on Gramophone Records. 4.0 p.m., Dance Music, relayed from the Saint sauveur Palais de Danse. 5.0, Report by Dr. Terwagne, President of the International Society of Free Thinkers. 5.15, Talk on Doctor De Croly. 5.30, Sonata Recital by Mme. Husson-Michaux (Pianoforte) and Léon Guller (Violin). Sonata (Veracini); Sonata (Schumann). 6.0, Gramophone Concert: Soir (Faure); Pavane pour une Infante défunte (Ravel); Les petite ânes (Rasse); A Wedding Procession (Rimsky-Korsakov). 6.15, Talk on the Belgian Poet, Félix Bolson. 6.30, Health Talk. 7.0, Extracts from the Quartet No. 21 (Mozart) on Gramophone Records. 7.15, Eros and Psyche—Drama in Verse (Giraud). 8.30, Gramophone Concert: Selection from Lakmé (Delibes-Tavan); Méditation from Thaïs (Massenet); Mexican Rhapsody (Briceni); Réverie (Coppola); Stay Rhapsody (Friedemann). 9.0, Journal Parlé. 9.10, Concert by the Paul Moreaux Orchestra relayed from the Mevlins Hall, Antwerp. 10.0 (approx.), Close Down.

BRUSSELS (No. 2)

I.N.R.; 887 kc/s, 338.2 metres; 15k W.— Programme in Flemish. 11.0 a.m., Extracts from La Gioconda—Opera (Ponchi). on Gramophone Records. 12 Noon, Journal Parlé. 12.10 p.m., Concert relayed from the Grand Hotel, Antwerp. 4.0, Brahms Gramophone Concert: Academic Festival Overture; Symphony No. 2; Song, Von ewiger Liebe; Ballad in G Minor; Hungarian Dances, Nos. 1, 2, 8, 5, and 6. 5.15, Talk: Free Thought in Belgium and Abroad. 5.30, Dance Music on Gramophone Records. 6.15, Talk. 6.30, Theatre Review. 7.0, Song and Organ Recital by Michael Gitowsky (Bass) and Jozef Vaes (Organ), relayed from the Norwegian Church, Antwerp: Organ Solo, Symphony No. 5, Part 1 (Widor); Songs (Händel); (c) Caleb's Aria, from Joshua, (b) Simon's Aria, from Judas Maccabaeus, (c) Dank sei Dir, Herr; Organ Solo, Jesus Christus, unser Heiland (Bach); Songs (Schubert); (c) Der Kreuzzug, (b) Der greise Kopf, (a) Dem Unendlichen; Organ Solo, Adagio (Liszt); Two Songs from the Vier ernste Gesänge (Brahms); Prelude and Fugue in B for Organ (Saint-Saëns). 7.45, Recitations. 8.0, See Paris (Radio Paris). After the Relay, Journal Parlé.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra. In the interval at 5.0, News and Time Signal. 6.0, Talk: Romanian Painting. 5.20, Talk on Sociology and Politics. 7.0, Cello Recital of Modern Music by Jos. Thaler. Sonata Op. 50 (Teich); Scandinavian Suite (Grainger). 7.30, Talk. 7.45, Pianoforte Recital by Dagobert Buchholtz. Toccata in D Minor for Organ (Bach-Busoni); Intermezzo Op. 117, No. 2 (Brahms); Rhapsody, Op. 119 (Brahms); Allegro barbaro (Bartok); Hebrew Dances, Anate (Stutschewsky); Etude in C (Glazunov). 8.15, Violin Recital by Marcel Gall; La Folie (Corelli); Turkish March (Beethoven); Zephyr (Hubay). 8.45, News. 9.0, Dance Music from the Grand Hotel Restaurant.

BUDAPEST

645 kc/s, 550 metres; 18.5 kW.—Programme also relayed on 840 metres from 5.30 to 11.0 p.m. 4.30 p.m., Violin Recital. 5.0, Talk. 5.30, Military Band Concert. 6.45, Review of Foreign Affairs. 7.0, Bizarre—Drama in Four Acts (Franz Hertzeg). 9.0, News Bulletin. 9.15 (approx.), Cigány Concert from the Hotel Metropole. 9.45, Concert of Light Music, conducted by T. Polgar: Overture, Fra Diavolo (Auber); Fantasia, Aschenbrotel (Belykai); Divertissement (Parkas); Ballet Suite (Goldmark); From the Diary of a Humorist (Kazacsay).
CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—11.45 a.m. to 1.0 p.m., Concert from the Wivex Restaurant. 2.0, Gramophone Concert: Waltz, Frühlingsstimmen (Joh. Strauss); Prelude to and Duet from the First Act of Rigoletto (Verdi); Song, A Vucchella (Tosti); Andante from Ruzalja Hungary, Op. 32 (Dohnanyi); Gurli (Sylvain); Let's all go to Reno (Cottrell); Song, He's dead, but he won't lie down (Haines and Harper). 2.30, Orchestral Concert conducted by Fritz Mulder: Overture, Les Dragons de Villars (Maillart); Suite from The Fair Maid of Perth (Bizet); Waltz, Wienerblut (Joh. Strauss); Radetzky March (Joh. Strauss, Sen.); Four Movements from the Serenade No. 3 in D (Mozart); Ballet Music in G from Rosamund (Schubert); Waltz, Die Sagenbrecher (Joh. Strauss, Sen.); Overture, Fatinitza (Suppé). In the interval at 3.15, Talk for Women. 4.40, Exchange and Market Prices. 4.50, Talk on the German Language. 5.20, French Lesson. 5.50, Weather and News. 6.15, Time Signal. 6.16, Talk: A Secret Socialist Congress Fifty Years Ago. 6.45, Talk on the Following Transmission. 7.0, First Act of Schwanda the Piper—Opera in Two Acts (Garonir Weinberger), relayed from the Royal Theatre. 8.30, Talk: Questions of the Time—Distress in Germany. 9.0, Negro Spirituals on Gramophone Records: Paul Robeson: My Lord what a morning! The Fisk University Jubilee Singers: Ezekiel saw the wheel. Marion Anderson: Deep River. Paul Robeson: (a) I stood on de ribbon, (b) Peter, go ring dem bells. The Fisk University Jubilee Singers: Shout all over God's heaven. 9.15, News Bulletin. 9.35, Concert by the Radio Chamber Orchestra, conducted by Fritz Mulder: Overture, Armide (Renard Lully); The Brandenburg Concerto No. 5 in D for Flute, Violin, Harpsichord, and Strings (Bach). 10.5, Dance Music from the Nimb Restaurant. In an interval at 11.0, Town Hall Chimes. 11.30 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsburg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., Light Music on Gramophone Records. 11.30, News Bulletin. 11.45, Variety Concert. 5.30 to 7.0, Programme in English by the I.B.C. C. Danvers-Walker, B. McNabb, and F. Lamping announcing. (Times subject to

ALGIERS

825.3 kc/s, 364 metres; 13 kW.—7.0 p.m., Financial News. 7.10, Shipping Notes. 7.15, Agricultural Notes and Weather Forecast. 7.20, Songs from Oh! Papa!—Operetta (Yvain). 7.35, Instrumental Solos: Air from The Pearl Fishers (Bizet); Serenade for Concertina (Pierne); Cello and Guitar Duets: (a) Jour et nuit (Fominé), (b) My Boat (Horizo); Pianoforte Solos: (a) Bagatelle (Beethoven), (b) Ecosaisse (Kempff). 7.55, News Bulletin. 8.0, Time Signal. 8.2, Travel Talk: Two Thousand Kilometres up the Amazon. 8.15, Instrumental and Vocal Concert of Spanish Music. 9.10, Symphony in G Minor (Mozart). 9.40, News. 9.45, Light Music. 9.55, News. 10.0 (approx.), Close Down.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, German Lesson. 8.0, Military Band Concert, conducted by Colonel Fritz Brase. 9.0, A Sketch by The Mimmers. 9.30, Instrumental Trio Music. 9.45, Soprano Solos by Eileen Driscoll. 10.0, Instrumental Trio Music (cont.). 10.30, Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EA41, 860 kc/s, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert: Selection from Lilac Time (Schubert); Le coucou (Daquin); Entr'acte (Chillemont); Romance (Rubinstein); Minuet from Sonata No. 2, Op. 49 (Beethoven); Selection from The Snow Maiden (Rimsky-Korsakov). 7.0, Dance Music relayed from the Riz Hotel. 7.30, Exchange Quotations and relay from the Guildhall. 8.0, Light Music on Gramophone Records, followed by News. 9.0, Chimes from the Cathedral. Weather Forecast, Exchange Quotations, and Market Prices. 9.5, Concert by the Station Orchestra. 10.0, Talk in Catalan. 10.15, Quartet in G (Gretchaninov). 10.45, Concert by the Station Orchestra (cont.). 11.0, News Bulletin, followed by Popular Music on Gramophone Records. 11.30, Dance Music relayed from Hollywood Bar. 12 Midnight (approx.), Close Down.

BARI

1,112 kc/s, 267.8 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Report and Dopplavoro Notes. 7.20, Giornale Radio. 7.30, Time and Announcements. 7.35 (approx.), Concert of Chamber Music. Soloists: Milena Barberio (Soprano) and Nina Lorenco (Pianoforte). Overture, Luisa Miller (Verdi); Three Pianoforte Pieces (Pedroni); Soprano Solos: (a) Pace montana (Guarino), (b) Stornello (Cimarra); Danza antica (Amadei); Soprano Solo, Spionetto (Napoli); Pianoforte Solos (Albania): (a) Sevilla, (b) Trana; Rocco Suite (Translation); Overture, I promessi sposi (Ponchielli); Pianoforte Solos: (a) Gavotte, (b) Studio melodico (Sgambati); Soprano Solo, Cossack Cradle Song (Gubitosi); Minuet (Brero); Pianoforte Solos: (a) Sonata (Dorwell), (b) Tarantella (Rubinstein); Melody (Respighi); Soprano Solo, Nubi folli (Zucchi); Profumate (Bolognese); Literary Notes in the interval. 9.30, Gramophone Records of Popular Music. 9.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

607 kc/s, 430.4 metres; 2.8 kW.—4.0 p.m., Medical Talk. 5.55, Time Signal and Programme Announcements. 6.0, Recital of Folk Songs. 6.40, Talk. 7.10, Introductory Talk, followed by Rigoletto—Opera in Three Acts (Verdi), on Gramophone Records. 9.0 (approx.), News, followed by Cigany Music from the Rudinean Restaurant.

BERLIN

KÖNIGS WUSTERHAUSEN, 183.5 kc/s, 1,635 metres; 60 kW.—1.0 p.m., Extracts from Tristan and Isolde—Opera (Wagner), on Gramophone Records, relayed from Berlin (Witzleben). 1.45, Programme for Young People: Das kalte Herz—a Radio Play after Wilhelm Hauff. 2.30, Weather and Exchange. 2.45, Reading from Die sonnblume (Georg von Ompfeda) on the Author's Seventieth Birthday. 3.0, Talk: Are there still undiscovered Animals? 3.30, See Hamburg. 4.10, Dialogue: Twentieth Century Systems of Defence. 4.30, Talk: Problems of National Education. 5.0, Quintet in E flat for Oboe, Clarinet, Bassoon, French Horn and Pianoforte (Beethoven). 5.25, Topical Talk. 5.40, Wireless Technical Talk. 5.55, Weather and Announcements. 6.0, English Lesson. 6.30, A Poem. 6.35, Concert from Frankfurt. 7.0, See Hamburg. 8.35, The Kreutzer Sonata (Beethoven) by Martha Linz (Violin) and Luise Gmüner (Pianoforte). 9.10, Weather, News and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Programme from Stuttgart. 11.0 (approx.), Close Down.

MARCH 29th

WEDNESDAY

continued

alteration.) 5.30, Military Band Concert for Portsmouth Listeners. Naval Patrol (Williams); Amorette (Gungl); Old Panana (Alford); Valse des Alouettes (Drigo); Parade of the Tin Soldiers (Jessel); The Turkish Patrol; Wood Nymphs (Coates); Military March (Schubert). 6.0, Orchestral Concert of Tangos for Southsea Listeners. Marion; Il Conto dell' attesa; I kiss your hand Madam; Farewell; Mariette; Thrill me; Little Lady; Mama Inez. 6.30, Vocal Concert for Isle of Wight Listeners. Songs: (a) Passing by, (b) Only a Rose, (c) My Dreams. Violin Solo: Because. Songs: (a) At Dawning, (b) To Mary, (c) Maire ny Girl. Violin Solo: Song of Songs. 7.0, Local News and Light Music on Gramophone Records. 7.30, Radio Gazette. 8.0, Popular Concert. 8.30, "Broldingnac" or "La Dictateur"—Comedy in Four Acts (R. Cortal and Marc Henri Miles). 10.0 till Close Down, Programme in English by the I.B.C. (Times subject to alteration.) 10.0, Variety Music. It's great to be in Love; I idolize my Baby's eyes; Flame of Desire; You call it madness, but I call it love; Mona Lisa; You try somebody else; By the Fireside; Ecstasy; I'm sorry dear; Falling in love again; One little Quarrel; Life is just a bowl of Cherries; The Song of the Islands; Bend down Sister; Save the last Dance for me. 11.0, Orchestral Concert. Overture, Mignon (Thomas); Drinking Song from The Rose of Persia; Spring Song (Mendelssohn); The Song that reached my Heart; Hungarian Dance, No. 6 (Brahms); Selection from "Il Trovatore" (Verdi). 11.30, Songs from Musical Comedies by the Studio Chorus: (a) The Merry Widow (Lehar). (b) La Poupée (Andran). (c) Miss Hook of Holland. (d) The Maid of the Mountains (Fraser Simpson). 12 Midnight, Variety Music. Mari-gold; Keep a Song in your Soul; Down the River; A Night in Venice; I've got a Girl; Maggie's Cold; Medley of Popular Airs. 12.30 a.m. (Thursday), Scottish and Irish Songs. We Cooper O'Pife; O'ne the Airts; To Mary in Heaven. Orchestra; Irish Jigs; The Londonderry Air; Bonnie wee thing; The Mountains of Mourne. Orchestra; Eightsome Reel. 1.0, Organ Recital. In a Japanese Garden (Biggs). Two Songs (Woodforde Finden): (a) Till I wake, (b) Kashmiri Love Song; The Sacred Hour (Kotelbey); Sylvian Scenes (Fletcher) Eleanor (Hanky); Now I'm in Love (Vollen); The Love Waltz (Huyemann). 1.30 (Thursday), Vocal Duets; Open up dem pearly Gates; Every time my Sweetie passes by; She was poor, but she was honest; High Society Blues; Life is just a Bowl of Cherries; Zuland; Guilty. 2.0, Variety Music. Hock Caroline; By the Fireside; Sing Brothers; Good-night, little Girl, Good-night; Long Ago; What makes you so adorable; When the Rest of the Crowd goes home; Don't tell a Soul; Marta; We will always be Sweethearts; Shadows on the Window; What would you do?; How are you?; Song of the Harp. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres.—2.16 p.m., Programme for Young People. 3.50, Economic Notes. 4.0, Concert by the Radio Orchestra: Part I: Conductor: Reinhold Merten; Symphonic Poem, Orpheus (Liszt); Italian Suite (Raff); Part II: Conductor: Walter Caspar; Old Dance Music. 6.15, Economic Notes. 5.25, Talk: German Wireless in Chicago. 5.50, Topical Talk. 6.15, Time, Programme Announcements, Weather and Economic Notes. 6.30, Orchestral Concert: Part I: Marches. Part II: Waltzes by Lanner and Strauss. 8.30, Brahms Memorial Concert, relayed from St. Catherine's Church; Motet, Schaffe in mir Gott ein reines Herz; Motet, Warum ist das Licht gegeben; Readings. 9.0, Time, News, Weather and Sports Notes. 9.20, See Stuttgart. 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBURG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 630 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—3.30 p.m. (from Flensburg). Concert of Scandinavian Music by the Municipal Orchestra, conducted by Kurt Barth: Overture, Im Hochland (Gade); Symphonic Poem, Korsholm (Järnfeldt); Divertimento for Strings (Rangström); Tone Poem, Finlandia (Sibelius); Swedish Rhapsody, Gramophone Records. 2.25, Vocal and Instrumental. 4.30, Radio Report from the Excavation of a Pre-historic House in Duhnen. 4.55, Variety Programme. 5.50, Exchange and Market Prices. 6.0, Talk: Austria as a Frontier Land. 6.30, Hermann Munk sings Weber Songs to the Guitar; Variations

on a Theme, Op. 2; Aria from Die Minnesänger; Sanftes Licht; Waltz; Lass mich schlummern; Herzlich schweige; Liebeszauber; Allemande. Op. 4; Liebeslied; Abschied. 7.0, Talk: Germany builds a Trading Vessel. 8.35, See Munich. 9.20, Time, Weather, Announcements, Sports and Police Notes. 9.40, Topical Talk. 9.50, Concert of Light Music on Gramophone Records. In an interval at 10.20, Ice Report.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—12.5 p.m., Gramophone Concert. In the interval at 12.20, News. 1.30, Programme arranged by the Post Office, with Gramophone Records. 2.0, Exchange Quotations. 2.20, Talk for the Housewife. 2.30, Programme for Children. 3.0 (from Danzig), Dialogue for Parents. 3.30, Concert by the Small Station Orchestra, conducted by Eugen Wilken; March, Mein Regiment (Blankenburg); Overture, Albin (Flotow); Waltz, La Housarde (Ganne); Die kleinen Soldaten (Marks); Anzug der Stadtwahe (Jessel); Selection from Herbstmäner (Kalmann); Overture, Light Cavalry (Suppe); Eins-zwei-drei die ganze Kompagnie (Reisfeld-Marlot); Worum schwärmt die Rosmarie für die stramme Infanterie; Waltz, Soldatenliebe (Gungl); Potpourri, Soldatenliebe-Soldateneben (Roland). 4.50, Talk: Champions in the Animal World. 5.15, Market Prices. 5.20, Ice Report. 5.30, The Art of Playing the Piano-forte—Talk, with Illustrations: Sonata in D (Haydn); Sonata in E flat (Haydn). 6.0, Bridge Lesson. 6.25, Talk on George Baron von Ompteda on his Seventieth Birthday. 6.55, Weather and News. 7.0, Dance Music by the Small Station Orchestra, conducted by Eugen Wilken, and the Eduard Runde Band. 8.30, News. 8.35, See Munich. 9.20, News Bulletin. 9.30, Hugo Wolf Commemoration Concert by the Wireless Chorus and the Königsberg Opera House Orchestra, conducted by Ludwig Leschitzky; Soloist: Bronka von Ferenczy (Songs); Prelude to and Extracts Music from Der Corregidor. Songs, with Orchestral Accompaniment, Italian Serenade. Ballad for Choir, Der Feuerreiter. 10.30 (approx.), Close Down.

HILVERSUM

Announced HUIZEN, 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Christian Radio Society (N.C.R.V.).—12.40 p.m., Academic Festival Overture, Op. 80 (Brahms), on Gramophone Records. 12.55, Organ Recital. 1.55, Symphonic in C—the Jupiter (Mozart), on Gramophone Records. 2.25, Vocal and Instrumental Concert: Hymn, Hör mein Bitten (Mendelssohn); Violin Solos: (a) Romance in F (Beethoven), (b) Allegro (Puccini); Piano-forte Solo, The Moonlight Sonata, Op. 27, No. 2 (Beethoven); Songs: (a) Swedish Song, The Shepherd, (b) Russian Song, The Nightingale, (c) Piece (Chopin), (d) Lithuanian Song (Chopin); Piano-forte Solos: (a) Sonetto del Petrarca (Liszt), (b) Spinning Chorus from The Flying Dutchman (Wagner); Interlude on Gramophone Records: (a) Overture, The Flying Dutchman (Wagner), (b) Melody for Cello and Piano-forte (Rubinstein); Violin Solos: (a) Romance (Verhallen), (b) Polonaise (Hofmeister); Six Dutch Songs. 4.10, Programme to be announced. 4.40, Programme for Children—Sacred Music. 5.40, Talk by Heer Terwort. 5.55, Talk by Heer Stakekamp. 6.10, Elementary English Lesson. 6.40, Talk arranged by the Department of Buildings and Roads. 7.10, Police Notes. 7.25, News Bulletin. 7.40, Concert by the Haarlem Orchestra, conducted by Frits Schuurman; Entry of the Guests into the Wartburg, from Tannhäuser (Wagner); Siegfried Idyll (Wagner); Kol Nidrei (Bruch); Suite, Jeux d'enfants (Bizet); Cello Solo, Elégie (Fauré); Prélude à l'après midi d'un faune (Debussy). 8.40, Talk on New Guinea. 9.10, Concert (cont'd.): Overture, Le carnaval romain (Berlioz); Algerian Suite (Saint-Saëns); Concert Overture, Cyrano de Bergerac (Wagenaar); Rhapsody, Piet Hein (van Anrooy). 9.40 (in an interval), News Bulletin. 10.10, Gramophone Concert of Popular and Sacred Music. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

(Announced HILVERSUM). 160 kc/s, 1,875 metres; 8.5 kW. Programme of the Workers' Radio Society (V.A.R.A.).—11.40 a.m., Concert by De Notenkrakers, conducted by D. Wms. Soloist: A. de Bony (Songs). 1.25 p.m. to 1.40, Interval. 1.40, Programme for Women. 2.40, Programme for Children. 5.10, Concert of Balalaika Music by the V.A.R.A. Orchestra, conducted by L. Powariev. 5.40, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot. Selection from Les dragons de Villars (Mailart); Glocken-sérénade (Kockert); Berceuse from Jocelyn (Godard); Rote Rosen (Lehar); Potpourri, Hallo, hier Wien (Morena). 6.10, Talk arranged by the

R.V.U. 6.40, Topical Talk. 7.0, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot; Prélude à l'après-midi d'un faune (Debussy); Concerto in D, Op. 19 (Prokofiev); Overture, Fra Diavolo (Auber); Selection from The Bird Fancier (Zeller); Mürmelnde Lüftchen (Rhapsody); Pas des fleurs (Delibes); Slav Rhapsody (Friedemann). In the intervals at 7.38, S.O.S. Announcements, and at 7.40, Talk. 8.40, Eva Bonheur—Play (Heyermans). 10.25, Announcements and Variety Programme. 10.40, Organ Recital by J. Jong; Overture, Frau Luna (Lincke); The Tyrol in Song and Dance (Fotras); Gipsy Dream (Mark-shub); Zusammen und Marsch (Spreinger-Polaj); Let's all sing like the Birdies sing (Evans); After To-night we say Good-bye (Towers). After the Concert, The Gipsy Princess—Operetta (Kalmann) on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

NICE, 1,202 kc/s, 249.6 metres; 0.8 kW.—9.30 to 10.30 p.m., Programme in English by the I.B.C.: H. K. Hitchcock, announcing.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—6.15 p.m., Announcements and Gramophone Records. 6.25, Report of the Polish Youth Association. 6.30, See Warsaw. 9.40, Light Music on Gramophone Records. 10.0, The Letter Box in French.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—6.30 p.m., Popular Concert. 7.10, Talk for Women. 7.30, Variety Programme. 7.50, Talk: Auto-Suggestion. 8.10, Popular Concert. 8.40, Sports Notes. 8.50, Evening Concert. 9.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by Helsinki, 815, kc/s, 368.1 metres.—4.0 p.m., Programme for Children, relayed from Tampere, 536 kc/s, 560 metres. 4.40 Programme for Girls. 5.15, Estonian Lesson. 5.40, Talk. 6.5, Concert by the Laitu-Mielch Choir. 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

WESTDEUTSCHER RUNDFUNK, 635 kc/s, 473 metres; 60 kW.—12 Noon, Concert, conducted by Eysoldt. Soloist: Theodor Heidemann (Bass). Overture, Abu Hassan (Weber); Two Waltzes, Op. 54 (Dvorák); Bass Solos: (a) Aria from L'Elisir d'amore (Donizetti), (b) Air from Czar and Carpenter (Lortzing); Selection from Bank Bau (Erkel); Hungarian Rhapsody No. 13 (Liszt); Meditation (Taylor); Overture, Prince Methusalem (Joh. Strauss); Songs: (a) Ich weiss schon, was ich möcht' (Strauss), (b) Irmelin Rose (Peterson-Berger); Grüss Gott mit hellem Klang—for Male Voice choir (Weniger). In the interval at 1.0 p.m., News Bulletin. 1.30, Sponsored Programme with Gramophone Records. 2.30, Exchange and Time Signal. 2.50, Programme for Children. 3.20, Talk: The Songs of Germany's Native Birds. 3.40, Talk by Christian Baron von Ompteda on the Seventieth Birthday of Georg Baron von Ompteda. 4.0, See Frankfurt. 5.20, Talk on Music. 5.45, Weather, Time, Exchange and Sports Notes. 6.0, Talk: Sunday Shop closing. 6.20, Health Talk: Nerves. 6.35, The World on Gramophone Records—South of the Equator. 6.55, First General News. 7.0, See Hamburg. 8.30, Concert by the Little Station Orchestra, conducted by Eysoldt. 9.15, News and Sports Notes. 9.30, See Stuttgart. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—11.5 a.m., Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber; Overture, Czar and Carpenter (Lortzing); Serenade in E Minor (Fuchs); Selection from Die drei pintos (Weber); Shakespeare Suite No. 2 (Humperdinck); Suite, Bunte Reihe (Möllendorff); Waltz (Waldteufel); Selection from Clo-clo (Lehar). In the interval at 12 Noon, News, Weather, and Time. After the Concert, Exchange Quotations. 1.0 p.m., Gardening Talk. 2.35, Exchange and Market Prices. 3.0, Programme for Children: Part I: Frühling—Radio Play (Ilse Obirg); Part II: Thüringian Folk Songs; Part III: Reading (Herbert Roth). 4.50, Exchange, Weather and Time. 5.10, Book Review. 5.35, Italian Lesson. 5.55, Talk: Fifty Years of Financial Reform in Germany. 6.5, Talk: Motor Traffic Regulations. 6.15, Reading: Wanderings through the Mark of Brandenburg (Theodor von Fontane). 6.50, Topical Talk. 7.0, See Berlin (Witzleben). 9.10, News Bulletin. 9.45, See Stuttgart. 11.0 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

622 kc/s, 674.7 metres; 7 kW.—5.0 to 5.30 p.m., Programme in English by the R.C. 5.0, International Broadcasting Club Concert. Selection from White Horse Inn (Stolz-Benatzky); Songs: (a) Stonecracker John, (b) The Wolf; Selection from Countess Mariza (Kalmán); Songs: (a) The Sergeant of the Line, (b) Rocked in the cradle of the deep; You are my Heart's Delight, from The Land of Smiles (Lehar). 5.30, Light Music on Gramophone Records. 6.0, Russian Lesson. 6.30, Literary Talk. 7.0, Concert of Music by Anton Svetek. 8.15, Quintet Concert. 9.15, Time and News.

LWOW

788 kc/s, 381 metres; 16 kW.—6.10 p.m., Miscellaneous Items. 6.30, See Warsaw. 7.0, Choral Concert of Light Music. 7.50, See Warsaw. 9.40, Talk in English: Poland and her International Relations. 9.55, See Warsaw. 10.30 (approx.), Close Down.

LYONS

LA DOUA, PTT, 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., Radio Gazette for Lyons and the South East. 7.20, The Damnation of Faust—Opera (Berlioz), relayed from the Opéra, Paris. News after the Opera.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 20 kW.—10.30 p.m., Concert of Variety Music. 10.45, Radio Chronicle. 11.0, Concert (cont'd.). 11.35, Talk. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO (EAJ7), 707 kc/s, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations. Literary Talk and Request Gramophone Records. 8.25, News Bulletin and Political Review. 8.30 to 9.30, Interval. 9.30, Chimes, Time Signal, Political Review and a Play (Cocteau), translated by Julio Gómez de la Serna. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—5.25 p.m., Brass Band Concert, relayed from Kladsko. 6.0, See Prague. 6.10, See Brno. 6.25, See Prague. 7.40, See Brno. 9.0, See Prague. 9.15 (approx.), Close Down.

MOSCOW

230 kc/s, 1,304 metres; 100 kW.—4.30 p.m., A Sketch (Hasek). 5.30, Concert, relayed from the Small Conservatoire Hall. 8.0, Talk in English: The Miner in the Soviet Union.

MOTALA.—See Stockholm.

MUEHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.0 p.m., Concert by the Fritz Reithmeier Orchestra: Overture, Der Wildschütz (Lortzing); Albumblatt (Humperdinck); Selection from Hansel and Gretel (Humperdinck); Mürmelnde Quelle (Lortz); Suite from Der Rosenkavalier (R. Strauss); Potpourri: An Evening in Grinzing (Dauber); Gaukler im Orient (Lindemann). 5.15, Italian Lesson. 5.35, Talk: The Civil Service Candidate. 5.55, Time, Weather and Agricultural Notes. 6.5, Talk: Art and Advertising. 6.25, Concert of Folk Music by the Oktavia Concertina Society. 7.0, See Hamburg. 8.35, Hundreds and Thousands—a Gramophone Melley arr. Bruno Aulich). 9.20, Time, Weather, News and Sports Notes. 9.45, Serenade conducted by Erich Kloss. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.15 p.m., Concert of Light Music: Aite Refrain (Kreiser); Viennese Canzice (Kreiser); Parlez moi d'amour (Lehar); Waltz, Poem (Fibich); Russian Tango (Markush); Foxrots and Waltzes. 4.45, Literary Review. 5.0, French Lesson. 5.30, Programme for Girls. 6.0, Announcements, Weather, and News. 6.30, Talk: Problems of Philosophy. 7.0, Time Signal. 7.1, Concert by the Station Orchestra, conducted by Hugo Kramm; Overture, Der Pfeifkavalier (von Schillings); Selection from Der Rosenkavalier (R. Strauss); Selection from Die tote Stadt (Korngold); Selection from The Sunken Bell (Respighi); Selection from Don Juan's Last Adventure (Grauer); Intermezzo from Hary Janos (Kodaly); Selection from Jenfa (Janacek). 8.0, Recitations. 8.30, Market Prices, Weather, and News. 9.0, Topical Talk. 9.15, Bridge Lesson, relayed from Aalesund, 447.1 metres. 9.45, Gramophone Dance Music.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—Transmits at intervals from 7.0 p.m., Dopplavoro Notes, Tourist Talk, Agricultural Notes and Giornale Radio, 7.20, Light Music on Gramophone Records, 7.30 (in an interval), Time Signal and Announcements, 7.45, Variety Concert. Soloists: H. di Gregorio (Soprano) and Ercolo Baudo (Guitar). Bacchante from Philémon et Baneis (Gounod); Soprano Solos; Nel giardino del silenzio and Buoi di miseria (Tirindelli); Gigue (Wormser); Guitar Solos: (a) Waltz (Navone), (b) Fantasia (Decher); Soprano Arias from (a) The Magic Flute (Mozart), (b) Mirella (Gounod); Dance from The Fair Maid of Perth (Bizet); Guitar Solo: Sicilian Tarantella (Longo); Overture, Le dome curiose (Wolf-Ferrari). In the interval, Talk, 9.0, Song Recital, 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals)—5.45 p.m., Talk on Music, 6.0, Le Journal Parlé, 6.45, Programme for Children, 7.20, Weather, 7.30, The Damnation of Faust—Opera (Berlioz), relayed from the Opéra.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—5.45 Le Journal Parlé, 6.0, Talk: The Cercle Ronsard, 6.10, Popular Music on Gramophone Records, 7.0, Talks, 7.30, Chamber Music Concert, 8.10, Sponsored Concert, 9.10, Dance Music from the Lido, 10.0 (approx.), Close Down.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture, 6.30, Weather and Physical Culture (cont'd.), 6.45, Gramophone Records; Selection from Les vingt-huit jours de Clairette (Roger-Taxin); Selection from La Vie Parisienne (Offenbach), 7.0, Press Review and Weather, 11.0, Educational Talk, 11.15, Concert of Operetta Music by the Radio Paris Orchestra; Selection from La petite bohème (Hirschmann), 11.30, Organ Recital by G. T. Desserre, relayed from the Ganmont Palace; Ballet Music from Les deux Pigeons (Messager); Graciosa valse (Ardeley); Les airs de Fragon (Salabert), 12 Noon, Exchange, News and Weather, 12.5 p.m., Orchestral Concert (cont'd.); Selection from The Countess Maritza (Kálmán); Selection from Madame Favart (Offenbach); Selection from The Mikado (Sullivan); Selection from Haus der lustige Krieg (Joh. Strauss), 12.30, Exchange, 10, Exchange, 2.45, Exchange and Market Prices, 5.10, Agricultural Talk, 5.30, Market Prices, Weather and Agricultural Report, 5.40, German Lesson, 6.0, Medical Talk, 6.20, Gramophone Records: The Arrival of the Circus (Rust); Lassitude (Hermann); Ton non (Malderen); Berceuse (Bermann); Les Roses de Saadi (Hermann); Cantique d'amour (Georges-Charmettes); Catalan Caprice (Albeniz-Chapelier), 6.50, Commercial Prices and News, 7.0, Literary Readings, 7.30, News and Weather, 7.40, Fashion Review by Mlle. José, 7.45, Gramophone Records: Overture, The Secret Marriage (Cimarosa); Aria from Le levain du village (Roussseau); Songs (Debussy): (a) Fêtes galantes, (b) Mandoline, 8.0, Concert by the Lamoureux Concert Society, conducted by Albert Wolff, relayed from the Salle Gaveau; Overture, Gwendoline (Chabrier); Symphonic Poem, Ophelia (Bondeville); Concerto (Ravel); Extracts from Le Roi David (Honegger), by the Paris Mixed Choir and Soloists, conducted by Marc de Rausse.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relayd by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Work-day Thoughts, 9.5, Business News, 9.15, Ballroom Promenade, from New York, 9.30, Weather Report, 9.32, Market Reports, 9.45, Blue Ridge Buddies, 9.57, David Lawrence Dispatch, 10.0, Jazz and Glee, 10.15, Dick Darling, from New York, 10.30, The Singing Lady, 10.45, Little Orphan Annie, from New York, 11.0, Booth Tarkington's Maude and Cousin Bill, from New York, 11.15, Time Signal, 11.16, Weather Report, 11.17, Teaberry Sport Review, 11.22, Press News Reeler, 11.27, Strange Facts, 11.29, Temperature Report—Philadelphia Company, 11.30, KDKA Orchestra, 11.45 to 3.15 a.m. (Thursday), New York Relay, 11.45, Today's News by Lowell Thomas, 12 Midnight, Amos 'n' Andy, 12.15, The Southern Singers, 12.30, International Tidbit, 1.0, Eno Crime Club, 1.30, Time Signal and Harriet Lee and her Leaders, 1.45, Country Doctor, 2.0, Adventures of Sherlock Holmes, 2.30, Woodbury Programme with Morton Downey and Donald Novis, 3.0, D. W. Griffith's Hollywood, 3.15, Around the Cracker Barrel, 3.30, Music Magic, from New York, 4.0, Time Signal, 4.1, Teaberry Sport Review, 4.11, Temperature Report—Philadelphia Company, 4.12, Weather Report, 4.15, Press Last-minute News Flashes, 4.20, Smith Ballou and his Orchestra, 4.58, KDKA Artist Bulletin, 5.0, College Inn Orchestra, from New York, 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

MARCH 29th

WEDNESDAY

continued

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by Iva Krejci; Overture, Il Seraglio (Mozart); Overture, The Ruins of Athens (Beethoven); La Boutique fantasque (Rossini-Respighi); Waltzes (Smetana); Serenade (Suk); Festival March (Dvorák), 4.0, Talk: The Effect of School on the Modern Child, 4.10, A Marionette Play (Musik) after a Story by Poci, with Music by Paukner, 5.5, Agricultural Report, 5.15, Gardening Talk, 5.25, News in German, 5.30, German Transmission: Reading, Talk for Workers, and Market Prices, 6.0, Clinics, 6.1, News Bulletin, 6.10, See Brno, 6.25, Military Band Concert, conducted by Jan Pesta. In the interval, Talk, 7.40, See Brno. In the interval at 8.0, Time Signal, 8.40, Pianoforte Recital by Eleanor Spencer: Pastorale (Schubert); Ondine (Ravel); Papillons (Schumann), 9.0, Time Signal, 9.1, News Bulletin, 9.15, Review of Foreign Affairs in French, 9.20 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW; LAUSANNE, 442 kc/s, 680 metres; and GENEVA, 395 kc/s, 760 metres.—5.0 p.m., Programme for Children relayed from Nyon, 6.0 (from Lausanne), Weather Forecast, News Bulletin and Announcements, 6.30 (from Lausanne), Talk: The Care of Fruit Trees, 7.0 (from Lausanne), Clarinet and Pianoforte Recital, Two Pieces for Clarinet and Pianoforte: (a) Sonata in G Minor (Handel), (b) Réverie from the Suite algérienne (Saint-Saëns); Pianoforte Solos: (a) Ballad (Dvorák), (b) Zephyr (Suk); Fantasias for Clarinet and Pianoforte (Schumann), 7.40 (from Lausanne), Song Recital by Mme. Berthe de Vigier. In the interval: Reading of Poems, 8.15 (from Lausanne), Dramatic Programme, 9.0, News Bulletin and Weather Forecast, 9.10 (from Lausanne), Dance Music relayed from the Bel Air Métropole, 10.0 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW. 5.45 p.m., Dramatic Programme, 7.0, News, 7.15, Concert by the Conventual Praesidium, relayed from the Latvian University, Part I, The Death of Jaculis—Ballad for Baritone and Choir with Pianoforte and Harmonium Accompaniment (Medins), Part II, Latvian Songs, 8.0, Weather and News, 8.30, Concert of Light Music, Overture, The Gipsy Baron; Waltz from The Countess Maritza (Kálmán); Gavotte (Meyer-Hellmuth); Rhineland Suite (Nordaa); Selection from The Lazy John (Nedbal); Bolero (Elizetti); Waltz, Dorfkind (Kálmán); Military March (Schubert), 9.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

(IRO), 680 kc/s, 441 metres; 50 kW. Relayd by Naples, 941 kc/s, 319 metres; and 2RO, 1,150 kc/s, 25.4 metres.—12 Noon, Time and Announcements, 12.2 to 1.15 p.m., Orchestral Concert: The Belles of Barcelona (Payne); Song, with Hawaiian Guitar, Onda (Carducci); Selection from The Flower of Hawaii (Abraham); My Dream (Gilbert); Fantasia africana (Donati); Fantasia on Negro Spirituals for Voice and Orchestra (Foulds); Lucia, Luci (de Curtis); Spanish Song (Valdes); Patrick (de Wlastov). In the interval from 12.30 to 12.45, Giornale Radio and Exchange, 3.45, Children's Radio Review, 4.10, Announcements, 4.15, Exchange, Report of the Royal Geographical Society and Giornale Radio, 4.30 to 5.15, Song Recital by Re Kosterg (Soprano) and Angelo Parigi (Tenor), Four Old Dutch Songs for Soprano, Eight Tenor Songs from Dichterliche (Schumann); Three Songs for Soprano from Chants d'Anvers (Canteloube), 6.0 (Naples), Shipping and Sports Notes, 6.10, Agricultural and Dopplavoro Notes, 6.20, Giornale Radio and Light Music on Gramophone Records, 7.0, Time and Announcements, 7.15, Medical Talk, 7.30, Sports Notes and Tourist Report, 7.45, Relay from a Theatre. In the intervals, Talk and News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 790 kc/s, 379.5 metres; 50 kW. Relayd at intervals by W2XAF and by W2XAD (See Short-Wave List)—7.30 p.m. to 12.15 a.m. (Thursday), New York Relay, 7.30, Westminster Choir, 8.0, Two Seats in the Balcony, 12 Midnight, Mischa Weisbord (Violinist), 12.15 a.m. (Thursday), Stock Reports, 12.30 to 2.30, New York Relay, 12.30, Soloist, 12.45, The Goldbergs, 1.0, Royal Vagabonds, 1.30, The Shadow, 2.0, General Tire and Rubber Company Programme, 2.30, Supper Club Orchestra, followed by Programme Resumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; BASLE, 1,229 kc/s, 244.1 metres; and

BERNE, 1,220 kc/s, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory, 11.30, Weather and News, 11.40 (from Berne), Orchestral Concert, 12.35 p.m., Weather and Exchange, 12.40 to 2.30, No Transmission, 2.30 (from Berne), Viennese Folk Music on Gramophone Records, 3.30 (from Berne), Programme for Children, 4.0 (from Berne), Songs on Gramophone Records, 4.30, Weather Report, 4.32 to 5.30, No Transmission, 5.30 (from Basle), Talk: People and Dogs, 6.0, Time, Weather, and Market Prices, 6.15 (from Basle), Talk on Maiorca, 6.45 (from Basle), Recital of Violin Sonatas, 7.35 (from Basle), Livietta e Tracollo—Opera (Pergolesi), 8.30, Weather and News, 8.40 (from Basle), Yodel Duets, 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

RADIOTJANST (SASA), 669 kc/s, 436 metres; 55 kW. Relayd by Boden, 244 kc/s, 1,225.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.5 p.m., Accordion Music, 4.30, Reading, 4.55, Popular Music on Gramophone Records, 5.55, Talk, 6.15, Weather and News, 6.30, Talk, 7.0, Popular Music on Gramophone Records, 7.15, A Play—(Ove Ekelund), 8.0, Symphony Concert, 8.45, Weather and News, 9.0, Dance Music, 10.0 (approx.), Close Down.

STRASBOURG

859 kc/s, 345 metres; 11.5 kW.—10.30 a.m., Gramophone Concert of Classical Music, 11.45, News, 12 Noon, Time and Exchange, 12.5 p.m., Light Music on Gramophone Records, 1.0 to 2.30, Interval, 2.30, Concert relayed from Radio Coloniale (Paris) (11,705 kc/s, 25.63 metres), Conductor: Henri Tomasi, Symphony Concertante for Oboe, Clarinet, Bassoon and Horn (Mozart); Siegfried Idyll (Wagner); Scènes municipales (H. Tomasi); Ballet Music from La boîte à jonjoux (Debussy), 4.0, Concert of Jazz Music, conducted by Roskam, 5.0, Trio Concert of Variety Music, relayed from Lille (1,130 kc/s, 265.4 metres), 6.0, Legal Talk in French; Amusement Taxes, 6.15, Talk in German on Political Economy, 6.30, Time and News, 6.45, Gramophone Concert; Second Potpourri of Waltzes (Robrecht); Ein Abend in Grünzig (Dauber); Aubade printempsière (Lacombe); Selection from Lysistrata (Linke); Valse triste (Sibelius); Spring Song (Sibelius); Third Potpourri of Waltzes (Robrecht), 7.20, Lottery Results, 7.30, Les Béatitudes—Oratorio for Soloists, Choir and Orchestra (César Franck), relayed from the Conservatoire, Metz, 10.0, Quintet Concert, relayed from Radio Coloniale (Paris), 11.0 (approx.), Close Down.

STUTT GART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayd by Freiburg, 527 kc/s, 570 metres.—12.30 p.m., Concert from Langenberg, 1.0, Musical Programme arranged by the Post Office, 1.15 to 1.30 (from Mannheim), Musical Programme arranged by the Post Office, 3.0, Programme for Children, 4.0, See Frankfurt, 5.15, Time, Weather, and Agricultural Notes, 5.25, Talk on Everyday Psychology, 5.50, Talk: Relics of Ancient Races in the Amazon Primeval Forests of Amazonas, 6.15, Time and News, 6.30, Concert of Swabian Peasant Music, 7.0, See Hamburg, 8.30, Sonata in A for Violin and Pianoforte, Op. 100 (Brahms), by Catharina Bosh-Möckel and Hubert Giescu, 9.0, Time, News, Weather, and Programme Announcements, 9.20, Serenade by the Philharmonic Orchestra, 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 779 kc/s, 385 metres; 8 kW.—5.15 p.m., Instrumental Solos: Turkish March (Mozart); Serenade for Violin (Drilla); Pianoforte Solo, La Campanella (Bergami-Liszt); Serenade for Saxophone (Saint-Saëns), 5.30, Light Music, 5.50, Talk, followed by Méditation (Massenet), 6.15, News, Racing Results and Market Prices, 6.25, Local News, 6.30, Songs from Sound Films, 6.45, Military Music, 7.0, Arias from Opera, 7.15, Orchestral Concert: Selection from A Midsummer Night's Dream (Mendelssohn); Pastorale d'été (Honegger); Aria (Bach); An den Frühling (Grieg); Minuet (Schubert); Minuet in G (Beethoven), 7.45, Popular Melodies, 8.0, Concert by the Estudiantina Les Freres Mandols, In the intervals, Airs from Operettas, 9.15, North African News, 9.30, Concert for Listeners in Morocco, 10.0, Viennese Music, 10.30 to 11.00, Programme in English by the I.B.C., 10.30, W. Brown-Constable announcing, 10.30, A Year Ago—Part I: Miss Elizabeth Brown; You forgot your Gloves; Music; The King's Horses; Springtime in the Rockies; Elizabeth; Got a Date with an Angel; Goodnight and Pardon Madame.

10.57, I.B.C. Goodnight Melody, 11.0, Weather and Announcements, 11.5, Accordion Solos, 11.15, Dance Music, 11.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—4.0 to 6.35 p.m., See Turin, 6.35, Light Music from the Café Dante, 7.0 (approx.) till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayd by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 509.8 metres.—4.0 to 5.0 p.m., Tenor and Baritone Song Recital by Giulio Scariaci and Carlo Togliani; Tenor Solo: Pourquoi me reveiller? from Werther (Massenet); Baritone Solo from Le Roi de Lahore (Massenet); Tenor Solo, Cielo e mar from La Gioconda (Ponchielli); Monologue for Baritone from André Chénier (Giordano); Tenor Solo: Tombe degli avi miei, from Lucia di Lammermoor (Donizetti); Baritone Solo, Thou art avenged, from Dinaora (Meyerbeer); Tenor Solo from La Traviata (Verdi); Figaro's Cavatina from The Barber of Seville (Rossini); Duet from La Gioconda (Ponchielli), 5.35, Giornale Radio, Agricultural and Dopplavoro Notes, 6.5, Giornale Radio, 6.30, Time, Announcements and Tourist Report, 6.35 (approx.), Gramophone Records of Popular Music, 7.0, Giornale Radio and Weather, 7.15, Medical Talk, 7.30, A Comedy in Three Acts, followed by Concert of Light Music, 10.0, Giornale Radio, 10.5 to 10.30 (Florence), Dance Music from the Rajola.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in Spanish, 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayd by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—4.0 p.m., Concert of Czechoslovak Music. Introduction and Allegro from the Symphony in F for Trio (Tuma); Andantino from the Sonata for Flute, Violin and Cello (Mysliveček); Duet for Soprano and Mezzo-soprano: Der Jünglingsel and der Mühlbach; Allegro con briò, from the Sonata for Pianoforte, Op. 29 (Worisek); Lullaby from The Kiss (Smetana); Cello Solo: Forest Calm (Dvorák); Poem (Fibich); Soprano Solo: Nach Hause (Fürster); Pianoforte Solo: Alla Ballata (Novak); Violin Solo: Burlesque (Suk); Mezzo-Soprano Solos: (a) Vision (Kricka), (b) A Mother's Heart (Jerejans); Pianoforte Solo: Lullaby (Aycpaek); Pianoforte Solo: Scherzando (Hrjak); Soprano Solo: Spring (Petzelka); Pianoforte Solo: Prelude and Fugue (Weinberger); Duet from Das lustige Fischen (Janacek); Two Pieces from Ostrina (Schubert); Nocturne for Violin (Mracek); Reiterburleske (Füke), 5.25, Medical Talk, 5.50, Talk for Workers, 6.15, Talk: Invisible Things in Nature, 6.40, Time, Weather and Programme Announcements, 6.50, Der Jögl vom Weescheidhof—Musical Play (Paul Löwinger-Hartweg), 7.30, Weather and Announcements, 8.45, Popular Concert by Wilhelm Wacek and his Orchestra. Overture, Let petit Duc (Lecocq); Waltz Song and Marching Song from Sissy (Kreiser); Waltz, Liebesströme (Haupt); Selection from Frühling in Wienerwald (Ascher); Eestasy (Ganne); Potpourri A. B. C (Kozak); Polka, Lustig herum (Mahr), 9.45, Music Notes, 9.55, Concert by Jack Payne and his Band on Gramophone Records.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—10.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow, 11.5, Programme Announcements, 11.10, Light Music on Gramophone Records, 12.20 p.m., Weather Forecast, 12.25 to 2.10, Interval, 2.10, Announcements, 2.15, Economic Notes, 2.30, Scouts' Report, 2.35, Programme for Children, 3.0, Popular Music on Gramophone Records, 3.20, Talk on History, 3.40, Talk relayed from Lwów, 788 kc/s (381 metres), 4.0, Gramophone Records of Kreiser and Tito Ruffo, 4.40, Talk, 4.55, Programme Announcements, 5.0, Talk on Polish Literature: Kasparovics, 5.20, News, 5.25, Light Music, 6.0, Miscellaneous Items, 6.20, Answers to Correspondence, 6.30, Talk: The Polish Novel, 6.45, Radio Journal, 7.0, Choral Concert from Lwów, 7.50, Sports Notes, 7.55, Radio Journal, 8.0, Pianoforte Recital by B. Wojtowicz, Prelude, Choral and Fugue in B Minor (Franck); L'Onidine (Ravel); Prelude, Sarabande and Toccata (Debussy), 8.45, Topical Talk, 9.0, Song Recital by Mario Janowska-Kopezynska, 9.35, Dance Music, In the interval at 9.55, Weather Report and Police Notes.

ZURICH.—See Schweizerischer Landeseender.

ALGIERS

675.3 kc/s, 364 metres; 13 kW.—7.0 p.m., Financial News. 7.10, Shipping Notes. 7.15, Agricultural Talk and Weather Forecast. 7.20, Talk: Curiousities and Recreations. 7.35, Symphonic Music. 7.55, News Bulletin. 8.0, Time Signal. 8.2, Legal Talk. 8.35, Qui a bu boira—Play in One Act (Lonywek). 8.45, News Bulletin. 8.50, Request Gramophone Concert. 9.40, News Bulletin. 9.45, Organ Solos. 9.55, News. 10.0, Concert of Oriental Music. 11.0 (approx.), Close Down.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and GORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 8.0, Gramophone Concert of Variety Music. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.10, Dublin Cattle Market Report. 7.20, News Bulletin. 7.30, Time Signal. 7.31, French Lesson. 7.45, Literary and Dramatic Talk. 8.0, The Station Orchestra. 8.45, Tenor Solos by Peter Lynch. 9.0, Banjo Solos by R. W. Hope. 9.15, Soprano Solos by Mollie Phillips. 9.30, Dramatic and Musical Programme. 10.0, Gramophone Records of Light Music. 10.30, Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 860 kc/s, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations and Talk in Catalan. 8.0, Popular Music on Gramophone Records, followed by News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, and Market Prices. 9.5, Concert of Popular Music by the Station Orchestra. 9.30, Flamenco Song Recital. 10.0, La Pobre Bertu—Catalan Play in Three Acts (Adrian Gual). 11.0 (in an interval), News Bulletin. 12 Midnight (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist, and Dopolavoro Report. 7.20, Giornale Radio and Announcements. 7.35 (approx.), Military Band Concert, conducted by Salvatore Rubino; Overture, Il Guarany (Gomez); Hymn to the Sun and Selection from Iris (Mascagni); Suite, Sigurd Jorsalfar (Grieg); Selection from the First Act of William Tell (Rossini); Bolero for Clarinet (Blennant); Marcia del Decennale (Marincola). In the interval, Talk on History and Announcements. 9.30, Variety Music on Gramophone Records. 9.55, News Bulletin.

BASLE—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—4.0 p.m., Talk. 5.25, Time and Programme Announcements. 5.30, Dialogue in French. 6.0, Orchestral Concert of Light Music. 7.0, See Ljubljana. 9.0, News. 9.5, Popular Music on Gramophone Records.

BERLIN

KONIGS WUSTERHAUSEN; 183.5 kc/s, 1,635 metres; 60 kW.—1.0 p.m., Gramophone Concert of Instrumental Music from Berlin (Witzleben). 2.0, Musical Programme for Children. 2.30, Weather and Exchange. 2.45, Reading: Die wunderlichen Nachbarinder (Goethe). 3.0, Talks for Women in the Country. 3.30, Concert from Berlin (Witzleben). 4.10, Talk on Philosophy. 4.30, Sonata No. 3 in D Minor Op. 49 (Weber) by Hans Beltz. 5.0, Talk: Handicrafts and their Bearing on Popular Culture. 5.30, Flute and Pianoconcert Recital; Sonata in C for Flute and Pianoconcert (Ph. E. Bach); Sonata in B Minor for Flute and Pianoconcert (Frederick the Great). 5.55, Weather and Announcements. 6.0, German for Germans. 6.20, Agricultural Talk. 6.45, Hein Butendörp sin Bestmann—Play in Dialect. 7.30, See Frankfurt. 9.0, Weather, News and Sports Notes. 9.45, Weather Report for shipping. 10.0, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—5.5 p.m., Recital of Clemens Schmalstich Songs by Georg Hölger (Baritone), with the Composer at the Piano; Ich weiss von Nichten, Eine schwarze Perle, from Der neue Tannhäuser; Lenziend; Capriccio. Nun darfst du weinen; Gedenken; Siehst du die Sonne. 5.30, Talk on Wireless. 5.45, Talk on Pomerania. 5.55, The Witzleben Station informs its Listeners. . . . 6.0, Topical Talk. 6.10, Recital of Folk Songs. 6.40, Talk on the Evening's Musical Programme. 6.50, A Microphone Visit to an Antique Shop, a Radio Report from Stettin (1,058 kc/s, 283 metres). 7.10, Announcements. 7.15, Mandoline Concert. 7.40, Hans Pfitzner Concert by the Berlin Philharmonic Orchestra, relayed from the Philharmonie, Soloist, Hans Reimar (Baritone); Two Songs: (a) Zorn, (b) Klage. 8.0, Concert by the Stettin Teachers' Choral Society, relayed from Stettin: Nis Randers—Ballad for Male Voice Choir, Contralto, and Piano-forte (Wapenhensch); Male Voice Choir: (a) Fridericus Rex (Löwe), (b) Alter Gruss (Lorenz), (c) Abendsged (Wiemann). 8.15, Pfitzner Concert (cont'd): Symphony in C Sharp Minor, Op. 36a. 9.0, Weather, News,

THURSDAY
MARCH THE THIRTIETH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL

"Macbeth," from the Artist Designer's Point of View. "Merry-go-Round," feature programme by C. D. Freeman.

LONDON

REGIONAL
MIDLAND
REGIONAL

Symphony concert from the Town Hall, Birmingham. Scene from "King John" by the Northampton Repertory Players.

NORTH

REGIONAL
BELFAST

"Links in the Chain," the nerve-centres of Northern transport and traffic enterprises. An Irish programme.

ABROAD

BERO-

MUNSTER

7 p.m. Brahms' Centenary Concert, from St. Gall. Eily Ney, solo pianoforte.

BRUSSELS

(No. 2)

7.30 p.m. Carillon recital by Staf Nees.

BUDAPEST

7.30 p.m. The Opera House Orchestra, conducted by E. Dohnanyi; solo violin, Juan Manen.

COPENHAGEN

7.10 p.m. Concert from the State Broadcasting Building.

HILVERSUM

7.55 p.m. Concert conducted by Dr. W. Mengelberg, from Amsterdam. Solo violin: Samuel Duskin.

LEIPZIG

RADIO-PARIS

6.30 p.m. Beethoven's Ninth Symphony. 8 p.m. Concert from the Old Conservatoire, conducted by H. Raband.

ROME

7.45 p.m. Symphony concert, conducted by A. la R. Parodi.

SOTTENS

TOULOUSE

Symphony Concert, conducted by E. Ansermet. 8 p.m. Extract from "Lohengrin" (Wagner).

and Sports Notes. 9.10 (approx.), Dance Music by the Osear Joost Band, relayed from the Eden Pavillon. 11.0, Hugo Wolf—Radio Picture (Erich Fortner).

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

PTT 986 kc/s, 304 metres; 13 kW.—6.30 p.m., News Bulletin and Exchange quotations. 6.40, Talk arranged by the International Labour Bureau. 6.55, Lottery and Charade Results. 7.0, Talk on Wines. 7.15, News Bulletin and Weather Report. 7.30, Gramophone Concert of Light Music. 8.0, L'Homme qui a vu le Diable—Comedy (Leroux).

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—5.15 p.m., Violin Recital by Rudolf Ibl. 5.55, See Prague. 6.5, Talk: Creative Art. 6.20, See Prague. 6.30, See Brno. 9.30, See Prague. 10.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—12.10 p.m., Johann Strauss Concert by the Small Silesian Philharmonic Orchestra, conducted by Hermann Behr. Overture, Karneval in Rom; Shawl Polka from The Arabian Nights; Waltz, Wiener Blut; Mazurka, Lob der Frauen; Gallop, Tritsch-Tratsch. 12.45, Time, Weather, News and Exchange. 1.5, Gramophone Concert of Variety Music. 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Topical Talk. 2.50, Book Review: Soldaten bis Ypern (Herbert Blank). 3.10, Orchestral Concert, Zigeunerfest (Heykens); Potpourri, Alter Sang, heuer Klang (Wismar); Revue Overture (Lincke); Selection from Die Fahrt ins Glück (Gilbert); Foxrott, Ich bin nur ein armer Wandergeisel; Hungarian Dance Suite from Der Teufelsreiter (Kálmán). 4.0, Programme for Children. 4.30, Agricultural Prices. 4.35 (approx.), Max Reger Harmonium Recital by Fritz Kaatz, Benedictus, Op. 59, No. 9, Three Choral Preludes: (a) Aus tiefer Not, (b) O Haupt voll Blut und Wunden, (c) O Welt, ich muss dich lassen; Romance in A Minor; Intermezzo from the First Organ Sonata, Op. 33. 5.0, Programme to be announced. 5.15, Talk: The Composer as a Collector: Unfamiliar Incidents from the Life of Johannes Brahms. 5.35, Talk on Welfare Work. 6.0, Talk on Bratislava. 6.30, Weather for Farmers. 6.35 (approx.), Variety Music on Gramophone Records. 7.15, Orchestral Concert. Soloist: Hans W. Bachmann (Baritone). 8.0, An-

ouncements. 8.10, Talk: The Fate of Upper Silesia. 9.10, Time, Weather, News, Sports Notes and Programme Announcements. 9.30, Talk in Esperanto. 9.40, Talk: Rare Specimens in the Breslau Botanical Gardens. 10.0 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by B. Bakala. 4.10, News for Young People. 4.20, See Prague. 4.50, Educational Talk. 5.0, Literary Review. 5.15, See Prague. 5.25, German Transmission: News Bulletin and Two Talks. 5.55, See Prague. 6.30, An Opera (Rudolf Karel), relayed from the National Theatre. 9.30, See Prague. 10.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—11.0 a.m., Concert by the Small Station Orchestra, conducted by P. Leemans; Soloists: M. Wigy (Violin) and M. Douliez (Piano-forte); Overture, Tartuffe (Gyze); Aubade (Caludi); Andalous (de Tave); Selection from The Merry Widow (Lehar); Czardas for Violin (Monti); Waltz, Tes deux baisers (Macker); Suite of Dances for Piano-forte (Mayerl); Selection from Yes (Yvain). 12 Noon, Journal Parlé. 12.10 p.m., Gramophone Concert: Second Serenade (Toselli); Waltz, Dolores (Waldteufel); Les joujoux (Jacobs), Selection from Les millions d'Arlequin (Drigo); Moment musical (Schubert); Die Spinnerin (Mendelssohn); Selection from Les Noces de Jeannette (Massé); Scottish Dance (Rosse); Waltz No. 2 (Weber); Czardas No. 3 (arr. de Barthet); Concert Waltz, Lieb-ling der Frauen (Boullanger); Serenata (Tarenghi); Music from Sound Films (Borchert). 4.0, Concert by the Radio Orchestra, conducted by Charles Walpot: March, The Picador (Souza); Overture, A Waltz Dream (O. Strauss); Overture, The Nuremberg Doll (Adam); Musette for Piano-forte and Orchestra (Poot); Piece from Scènes napolitaines (Massenet). 4.30, Programme for Children. 5.0, Talk. 5.15, Suite bergamasque (Debussy), on Gramophone Records. 5.30, Concert by the Small Station Orchestra, conducted by P. Leemans. 6.15, Talk for Workers. 7.0, Tchaikovsky Concert by the Symphony Orchestra; Soloist: M. Delcour (Piano-forte); Slav March; Concerto for Piano-forte and Orchestra; The Pathetic Symphony. In the interval at 7.45, Talk. 9.0, Journal Parlé. 9.10, Gramophone Concert: Part I—Old and Modern Dance Music; Part II—Modern Symphony Music. 10.0 (approx.), Close Down.

BRUSSELS (No. 2)

I.N.R.; 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—11.0 a.m., Gramophone Concert of Variety Music. 12 Noon, Journal Parlé. 12.10 p.m., Concert by the Small Station Orchestra, conducted by P. Leemans; March, Vivat Hungaria! (Ká-

mán); First Peer Gynt Suite (Grieg); Serenade to Lisette (Caludi); Dance of the Dolls (Turina); Berceuse (Fauré); An den Frühling (Grieg); Flemish Divertissement (Vidal). 4.0, Concert of Flemish Music, with Commentary. 4.45, Programme for Children. 5.30, Programme by the J.V.K.A. 6.15, Book and Film Review. 6.30, Talk for Women. 7.0, Concert by the Radio Orchestra, conducted by Charles Walpot. Soloist: M. Rubean (Songs). K.R.V.O.—Strijdlied (Meulemans); Overture, Chal Romano (Ketelbey); Songs: (a) Air from Martha (Flotow), (b) J'avais un foyer (De Beek); In the Harbour of Port Said (Armanjola). 7.30, Carillon Recital by Staf Nees; Rhenish-marsch en Beiaardlied (Benoit); Mijn Moederspraak (Benoit); Le chant des cloches (Van Beers); Minuet (Boechgrini); Barcarolle (Mendelssohn); La matinee enfantine de l'Oncle Jean (Ghesquier). K.V.R.O.—Strijdlied (Meulemans). 8.0, Talk. 8.15, Orchestral Concert (cont'd): Rhapsody in B Minor (Hartung); Rhapsody No. 14 (Liszt); Two Songs (Lehar) from (a) Land of Smiles, and (b) Frederica; Russian March (Ganne). 8.55, Evening Prayer. 9.0, Journal Parlé. 9.10, Extracts from Iolantie—Operetta (Sullivan), on Gramophone Records. 10.0 (approx.), Close Down.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—4.0 p.m., Light Music and Romanian Music by the Dimco Orchestra. 5.0, News and Time Signal. 5.15, Light Music (cont'd). 6.0, Talk: Romanian Sculpture. 6.30, Relay from the Opera House. In the intervals, News.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW.—Programme also relayed from 840 metres from 7.30 to 11.0 p.m. 4.30 p.m., Gramophone Concert of Popular Music. 5.30, English Lesson. 6.0, Cigány Concert with Recital of Hungarian Folk Songs. 7.0, Reading. 7.30, Concert by the Opera House Orchestra conducted by Ernst Dohnanyi. Soloists: Juan Manen (Violin). 9.0, News Bulletin. 9.15 (approx.), Dance Music from the Café New York. 10.15, Cigány Concert from the Café Emke.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—11.0 a.m., Time and Chimes from the Town Hall. 11.5, String Ensemble Concert relayed from the Hotel d'Angleterre. 12.0 to 2.0 p.m., Interval. 2.0, Piano-forte Recital by Berl Botschinsky: Rondo in A Minor (Mozart); Moment musical in F Minor (Schubert); Impromptu in A Flat (Schubert). 2.25, Relay of the General Meeting of the Industrial Society. 2.50, Orchestral Concert from the Wivex Restaurant. 4.0, Programme for Boys. 4.40, Exchange and Fish Market Prices. 4.50, Talk on Dentistry. 5.20, English Lesson. 5.50, Weather Forecast. 6.0, News. 6.15, Time Signal. 6.16, Talk: Stoves or Central Heating? 6.45, Danish Lesson. 7.10, Twenty-fifth Concert relayed from the State Broadcasting Building; The Station Symphony Orchestra, conducted by Emil Reesen; Soloists, Duolina Giannini (Songs) and Louis Jensen (Cello); Symphony in D (the London) (Handel); Aria from Alceste (Glück); Concerto in G Minor for Cello (Handel). Ten minutes Interval. Overture, La Vestale (Spontini); Song from La Vestale (Spontini); Cello Solos: (a) Grave (Sammartini), (b) Allegro (Guerrini); Italian and Spanish Folk Songs: (a) In mezzol mar, (b) Manella mia, (c) Cielito lindo. Part One from Impressioni dal vero (Malipiero). 9.15, News. 9.30, Reading of Japanese Poetry. 9.50, Dance Music from the Ritz Restaurant. In the interval at 11.0, Time and Chimes from Town Hall. 11.30 (approx.), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—6.0 p.m., Answers to Correspondents. 6.15, Miscellaneous Items and Announcements. 6.30, See Warsaw. 7.0, Concert of Polish Music. 8.30, Dramatic Programme relayed from Vilno, 533 kc/s (563 metres). 9.15, See Warsaw. 10.0, Light Music from the Pavillon Restaurant. 11.0, Fantare from Notre-Dame.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., Popular Music on Gramophone Records. 11.30, News Bulletin. 11.45, Programme for Children. 5.30 to 8.0, Programme in English by the I.B.C. (These times are subject to alteration.) 5.30, Concert for Working Listeners: Molly on the Shore; Siciliana; Song, For you alone; Cherry Ripe; Gavotte; Mignon; Song, I hear a Thrush at Eve; Andante cantabile; Orientale. 7.0, Concert for Brighton Listeners: The Keys of Heaven; Give me thy Hand, O Father; Piano-forte Solo, The Bee's Wedding; A Paradise for two; Lightly, lightly; Piano-forte Solo, Hunting Song; Homing; O lovely Night. 7.30, Concert for Home Listeners: The Cuckoo Waltz (Jonasson); That tiny Teashop (Raymond); The Toymaker's Dream (Golden); Argentina amor (Blum); The Clock is playing (Blauer); Potpourri, Dabinsklika (arr. Alexander); Bells across the

MARCH 30th

THURSDAY

continued

Meadows (Ketelbey). 8.0, Answers to Correspondence and News. 8.30 to 10.0, Programme relayed from Rouen. 8.30, Talk, Book-keeping Lesson and Literary Review. 9.0, Concert by the Fratelli Colluto Jazz Band. 10.0 till Close Down, Programme in English by the I.B.C. (These times are subject to alteration.) 10.0, Dance Music: It's great to be in Love; I idolise my Baby's eyes; Flame of Desire; You call it Madness, but I call it Love; Mona Lisa; You try somebody else; By the Fireside; Ecstasy; I'm sorry, Dear; Falling in Love again; One little Quarrel; Life is just a Bowl of Cherries; The Song of the Islands; Bend down, Sister; Save the last Dance for me. 11.0, Organ Recital; Overture, Poet and Peasant (Suppé); Le Cygne (Saint-Saëns); The Storm (Shaw); To a wild Rose (Macdowell); Prayer to Our Lady and Tocatta from the Gothic Suite (Bohlmann). 11.30, Songs and Orchestral Music; Autumn Leaves (Pepper); The Crocodile; Pretty Polly Perkins; Duet, The Battle Eye; Duet, Come to the Fair; Kashmiri Song and Temple Bells (Woodford-Finden); Liebesfreud (Kreisler). 12 Midnight, Variety Programme: The laughing Scot; Mammy is gone; The Golden Bird; My Ohio Home; The Laughing Band; Mrs. Orfield as her fortune told; Ragtime Medley. 12.30 a.m. (Friday), Duets: Down the Lane to Home sweet Home; Dreaming of my Indiana Sweetheart; Say a little Prayer for me; A Night of Happiness; My Baby just cares for me; You'll be mine in Apple blossom Time; My Heart belongs to a Girl; The Wedding in the Ark. 12 Midnight, Country Dances; Irish Set Dance; Russian Ballet; Barn Dance; The Midshipmite; Reels; Strip the Willow; Strathspeys; Petronella. 1.30 (Friday), Songs: Dancing with Tears in my Eyes; It happened in Monterey; My Song; The Ragpickers' Party; Down the Lane to Home sweet Home; Ragamuffin Romeo; Who am I? 2.0, Dance Music: Lovably; Put that Sun back in the Sky; When we're alone; Where's Bill Bailey? There's another empty Saddle; Bahama Mama; Can't we talk it over; If you were only mine; Moon; You're my everything; Let's put on the Lights and go to sleep; Moonlight, the Danube, and you; Mad about the Boy; The Younger Generation. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259 metres; 17 kW. Relayed by Cassel, 1,220 kc/s, 245.9 metres.—2.30 p.m., Programme for Children. 3.50, Economic Notes. 4.0, See Langenberg. 5.15, Economic Notes. 5.25, Talk: What the Stahlhelm proposes in the way of Self-Help. 6.50, Talk. 6.15, Time, Programme Announcements. Weather and Economic Notes. 6.20, Topical Talk. 6.30, Hans-Christophe Kaerger discusses his own Works. 6.45, The Royal Coloniser—A Tour of Inspection by Frederick the Great in 1771—Radio Sequence (Hermann Burger). 7.30, Wagner Concert by the Station Orchestra: Overture, Rienzi. Ballet Music from Rienzi; Bacchanale from Tannhäuser; Siegfried-Idyll; Overture, The Flying Dutchman; Homage March. 9.0, Time, News, Weather and Sports Notes.

FREDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Ro nande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

306 kc/s, 372 metres; 15 kW.—Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Temperance Talk. 6.25, Weather. 6.30, Rudolf Kintmann reads from his own Works. 7.0, Recital of Songs, Arias, and Duets by Maria Cebotari and Julius Patzak, relayed from the Convent Garden. Maria Cebotari: Four Songs: (a) Mondnacht (Schumann), (b) Ins Freie (Schumann), (c) Kling, meine Seele (Strauss), (d) Ständchen (Strauss). Julius Patzak: Four Songs: (a) Liebeslustschaff (Schubert), (b) Der Müselsohn (Schubert), (c) Hat dich die Liebe berührt (Marx), (d) Venetian Lullaby (Marx); Maria Cebotari and J. Patzak: Two Songs: (a) Er und sie (Schumann), (b) Tanzliedchen (Schumann). 7.50, News. 8.0, Frederick the Great at Leuthen—Historical Drama (Julius Bernhard). 9.15, Time, Weather, Announcements, Sports and Police Notes. 9.25, Topical Talk. 9.35, Concert of Dances by the Chamber Orchestra conducted by Gerhard Maass. Soloists: Gerhard Maass and Gerhard Gregok (Pianoforte). In an interval at 10.20, Tee Report.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres.—12.5 p.m., Light Music on Gramophone Records. In the interval at 12.20 p.m., News. 1.30 to 2.0, Interval. 2.0, Agricultural Prices and Exchange Rates. 2.30, Talk for Young People. 3.8, Talk: Toys in the Life of a Child. 3.30,

Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Anacreon (Cherubini); Legend (Dvorák); Waltz (Dvorák); Selection from Djamilah (Bizet); Hungarian Fantasia (Grünfeld); Waltz, Mariana (Joh. Strauss); Overture, Joan of Arc (Verdi). 4.45, Talk: Hints on Careers—German Engineers in China. 5.15, Agricultural Priors. 5.30, Agricultural Talk. 5.55, Introductory Talk to the 7.45 p.m. Transmission to be given on Friday, March 31. 6.15, English Lesson for Beginners. 6.40, Weather and News. 6.45, See Frankfurt. 7.30, Dances and Dance Songs from Five Centuries—Concert by the Freiburg Chamber Trio for Old Music. 8.10 (from Danzig), St. Florian—a Sequence of Reports, Statements and Songs about Fire and Methods of extinguishing it (Frotscher and Rühle). 9.10, Weather, News and Sports Notes.

HILVERSUM

(Announced HUIZEN), 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.55 to 1.40 p.m., Programme of the Catholic Radio Society (K.R.O.): Concert by the K.R.O. Orchestra, conducted by J. Gerritsen. 1.40 till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 1.40, Handicrafts Lesson. 2.40, Programme for Women. 3.10 to 3.40, Interval. 3.40, Bible Reading and Sacred Music. 4.40, Violin Recital by P. Hartvelt: Adagio from the Sonata in C Minor (Bach); Sonata Op. 79 (Beethoven); Pregliera (Martini); Prelude and Allegro (Pugnani-Kreisler); Gramophone Records: Printemps (Milhaud); Leme from Saudades do Brazil (Milhaud); Pianoforte Solo: Spanish Suite (Albeniz); Slav Dance No. 1 in G Minor (Dvorák-Kreisler). 5.25, Handwork for Young People. 5.55, Talk. 6.25, Dress-making Lesson. 6.40, Press Review. 7.10, Police Notes. 7.25, Popular Music on Gramophone Records. 7.40, Concert by Two Choirs and a Wind Instrument Quartet: Hymn (Gnek); Beati Mortini (Mendelssohn); Song (Beethoven); Hoe lief'lijk zyn op de bergen (Richter); Selig sind die da Leid tragen (Sehm); The Lord is my Shepherd (Klein); Ist es war (Mendelssohn); Ecco quomodo moritur (Händel); Frühlingsnacht (Sehmert); Address: Five Songs: Ave verum corpus (Mozart); Preis and Anbetung (Rück); Preis den Herrn und gibt ihm Ehre; Die Ruine (Brandts-Buys); Wiegenlied (Brahms). 9.40, Talk. 10.10, News Bulletin. 10.20, Popular Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm

HUIZEN

Announced HILVERSUM, 160 kc/s, 1,875 metres; 8.5 kW. Programme of the Allgemeine Vereinigung Radio Omroep (A.V.R.O.).—11.41 a.m., Concert by Nico Treep: March, Songs of the Brave (Auber); Ballet Suite, Le cheval de bronze (Auber); Overture, Songs from Handel (Thomas); Gramophone Records; Waltz, Moonlight on the Alster (Petras); Czardas from Der Geist des Wojewoden (Grossman); Magicians in the Far East (Lindemann); Krakowiak (Leopold); Selection from Frederica (Lehar); Gramophone Records; Harlequinade (Blümann); Chapinade (Fischer); Russian Song (Paladilhe); L'amour brise (Gillet); Soldiers in the Park (Monkton). 1.40 p.m., Talk for Women. 2.10 to 2.25, Interval. 2.25, Popular Music on Gramophone Records. 2.40, Needlework Lesson. 3.25, Light Music on Gramophone Records. 3.40, Programme for Hospitals. 4.10, Pianoforte Recital by Willem Zonderland: Suite for Harpsichord (Voormlolen); Waltzes (Schubert-Dohnanyi); Concert Etude, The Hunt (Sauer); Waltz Paraphrase on Wienerblut (Strauss-Schifer). 4.40, Programme for Children. 5.10, Organ Recital by Pierre Palla, relayed from the Kurhaus, Scheveningen, with Lotte Fernandez (Soprano) and Boris Lensky (Violin). Organ Solo: Selection from Il Trovatore (Verdi); Songs with Organ Accompaniment: (a) Hungarian Song (Brodsky), (b) Song (Rotter-Jurmann), (c) My Greetings (Wilezynski-Grothe), (d) I dream of a Night of Tales (Rust); Violin and Organ: (a) On Wings of Song (Mendelssohn-Aehron), (b) Love Song (Maya), (c) Old German Gavotte (Bohm); Organ Solo: Musica proibita (Gastaldon); Soprano and Organ: (a) Chiquita (Wayne), (b) Pagan Love Song (Brown), (c) Kashmiri Love Song (Woodford-Finden), (d) Only a Rose (Friml); Organ Solos: (a) Variations on 's kommt ein Vogel geflogen (Siegfried Ochs), (b) Anfang der Stadtwahe (Jessel), (c) Rustic Dance (Howell); Violin and Organ: (a) Song (To-ti), (b) Serenade, Torna a Surriento (de Curtis), (c) Silvery Rain (Linsky); Organ Solo: Overture, Poet and Peasant (Suppé). In the interval at 6.10, Sports Talk. 7.10, English Lesson. 7.40, Time and News. 7.45, Popular Music on Gramophone Records. 7.55, Symphony Concert by the Concertgebouw Orchestra, relayed from the Concertgebouw, Amsterdam. Conductor: Willem Mengelberg. Soloist: Samuel Duskin (Violin). Passacaglia (Bugh-Respighi); Concerto for Violin and Orchestra (Stravinsky); Gramophone Records; Symphony No. 4 in F Minor (Tchai-

kovsky). 10.10, Concert of Light Music by the Kovacs Lajos Band. Soloist: Bob Scholte (Songs). In an interval at 10.40, News. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

NICE, 1,202 kc/s, 249.6 metres; 0.8 kW.—9.30 to 10.30 p.m., Programme in English by the I.B.C. H. K. Hitechock announcing.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—6.15 p.m., Announcements and Gramophone Records. 6.25, Report for Boy Scouts. 6.30, See Warsaw. 10.0, Dance Music from the Café Astoria.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—6.30 p.m., Popular Concert. 7.0, Talk: Tin and its Products. 7.20, Popular Programme. 7.40, Sports Notes. 7.50, Economic Review in Esperanto. 8.10, Evening Concert. 9.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW. Relayed by HELSINKI, 815 kc/s, 368.1 metres.—4.0 p.m., Trio Concert. 4.25, Talk. 5.15, Talk. 5.40, Song Recital by Inkri Tuominen. 6.5, Talk. 6.30, Concert by the Station Orchestra, conducted by Toivo Haapanen. Soloist: Erik Cronvall (Violin). Overture, Puppenspiel (Weinberger); Small Suite (Madetoja); Song from Prince Igor (Borodin); Violin Solo: Fantasia appassionata (Vienustamps); Swedish Song and Norwegian Wedding March (arr. Sandby); Korsholm (Järnefelt). 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert: Auf rauhen Pfaden zu den Sternen (Urbach); Overture, Waldmeister (Joh. Strauss); Selection from Das Nachtlager in Granada (Kreutzer); Old Russian Dance Pictures (Clemens); Indian Suite, Part II (Lüling); Selection from The Czarevitch (Zeller). In the interval at 1.0 p.m. (approx.), Announcements. 1.30, Sponsored Programme with Gramophone Records. 2.30, Economic Notes and Time. 2.50, Programme for Children. 3.20, Talk for Women. 4.0, Concert of Chamber Music: String Quartet in E Flat, Op. 127 (Beethoven); String Sextet in B Flat, Op. 18 (Brahms). 5.20, Book Review. 5.45, Weather, Time, Economic Notes, and Sports Results. 6.0, Report on the Life of a Race-horse, relayed from the Sehelderland Stud on Gramophone Records. 6.30, Talk on Rheinish Westphalia and the German Hausseue League. 6.55, Announcements. 7.0, Orchestral and Choral Concert: Soloist, Peter Graef (Viola); Orchestra, Die Geschöpfe des Prometheus (Beethoven). Mixed Choir: (a) Abendlied (Frank), (b) Die Sterne durch den Himmel gehn (v. Ottegraven), (c) Japanisches Regentlied (Unger), (d) Auf dem Canale Grande (Lemacher); Orchestra: Music from Don Giovanni (Mozart); Male Voice Choir and Viola: Der stille Hof (Sieg); Orchestra: (a) Träume (Wagner), (b) Albumblatt (Wagner); Women's Choir: (a) Der Weiber (Koch), (b) Gute Nacht (Koch); Orchestra Music: Ballet Music from les petits riens (Mozart); Mixed Choir: (a) Folk Song, Die Vögelin (arr. v. Ottegraven), (b) Folk Song Jan Himmer (arr. Ochs); Orchestra Music: Variations on 's Kommt ein vogel geflogen (Ochs). 9.5, Announcements and Sports Notes. 9.30, Serenade and Dance Music, conducted by Eysoldt. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—11.5 a.m., Concert of Light Music on Gramophone Records. 12 noon, News weather and Time. 12.15 p.m., Gramophone Concert: Melody (Gluck); Canzonetta (d'Ambrosio); March from Judas Maccabaeus (Handel); Chaconne (Handel); Minuet (Bocherini); Minuet from the Quartet in E (Dittersdorf); Benedictus (di Lassa); Andante and Allegro assai from the Brandenburg Concerto No. 2 in F (Bach); Gagliarda (Schmid); Allegro from the Organ Concerto No. 4 (Händel); After the Concert, Exchange Quotations. 1.0, Film Review. 1.5, Talk: Housing Schemes for the Unemployed. 2.0, Programme for Children. 2.35, Exchange and Market Prices. 3.0, Concert by the Emdé Orchestra: Overture, the Land of Smiles (Lehar); Waltz, Künstlerträume (Volstedt); Wander-suite (Krämann); Stolzengels am Rhein (Meissner); March of the Wooden Dolls (Richter); The Minstrels (Amadei); Selection from The Duharry (Millocker-Mackeben); Tränmendel (Eilenberg); Paraphrase on 'Noch sind die Tage der Rosen (Baumgartner); Potpourri of Tyrolese Songs and Dances (Petras); March, Flitsch (Eduard Wagner). 4.30, Weather and Time. 4.50, Exchange Quotations. 5.0, Health Talk. 5.15, Notes on Taxation. 5.30,

Spanish Lesson. 5.50, The Leipzig Station informs its Listeners. 6.0, Talk: Fifty Years of Financial Reform. 6.30, The Ninth Symphony (Beethoven), by the Gewandhaus Orchestra, (Choir and Soloists. 8.0, News. 8.10, Der Bürgergeneral—Comedy (Goethe), with Incidental Music by Heinz Fritzsche. 9.10, News Bulletin. 9.30 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Talk on Geology. 7.0, Choral Concert, relayed from Trbovlje. 9.0, Time and News. 9.5 (approx.), Concert of Light Music.

LWOW

788 kc/s, 381 metres; 16 kW.—6.5 p.m., Miscellaneous Items and Light Music on Gramophone Records. 6.30, See Warsaw. 10.0, Dance Music relayed from the Bagatela Theatre. 11.0 (approx.), Close Down.

LYONS

LA DOUA, Call PTT, 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., Radio Gazette for Lyons and the South East. 7.30, Concert conducted by Gaston Billet. Soloists: Mme. Dubost (Soprano) and Jean Marguerite (Tenor), News after the Concert.

MADRID

ARANJUEZ (EAO), 9,860 kc/s, 30.43 metres; 20 kW.—10.30 p.m., Popular Concert. 10.45, Radio Chronicle. 11.0, Popular Concert (contd.). 11.35, Talk. 11.40, Light Music. 12.0 Midnight (approx.), Close Down.

MADRID

UNION RADIO, EAJ7, 707 kc/s, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Programme for Children and Request Gramophone Records. 8.15, News Bulletin and Political Review. 8.30 to 9.0, Interval. 9.0, Lingo-Phone English Lesson. 9.30, Chimes, Time Signal, Political Review, Scientific Talk, and Band Concert, relayed from the Hotel Nacional. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—5.30 p.m., German Transmission: Two Talks. 5.55, See Prague. 6.30, See Brno. 9.30, See Prague. 10 (approx.), Close Down.

MOSCOW

230 kc/s, 1,304 metres; 100 kW.—4.30 p.m., Popular Music on Gramophone Records. 5.30, Concert of Music by Bach, Brahms, and Beethoven, relayed from the Radio Theatre. 8.0, Review of the Week and Answers to Correspondents in French.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.0 p.m., Orchestral Concert: Fest-Ouverture (Lortzing); An den Frühling (Grieg); Selection from The Merry Widow (Lehar); Waltz, Marienklinge (Jos. Strauss); Le Moulin (Gille-C); March, Dem Lenz entgegen (Blaukenburg); 5.15, Talk: The Protection of the Bavarian Homeland. 5.35, Agricultural Talk. 5.55, Time, Weather and Agricultural Report. 6.5 (from Nürnberg), Talk: German Soldiers in Foreign Pay. 6.25, Introductory Talk to the following Transmission. 6.35, The Barber of Bagdad—Comic Opera in Two Acts (Cornelius), relayed from the National Theatre. 8.50, Concert by a Schrammel Trio: March, Zum Rendezvous (v. Blom); Waltz (Waldteufel); Two Songs: (a) 's Millinadel (Thoms), (b) Erst sagt man A (Müller); Upper Bavarian Ländler; March, Die Ehrenwache (Lehnhardt). 9.20, Time, Weather, News and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 622 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.0 p.m., Orchestral Concert, relayed from the Grand Hotel: Overture, Die Fledermas (Joh. Strauss); Waltz, Tonjours on jamais (Waldteufel); Selection from Die toten Augen (d'Albert); Romance (Gustavson); Musette (Offenbach); Three Spanish Dances (Moszkowski). 5.0, German Lesson. 5.30, Religious Address. 6.0, Announcements, Weather and News. 6.30, Agricultural Report. 7.0, Time Signal. 7.1, Austrian Programme, arranged by the Norwegian Austro-German Society, relayed from the University: The Blue Danube (Joh. Strauss), sung by a Boys' Choir, conducted by J. Berg-Hansen. Talk by Stefan Zweig: The Poetry of History. 7.45, Concert by the Cecilia Choir, relayed from St. Saviour's Church. 8.45, Weather and News. 9.5, Topical Talk. 9.20 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

(ITALY). ENTE ITALIANO AUDIZIONI RADIOFONICHE, 558 kc/s, 537.6 metres; 3 kW. Transmits at intervals from 7.0 p.m., Dopolavoro Notes, Agricultural Report, and Giornale Radio. 7.20, Popular Music on Gramophone Records. 7.30 (in an interval), Time Signal and Announcements. 7.45, Light Orchestral Concert, with Songs and Variety Items. 8.30, A Florentine Tragedy—Play in One Act (Oscar Wilde). 9.0, Song Recital. 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Talk on the Theatre. 6.0, Le Journal Parlé. 7.20, Weather Report. 7.30, Gramophone Concert: Concerto in D for Violin and Orchestra (Beethoven); Selection from Il Guarany (Gomez); The Old Steeple (Colas); Song from Les Brigands (Offenbach); Le Pas des écharpes (Claminate); Estrellita (Davis); Song from La Poupée (Audran); Songs (Eblinger); Waltz Potpourri (Rohrecht); Foxtrot Potpourri (Rohrecht); Melody (Rathke); Piece. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—5.45 p.m., Le Journal Parlé. 6.0, Programme for Children. 6.30, Variety Music on Gramophone Records. 7.0, Agricultural Talk. 7.30, Simili—Play in Three Acts (Roger-Max). In the interval at 8.40, Fashion Review. 9.30, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 6.30, Weather and Physical Culture (cont.). 6.45, The Nursery (Inghelbrecht) on Gramophone Records. 7.0, Press Review and Weather. 11, Protestant Address. 11.30, Orchestral Concert: Orchestral Suite, At the Circus (Armandola); Selection from White Horse Inn (Stolz-Benatzky). 12 Noon, Exchange, News, and Weather. 12.5 p.m., Pianoforte Recital by Albert Lévêque; Choral (Bach); Preludes and Fugues from Das wohltemperierte Klavier (Bach); At the Fountain (Schumann); Romance in B Flat (Schumann); Overture to the Cantata in D (Bach). 12.30, Exchange. 12.35, Orchestral Concert (cont.): Selection from The Vagabond King (Friml); Scenes hongroises (Masselet). 1.0, Exchange. 2.45, Exchange and Market Prices. 4.45, Agricultural Report. 5.0, Address by the Reverend Marc Boegner, relayed from the Reformed Church, Passy; Prayer and Communion with Jesus Christ. 5.30, Market Prices, Weather, and Agricultural Report. 6.0, Talk on Poetry; Belgian Symbolism. 6.20, Orchestral Music: Scenes rustiques (Gillet); Two Waltzes (Dvorák); Chanson bretonne (Claminate); Havanaise (Février). 6.45, Commercial Prices, News, and Review of the German Press. 7.0, Literary Programme on Gramophone Records: Les vieux (Daudet); Scene from Les précieuses ridicules (Molière); Scene from The Barber of Seville (Beaumarchais); Two Poems (Paul Fort): (a) Le dit du pauvre vieux, (b) La complainte du cheval blanc; Three Readings (Franc-Nohain): (a) Les chapeaux du premier Janvier, (b) Le porc-épic, (c) Une locomotive regarde une vache en passant. 7.30, News, Weather, and Sports Notes. 7.40, Review by Dominique Bonnard. 7.45, Eine kleine Nachtmusik (Mozart) on Gramophone Records by the Berlin Opera House Orchestra. 8.0, Concert conducted by Henri Rabaud, relayed from the Conservatoire; Selection from A Midsummer Night's Dream (Mendelssohn); Gesang der Geister über den Wasser, Op. 107 (Schubert); Scherzo, Queen Mab (Berlioz); Cantata, Herr gehe nicht ins gericht (Bach); Fifth Symphony (Beethoven)

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 980 kc/s, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres. (See Short-Wave List).—9.0 p.m., Work-a-day Thoughts, 9.5, Business News. 9.15, Ballroom Promenade. 9.30, Weather Report. 9.32, Market Reports. 9.45, Blue Ridge Buddies. 9.57, David Lawrence Dispatch. 10.0, Programme to be announced. 10.15 to 11.15, New York Relay. 10.15, Dick Darin. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Our Daily Food—by George Rector's Cooking School. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report—Philadelphia Company. 11.30, KDKA Orchestra. 11.45, Today's News, by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy, from New York. 12.15 a.m. (Friday), Concert Footlights. 12.45, The Townsend Murder Mystery. 1.0 to 4.1, New York Relay. 1.0, Captain Diamond's Adventures. 1.30, Time Signal and Rin Tin Tin Thrillers. 1.45, Thurston, the Magician. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra, with Lady Esther. 3.0, Carson Robinson's Pioneers. 3.15, Vic and Sade. 3.30, Homay Bailey and Orchestra. 3.45, Prof. McLallen, Sara and Sassafras. 4.1, Teaberry Sport Review. 4.14, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute

MARCH 30th

THURSDAY

continued

News Flashes. 4.20, Bertha Schmid (Soprano). 4.50, Josef Lhevinne (Concert Pianist), from New York. 5.0, Smith Ballou and his Orchestra. 5.15, KDKA Artist Bulletin. 5.47, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—3.10 p.m., See Brno. 4.10, Talk on Economics. 4.20, Programme for Children. 4.50, Variety Music on Gramophone Records. 5.5, Talk on Gardening. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Agricultural Talk. 5.55, News. 6.5, English Conversation. 6.20, Talk on the following Transmission. 6.30, See Brno. In the intervals at 8.0 and 9.0, Time Signals. 9.30, News Bulletin. 9.45, Light Music on Gramophone Records. 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; LAUSANNE, 442 kc/s, 680 metres; and GENEVA, 395 kc/s, 760 metres.—5.0 p.m. (from Lausanne), Sports Talk. 5.20 (from Geneva), Esperanto Lesson. 5.35 (from Lausanne), Italian Lesson. 6.0 (from Geneva), Weather Forecast, News Bulletin and Announcements. 6.15 (from Lausanne), Answers to Correspondence. 6.30 (from Geneva), Theatre Notes. 7.0 (from Geneva), Talk: The Work of the League of Nations. 7.20 (from Geneva), Introductory Talk to the following Transmission. 7.30 (from Geneva), Symphony Concert by the Station Orchestra. Conductor: Ernest Ansermet. In an interval at 8.15 (approx.), News Bulletin and Weather Forecast. 9.15 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Concert by the Station Quartet, with Violin Solos by Georg Takács.

RIGA

572 kc/s, 525 metres; 15 kW.—6.5 p.m., Concert of Love Waltzes, conducted by J. Medins; Mein Lebenslauf ist Lust und Lieb (Joh. Strauss); Le Caine (Waldteufel); Liebesfreud (Kreisler); Liebesleid (Kreisler); Liebesquelle (Vollstedt); Verschmähete Liebe (Lincke); Waltz from Gipsy Lovo (Lehár). 7.0, News Bulletin. 7.20, Latvian Songs. 7.40, Concert of Chinese and Japanese Music, conducted by J. Medins; In the Land of the Setting Sun—Japan (Yoshitomo); in a Chinese Temple Garden (Ketelbey); In a Chinese Theatre (Dreyer); The Vision of Fuji San (Ketelbey); Shanghai Cradle Song (Jones); A Garden Festival in China (Niemann). 8.0, Weather and News. 8.30, Light Music. 9.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

1RO, 680 kc/s, 441 metres; 50 kW.—Relayed by Naples, 941 kc/s, 319 metres, and 2RO, 11,810 kc/s, 25.4 metres. 12 Noon, Time and Announcements. 12.2 p.m., Humorous Talk. 12.5 to 1.15, Concert from Turin. In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30 to 5.15, Orchestral Concert: Overture, Martha (Flotow); Melody (Carducci); Selection from La Wally (Catalani); City (Ramponi); Serenata spagnola (Grieco); Selection from Frühlingluft, (Jos. Strauss); Meditation (Manno); Invauka (Amsaldo). 5.45 (Naples), Shipping and Sports Notes. 5.55, Agricultural and Dopolavoro Notes. 6.15, Giornale Radio. 6.30, Time and Announcements. 6.32, Talk: Preparation for the Holy Year. 7.2, Talk. 7.15, Gramophone Records of Light Music. 7.30, Sports Notes and Tourist Report. 7.45, Symphony Concert, conducted by Armando La Rosa Parodi. Soloist: Germano Arnaldi (Pianoforte). Morning from the Summer Concerto (Pizzetti); La Mer—Three Pieces (Debussy); Talk on Literature and Art; Omaggio a Vivaddi (La Rosa Parodi); Interlude from Dafni (Muller); Overture, Oberon (Weber); Pianoforte Solos: (a) Two Pieces (Korngold). (b) Ronda d'Aricle (Korngold); Seventh Symphony in A, Op. 92 (Beethoven). 9.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF and by W2XAD (see Short-Wave List).—12 Midnight, Southern Jubilee Quartet. 12.15 a.m. (Friday), Stock Reports. 12.30 to 3.0, New York Relay. 12.30, Donald Novis (Tenor). 12.45, The Goldbergs. 1.0, Fleischmann Hour. 2.0, Capt. Henry's Show Boat. 3.0, Lucky Strike Hour, followed by Programme Resumé.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; BASEL, 1,229 kc/s, 244.1 metres, and BERNE, 1,220 kc/s, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Basle), Orchestral Concert. 12.35 p.m., Weather and Exchange. 12.40 to 2.30, No Transmission. 2.30 (from Basle), Talk: The Swiss Poets. 3.0 (from Basle), Swiss Music on Gramophone Records. 4.30, Weather. 4.35 to 5.30, No Transmission. 5.30 (from Basle), Talk: Johann Lavater's Psychological Works. 6.0, Time, Weather and Announcements. 6.15 (from Basle), Italian Lesson. 7.0, Brahms Centenary Concert, relayed from the Concert Hall, St. Gallen. Soloist: Ely Ney (Pianoforte). 9.0 (approx.), Weather, News and Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

RADIOTJANST (SASA), 689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Mölby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.0 p.m., Weather Report. 4.5, Service, relayed from Karlskrona, 1,530 kc/s, 196 metres. 4.20, Programme for Children. 4.45, Light Music on Gramophone Records. 5.40, Talk. 5.55, Song Recital. 6.15, Weather and News. 6.30, A Dialogue. 6.45, Recital of Popular Songs by Lillian Grill. 7.0, A Discussion on International Languages—Esperanto, Ido, and others. In the interval at 8.45, Weather and News. 10.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.30 a.m., Gramophone Concert of Variety Music. 11.0, Orchestral Concert conducted by Maurice de Villers; Turkish March (Mozart); Overture, The Ruins of Athens (Beethoven); Orchestral Suite, A Midsummer Night's Dream (Mendelssohn); Military March (Schubert). 11.45, News. 12 Noon, Time and Exchange. 12.5 p.m., Orchestral Concert of Music by Reynaldo Hahn. Soloists: Grégoire (Violin) and Pogoda (Pianoforte). Overture, Mozart. Solos for Violin and Pianoforte: (a) Romance, (b) Nocturne; Orchestral Suite, La Fête chez Thérèse. 1.0, Programme for Children. 2.0 to 3.15, Interval. 3.15, French Elocution Lesson. 3.30, Programme for Children, relayed from Bordeaux-Lafayette. 5.0, Talk in German. 5.15, Talk for Women in French. 5.30, Orchestral March (Krier); Waltz, Galanterie (Leopold); Two Mamelurian Sketches (Glan); Prelude to Kunihild (Kistler); Selection from The Merry Wives of Windsor (Nicolaï); Geburtstagsständchen (Lincke); Selection from Pas sur la bouche (Vvain); March, Manhattan Beach (Sonsa). 6.30, Time and News. 6.45, Light Music on Gramophone Records. 7.20, Lottery Results. 7.30, Concert by the Theatre Orchestra, relayed from Metz: Overture, Orpheus in the Underworld (Offenbach); Selection from (a) Mignon (Thomas), (b) La fille de Madame Angot (Lecocq); Adagio from L'Arlésienne (Bizet); Selection from Werther (Massenet); Overture, Mirella (Gounod); Violin Solo: Selection from Paganini (Lehar); Canzonetta (Razigade); Bohemian Dance from Carmen (Bizet). 9.30 (approx.), Close Down.

STUTTART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12.30 p.m., Gramophone Concert: Fantasia, Der Frühling naht mit Brausen; Fantasia on the Strauss' Waltz Frühlingstimmen; Frühlingstraum (Schubert); An den Frühling (Grieg); Schön Rosmarin (Kreisler). 1.0, Concert arranged by the Post Office. 1.30, Spanish Lesson. 2.0, English Lesson for Beginners. 2.30, See Frankfurt. 3.30 to 4.0, Interval. 4.0, See Langenberg. 5.15, Time, Weather and Agricultural Report. 5.25, Talk: April Jokes and Humour from the Legal Point of View. 5.50, Talk on Graphic Art. 6.15, Time and News. 6.30, Gramophone Records of Light Music. 6.45 to 9.0, See Frankfurt. 9.0, Time, News, Weather and Programme Announcements. 9.20, Sonata in F Sharp Minor, Op. 11, for Pianoforte (Schumann), played by Hans Brehme. 10.0, Regula Kreuzfeld—A Legend (Albrecht Schaeffer), with Music by Wilhelm Locks, relayed from the University-Theatre, Mannheim. 10.30 (approx.), Close Down.

SUNOSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 779 kc/s, 385 metres; 8 kW.—5.15 p.m., Cello Solos: Elegy (Masselet); Berceuse de Jocelyn (Godard); O Star of Eve from Tannhäuser (Wagner); Le Cygne (Saint-Saëns). 5.30, Programme for Children. 6.0, Bal Musette. 6.15, News, Racing Results and Market Prices. 6.25, Local News. 6.30, Opéra-Comique Songs. 6.45, Military Music. 7.0,

Popular Songs. 7.15, Argentine Music. 7.30, Orchestral Concert: Selection from Die Fledermaus (Joh. Strauss); Prélude à l'après-midi d'un Faune (Debussy); A Hunt in the Black Forest (Vocler); Overture, Light Cavalry (Suppé); Trois petite pièces montées (Satie); Selection from The Italian Girl in Algiers (Rossini). 8.0, Extracts from Lohengrin—Opera (Wagner). 8.40, Viennese Music.—9.0, Hawaiian Guitar Solos. 9.15, North African News. 9.30, Concert for Listeners in Morocco. 10.0, Songs from Sound Films. 10.15, Hawaiian Guitar Solos. 10.30 to 11.0, Programme in English by the I.B.C. W. Brown-Constable announcing. Song and Music: Old Vienna Moon; The Gay Highway; Stoneracker John; Black Eyes; Love's Dream after the Ball; The Drum Major; The Wheel-tapper's Song; Selection from Congress Dances. 10.57, I.B.C. Goodnight Melody. 11.0, Weather and Announcements. 11.5, Vocal Tangos. 11.15, Military Marches. 11.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—4.10 p.m., till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW.—Relayed by Milan, 905 kc/s, 331.5 metres; Genova, 959 kc/s, 312.8 metres; and Florence, 589 kc/s, 500.8 metres.—4.10 to 5.0 p.m., Concert of Light Music. 5.35, Giornale Radio, Agricultural, and Dopolavoro Notes. 6.5, Giornale Radio. 6.30, Time, Announcements, Tourist Report, and Gramophone Records of Popular Music. 7.0, Giornale Radio, Weather, and Gramophone Records (cont.). 8.0, Relay of an Opera. In the intervals, Talk, Literary Notes, and Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in French. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

RADIO-WIEN, 581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—3.55 p.m., Concert by Gustav Macho and his band: Overture, St. Hubertus (Fueki); Didi Waltz (O. Straus); Vello Solo, Serenade (Cassado); Selection from Der lachende Ehemann (Eysler); Piano Solo, Spinning Song (Mendelssohn); Violin Solo, Hullohuza (Hubay); Waltz, Fische Geister (Edmund Straus); Pianoforte Solo, Scherzo (Brühl); Potpourri, Wiener Melodienkongress (Machio). 5.0, Talk on the Viennese Women's Arts Exhibition. 5.20, Talk for Workers. 5.45, Theatre Talk. 5.55, Talk: The Viennese Zoological Garden. 6.20, Time, Weather, and Programme Announcements. 6.30, Military Band Concert, conducted by Josef Richter: March (Engelhardt); Minnerfantasee (K. J. Richter); Waltz from Das Fürstentind (Lehar); Overture, Robert, le Diable (Meyerbeer); March, Mit dem Edelweiss (Kutscher); Potpourri, Vom Rhein zur Donau (Rhode); March (Weinberger); Waltz, Niltüten (Joh. Strauss); March (Novotny). 7.45, Tannhäuser—Opera (Wagner), on Gramophone Records. In the interval at 8.45, News, Weather, and Announcements, and at 9.45, Snow Report.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—10.57 p.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 11.30, Weather Forecast. 11.35, Twenty-second Concert for Schools. The Warsaw Philharmonic Orchestra, conducted by B. Wolffst, the Polonia Warsaw Mixed Choir, and Soloists. 1.0 to 2.10 p.m., Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Popular Music on Gramophone Records. 2.35, Review of Women's Periodicals. 2.50, Popular Music (cont.). 3.25, French Lesson. 3.40, Talk: The Utopia of the United States. 4.0, Concert in A Minor, Op. 51, No. 2 (Brahms) on Gramophone Records. In the interval, Announcements. 4.40, Topical Talk. 4.55, Programme Announcements. 5.0, Talk on History. 5.20, News. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Notes. 6.30, Reading. 6.45, Radio Journal. 7.0, Concert by the Station Orchestra, conducted by S. Nawrot. Soloist: H. Sawka (Soprano). Overture, A Waltz Dream (O. Straus); Intermezzo, Canto di passione (Pennati-Malvezzi); Waltz (Vollstedt). Songs: (a) The Swallow (Crescenzo), (b) Song from The Chocolate Soldier (O. Straus). (c) Ritorno amore (Buzzi-Pecora); Spanish Caprice—Alhambra (Semler); Crocienne (Noskowski); Serenade from Les millions d'Arlequin (Drigo); Overture, Donna Juanita (Suppé); Songs: (a) Souvenir (Drda), (b) Waltz from La Reginetta (Lele rose (Leonevallo), (c) Caprice viennois (Kreisler); Waltz from Casanova (Rozyni); Caravan (Friml); Slav Danes Nos. 1 and 10 (Dvorak); March (Muzek). In the interval, News and Radio Journal. 8.30, Reading, relayed from Wilno, 533 kc/s, 563 metres. 9.15, Dance Music. In the interval, Aviation Weather Report and Radio Journal.

ZURICH.—See Schweizerischer Landessender.

FRIDAY

MARCH THE THIRTY-FIRST

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON and MIDLAND REGIONAL NORTH REGIONAL "Chopin," a play by W. Rooke-Ley and C. Martin. "Nine-thirty Novelties," feature programme by G. M. Hayes and F. K. Clarke.

ATHLONE BARI BERO- Historic Cities of the North: Lancaster.

ABROAD

ATHLONE 8.20 p.m. The Follies Revue Company.
BARI 7.35 p.m. Vocal concert.
BERO- 6.40 p.m. Opera: "Don Carlos" (Verdi), from Berne.
BRUSSELS (No. 1) 7 p.m. The Symphony Orchestra, conducted by M. Kumps.
BRUSSELS (No. 2) 8 p.m. The Radio Orchestra, conducted by F. André.
BUCHAREST 7 p.m. Symphony concert by the Philharmonic Orchestra.
HAMBURG 8.10 p.m. The Philharmonic Orchestra, conducted by J. Eibenschütz.
HEILSBURG 7.45 p.m. Beethoven's Ninth Symphony, from Königsberg.
LANGENBERG 7 p.m. The Münster Teachers' Choral Society, with a Boys' Choir and organ solos.
PALERMO ROME 7.45 p.m. Opera: "The Pearl Fishers" (Bizet). 7.45 p.m. Extract from "Le Roi de Lahore" (Massenet).
TURIN 8 p.m. Symphony concert conducted by A. Pedrollo.
WARSAW 7.15 p.m. Concert from the Philharmonie, conducted by Fitelberg. Solo pianoforte: Alfred Cortot.

ALGIERS

823.3 kc/s, 364 metres; 13 kW.—7.0 p.m., Financial News. 7.10, Shipping Notes. 7.15, Weather Forecast and Agricultural Report. 7.30, Agricultural Talk. 7.35, Popular Music on Gramophone Records. 7.55, News. 8.0, Time Signal. 8.2, Talk: Aviation in the Sahara. 8.15, Veronique—Opera in Three Acts (Messenger).

ATHLONE

725 kc/s, 413 metres; 60 kW.; and **CORK**, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Talk on Gardening. 7.45, Talk for Farmers. 8.0, Pianoforte Recital by D. French-Mullen. 8.20, Programme by the Follies Revue Company. 9.20, Violin Solos by M. Collin. 9.35, The Station Orchestra. 9.50, Contralto Solos by Mairin Fenning. 10.5, The Station Orchestra (contd.). 10.30, Time Signal, News, Weather Report, and Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Dance Music relayed from the Ritz Hotel. 7.30, Exchange Quotations and Dance Music (contd.). 8.0, Light Music on Gramophone Records, followed by News Bulletin. 9.0, Chimes from the Cathedral. Weather Forecast, Messages to Seamen, Exchange Quotations, and Market Prices. 9.10, Concert by the Station Orchestra: Overture, His Life for the Czar (Glinka); Idyll (Bayer); Legend No. 10 (Dvorák); Marche héroïque (Saint-Saëns). 9.30, Concert by a Mandoline Orchestra. 10.15, Light Orchestral Concert relayed from the Café Espanol. 11.0 (in an interval), News Bulletin. 12 Midnight (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist and Dopolavoro Notes. 7.20, Giornale Radio. 7.30, Time and Announcements. 7.35 (approx.), Concert. Soloists: d'Angelo (baritone), De Santis Bruno (Soprano). Theatre Notes in the interval. 9.30, Light Music on Gramophone Records. 9.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—4.0 p.m., Talk. 5.45, Time and Programme Announcements. 6.0, Talk for Sokols. 6.30, Talk. 7.0, Folk Song Recital. 7.30, Concert by the Royal Guards Band. 9.0, News. 9.5, Light Music from the Ratnicki Don Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 183.5 kc/s, 1,635 metres; 60 kW.—12.45 p.m., News. 1.0 p.m., Gramophone Concert of Brahms Music relayed from Berlin (Witzleben). 2.0, Talk for Girls; Books. 2.30, Weather and Exchange. 2.45, Review of Periodicals. 3.0, Educational Talk. 3.30, See Leipzig. 4.10, Topical Talk. 4.30, Talk: Famous German Mystics. 5.0, Recital of German Folk Songs by the Station Chamber Choir, conducted by Landner: Der Lindenbaum (Schubert); Deutsches Weibeheld (Methfessel); Untrene (F. Glück); Treue Liebe: Mein eigen soll sie sein; In stiller Nacht (Brahms); Grenadierlied; Ein Schifflein sah ich fahren. 5.30, Talk for Workers: Social or Private Insurance? 5.55, Weather for Farmers and Announcements. 6.0, Medical Talk. 6.30, A Poem. 6.35, See Hamburg. 7.30, Schlager-Drama (Hanns Johst). 9.0, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, See Frankfurt. 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.0 p.m., Topical Talk. 6.10, Gramophone Concert: O schöner Mai (Joh. Strauss); Song from La Favorita (Donizetti); Song from The Pearl Fishers (Bizet); Two Songs from The Gipsy Baron (Joh. Strauss); Deine blauen Augen (Böhm); Duet from Wiener Blut (Joh. Strauss). 6.45, Talk on Gramophone Records: What People are talking about in America. 7.0, Announcement. 7.5, The Stargard Verdict—Radio Play (Veit Rosskopf). 8.35, Songs from Ludwig Tieck's Magelone, Op. 33 (Brahms), by Julius Patzak (Tenor). 9.15, Weather, News, and Sports Notes. 9.30 (approx.), Orchestral Concert from the Moka-Effli. 11.0 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

(PTT), 986 kc/s, 304 metres; 13 kW.—6.30 p.m., News Bulletin. 6.40, Light Music on Gramophone Records. 6.55, Lottery Results. 7.0, Spanish Lesson. 7.15, News Bulletin.

7.30, Concert by a Symphony Orchestra. In the intervals, Variety Music on Gramophone Records.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—5.5 p.m., Pianoforte Concerto in D (Mozart) by Milos Bradovcic and the Station Orchestra. 5.45, Slovak Spelling Lesson. 6.0 till Close Down, See Prague. 9.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gielwitz, 1,184 kc/s, 253 metres.—12.10 p.m., Gramophone Concert of Opera Music. 12.45, Time, Weather, News and Exchange. 1.5, Classical Music on Gramophone Records. 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Programme for Young People. 3.10, Recital of Spring Songs by Alfred Stieckel (Tenor), Frühlingsglaube (Schubert); Frühlingsnacht (Schumann); Spring Song (Mendelssohn); Warte, wenn wieder das Veilchen blüht (Haas); Es blinkt wieder das Veilchen blüht (Weininger); Kommt der Frühling (Riemann); Herr Lenz (R. Strauss). 3.35, Orchestral Concert, conducted by Franz Marszalek. Overture, Figaro (Mozart); Selection from The Daughter of the Regiment (Donizetti-Schreiner); Fantasia, Ein Fest in Aranjuez (Demerssman); Waltz, Freundesgrüsse (Jos. Strauss); Josef Gungl Potpourri (Petras). 4.30, Agricultural Prices. 4.35, Talk: The Town of Thorn, Poland. 4.55, Reading from Unpublished Works of Young Authors. 5.25, Programme to be Announced. 5.55, Gramophone Concert. Overture, The Black Domino (Auber); Intermezzo from A Midsummer Night's Dream (Mendelssohn); Till Eulenspiegel's Merry Pranks (R. Strauss). 6.30, Weather for Farmers and Cattle Market Prices. 6.35, Talk on Prague. 7.0, First Symphony in C Minor, Op. 68 (Brahms), by the Silesian Philharmonic Orchestra. 8.0, Announcements. 8.10, Countess Mariza—Operetta (Kálmán). 9.0, Time, Weather, News, Sports Notes and Programme Announcements. 9.25, Stage Anecdotes. 9.40, Variety Concert, relayed from Berlin (Witzleben). 11.0 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by Jan Janota; Soloist: Gustav Talman (Tenor); Overture, La Princesse jaune (Saint-Saëns); Seven Songs for Tenor and Orchestra, Op. 8 (Walter Vecerra); Suite, Old China (Walter Niemann). 3.55, Theatre Notes. 4.5, See Prague. 5.5, Talk: Creative Art. 5.15, Talk for Workers. 5.25, German Transmission: News, Sports Notes, and Literary Talk. 6.0, See Prague. 6.25, Recital of French Arias and Songs by Vlasta Kubiková. 6.45, Review of Gramophone Records. 7.15, In the Moun-

tains—Suite for Zither (Frant. Hycka), played by the Composer. 7.30, Reading of Czech Poems. 8.0, See Prague. 9.15 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 500 kc/s, 509 metres; 15 kW.—11.0 a.m., Selection from Tannhäuser (Wagner) on Gramophone Records. 12 Noon, Le Journal Parlé. 12.10 p.m., Concert by the Small Orchestra, conducted by P. Leemans: L'avoate (Ackermans); Chanson d'Arlotte (Detayre); Soirée à Lilliput (Berry); Fantasia for Pianoforte (Benoit); Two Pieces (d'Agrèves); Waltz (Guillaume); Loin du pays (Fauly). 1.0, Educational Programme. 4.0, Concert by the Radio Orchestra conducted by André: Selection from Viktoria and her Hussar (Abraham); A Musical Joke (Aston); Gavotte for Cello (Popper); Britolodia (Anghelies); Violin Solo, Salut l'Amour (Elgar); Sashinka (Hirschmann). 5.0, Talk on Motor Cars. 5.15, Gramophone Concert: Rhapsody for Clarinet and Orchestra (Debussy); Suite Op. 2 (Feinberg); Après un rêve (Faure); Suite bergamasque (Debussy); Mazepa (Liszt); Scherzo (Lalo); Valse de concert Op. 47 (Glazunov). 6.15, Talk: The Accountant. 6.30, Literary Review. 7.0, Concert by the Symphony Orchestra conducted by M. Kumps; Soloist: Mme. Faurive (Songs); Melody from Sylvia (Delibes); Extract from a Suite (De Lorient); Songs: (a) Der Lindenbaum (Schubert), (b) Sonntag (Brahms), (c) Cantique à l'Épouse (Chausson), (d) Melody (Jongen); Rapsodie Canadienne (Gilson). 7.45, Talk on Insurance. 8.0, Symphony Concert (contd.); Soloist: Mlle. Olga Ugame (Songs); Symphony in D (Mozart); Songs: (a) Curieuse (Perrier), (b) Si peple (Pievel), (c) Papa n'a pas voulu (Nohain); Variations on a Haydn Theme (Brahms); Hungarian Dance Suite (Brahms). 9.0, Le Journal Parlé. 9.10, Light Music on Gramophone Records. 10.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R.; 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—11.0 a.m., Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, Die schöne Galathée (Suppé); Petite Suite (Chaminade); Legend No. 7 (Dvorák); Selection from La Mascotte (Audran); Concert Mazurka for Flute (Doppler); Waltz, Ton amour (Langlois); Foxrot, Quit cryin the Blues (Lewis); Selection from Mr. Cinders (Ellis-Myers). 12 Noon, Le Journal Parlé. 12.10 p.m., Prologue and Act One of Mephistopheles—Opera (Boito) by the Soloists, Choir and Orchestra of the Scala, Milan, on Gramophone Records. 1.0, Educational Programme. 4.0, Concert by the Symphony Orchestra, conducted by J. Kumps: Symphony (Mozart); Danses villageoises (Grétry); Flemish Dances (Blokkx). 5.0, Hugo Wolf Song Recital by Théo Mercier: Der Genesene an

die Hoffnung; Der Tambour; An eine Acol-sharfe; Verborgenheit; Gesung Weylas. 5.15, Talk: The Birth of the Transvaal. 5.30, Concert by the Small Station Orchestra, conducted by P. Leemans: Cortège catalan (de Sévère); Nocturne (Debussy); Suite, Kérneo (Vuillomin); Le colibri (Chausson); danse dorienne (Guillard); Three Arias (Turina). 6.15, Talk: The Influence of Drink on Young People in Belgium and Abroad. 6.30, Wireless Review. 7.0, Ball and Dance Conversations—Radio Play (Hermynia zur Müllen), translated from the German by M. Schotte. 8.0, Concert by the Radio Orchestra, conducted by Franz André. Soloist: Mme. Dora Galgoy (Songs). Three Flemish Songs (Schocmaeker); Selection from Milena (Blokkx); Songs: (a) For you alone (Geel), (b) I love the Moon (Sanderson); Berceuse for Flute and Orchestra (Goyens); Marche grotesque (Goyens); Songs: (a) Jeunesse et amour (Van der Stucken), (b) Vaarom en weet ik niet (Keurvels); Selection from Hansel and Gretel (Humperdinck); Hungarian Dances (Brahms). 9.0, Le Journal Parlé. 9.10, Dance Music. 10.0 (approx.), Close Down.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra: Coronation March (Meyerbeer); Waltz from Mein junger Herr (O. Straus); Italian Suite (Kostal); Spanish Serenade (de Michel); Fox-trot on Themes from Die Fledermaus (Strauss-Kochmann). 5.0, News and Time Signal. 5.15, Concert (contd.): Romanian Potpourri (Dinicu); Humoresque and Mazurka (Dvorák); Rusticanelle (Cortopassi). 6.0, Talk: Romania's Popular Art. 6.20, Talks on Philosophy and History. 7.0, Symphony Concert by the Philharmonic Orchestra. 8.0, Talk. 8.15, Concert (contd.). 9.0, News.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW. Programme also relayed on 840 metres from 6.25 to 11.0 p.m.—4.30 p.m., Concert of Light Music. 6.0, Shorthand Lesson. 6.30, Relay from the Royal Hungarian Opera House. After the Programme, Gypsy Music from the Hotel Gellert. 10.15, Dance Music from the Hotel Gellert.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—Transmits at intervals from 11.0 a.m., Time and Chimes from the Town Hall. 11.5, String Ensemble Concert relayed from the Bellevue Strandhotel. 12.15 p.m., Geographical Talk. 12.45 to 1.40, Interval. 1.40, Concert by Carl Rydahl's Instrumental Ensemble. 3.40, The Last of the Mohicans—Play for Children with Songs (after the Book by James Fenimore Cooper). 4.40, Exchange and Fish Market Prices. 4.50, Address by Herman Koch. 5.20, German Lesson. 5.50, Weather Forecast. 6.0, News. 6.15, Time Signal. 6.30, Talk: Politics for the month of March. 7.0, Chimes from the Town Hall. 7.5, Programme by Per Knutzon. 7.10, Recital of German Duets by Anna Hagen and Edith Schmidt: Songs (Schumann): (a) Schön Blümlein, (b) Frühlingslied, (c) An die Nachtigall; Songs: (Mendelssohn): (a) Ich will meine Lieb ergötze sich, (b) Gruss, (c) Herbstlied. 7.30, Rose Bernd—Comedy in Five Acts (Gerhart Hauptmann). 9.0, News Bulletin. 9.15, Danish Music by the Station Orchestra conducted by Emil Reesen and the Breuning-Bache Quartet: Sinfonietta (Tarp); Prelude and Intermezzo for Oboe and Orchestra (Weis); String Quartet in G. Op. 16 (Brodersen). 10.15 (approx.), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW.—6.0 p.m., Miscellaneous Items and Announcements. 6.15, Talk. 6.30 till Close Down, See Warsaw. 10.0 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., Light Music on Gramophone Records. 11.30, News Bulletin. 11.45, Concert of Light Music. 5.30 to 7.0, Programme in English by the I.B.C.C.: Hanvers-Walker, B. McNabb, and F. Lamping announcing. (These times are subject to alteration.) 5.30, Orchestral Concert for Southampton Listeners: Potpourri of Intermezzi (arr. Ancliffe); Vienna, Vienna (Foss); Valencia (Padilla); The Woman in the Shoe; In the Night (Tate); Chinatown, my Chinatown (Schwartz); Memories of Paris (Christine); Potpourri of Waltzes (arr. Ancliffe). 6.0, Vocal Concert for Bournemouth Listeners: Brothers of the Empire (Helmore); My Sword and I (Byng); The Drum Major (Newton); Orchestra: Waltz—Gold and Silver (Lelár); The Volunteer Organist (Lamb); Ronte Marching (Reeve); Orchestra: Waltz from Bitter Sweet (Coward); Gramophone Celebrity Concert for Weymouth Listeners: Down among the Sheltering Palms,

MARCH 31st

FRIDAY

continued

by the Boswell Sisters; I think I'll get wed in the Summer, by Sir Harry Lauder; A little bit of Chinese Music, by Flanagan and Allen; Pardon me Pretty Baby, by Jack Smith; Love me To-night, by Greta Keller; Dream Sweetheart, by Layton and Johnstone; Obdiah's Mother, by Gracie Fields; Oh Man River, by Paul Robeson. 7.0, Local News and Popular Music on Gramophone Records. 7.30, Radio Gazette. 8.0, Agricultural Report. 8.15, News and Popular Music on Gramophone Records. 8.30, Concert, relayed from **Le Havre**. 10.0 till Close Down. Programme in English by the I.B.C. (These times are subject to alteration.) 10.0, Dance Music: Put that Sun back in the Sky; Georgia on my Mind; Lullaby of the Leaves; Good-night, Vienna; Goodies; You've got what gets me; If I didn't have you; Love you Funny Thing; The Echo of a Song; Don't tell a Soul; Gone for Ever; Living in Clover; One Little Quartet; I got Rhythm; Oh Monah. 11.0, Concert by a Symphony Orchestra; Rakoczy March (Berlioz); Ballet Music from Coppelia (Delibes); Morning (Grieg); Antuan (Chaminade); Selection from Il Trovatore (Verdi); Träume (Wagner). 11.30, Song Recital; Kilharney; Off in the Stilly Night; Once again; Pianoforte Solo: Selection from Viktoria and her Hussars; The Rosary; Tom Bowling; Drink to me only with thine Eyes. 12 Midnight, Variety Concert: I've got one Arm round Mary; Jack joins the Navy; Sweet Carolina; Hot Scotch; Minnie the Mocher; Barrel Organ Medley; Mrs. Carter. 12.30 a.m. (Saturday), Popular Songs: I feel you near me; Ireland, Mother Ireland; Hollywood Nights; Orchestra; Good Old Songs; I'd rather be a Beggar with you; Reach out for a Rainbow; Husky-baby Baby. 1.0, Pianoforte Recital: Popular Melodies on a Piano (Ray); I found you (Noble); The Big Pond Medley (Fain); Song: A Mother's Kiss; Let Love take Care of You (van Phillips); Song: A Little Green Heaven; The Squirt Dance (Elliott Smith). 1.30, Vocal Trios; You'll never realise; Tiptoe through the Tulips; Without a Song; Banjo Solo: The Bullion; I'll always be true; Time on my Hands; A Pair of Blue Eyes; Banjo Solo: Fingerticks. 2.0, Dance Music: The Sun has got his Hat on; Strangers; Singing in the Moonlight; Paradise; The Gag Song; The Old Kitchen Kettle; I've gone and lost my little Yo-Yo; At eventide; Pagan Moon; When the Band goes marching by; Leave the Rest to Old Man Moon; It's that extra little something; Speedway Sam; Same Old Moon. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLensburg.—See Hamburg.

Florence.—See Turin.

FRANKFURT

1,157 kc/s, 259 metres; 17 kW. Relayd by Cassel, 1,220 kc/s, 245.9 metres.—4.0 p.m., See Munich. 5.15, Economic Notes. 6.25, See Stuttgart. 6.15, Time, Programme Announcements, Weather and Economic Notes. 6.20 to 9.0, See Stuttgart. 9.0, Time and News. 9.30, Concert by the Radio Orchestra: Conductor: Reinhold Merten; Soloists, Michael Fubmann (Oboe), Wilhelm Schütz (Clarinet), and Gustav Jung (Bassoon); Ballet Suite, No. 1 (Glink-Mottl); Concerto for Oboe with Orchestra and Harpsichord Accompaniment (Telemann); Concertino for Clarinet, Op. 26 (Weber); First Movement from the Concerto for Bassoon and Orchestra (Mozart); Overtures (Joh. Strauss): (a) Blindekuh, (b) Prince Methusalem, (c) Cagliostro. 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

806 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres, and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Talk on the Week-end. 6.25, Weather Report. 6.30 (from Hanover), German Song and Dance Melodies by the Sücher Doule Quartet and the Station Orchestra. In the interval at 6.45, Talk by Kurt G. Sell: What People are talking about in America, relayed from America. 8.0, News. 8.10, Symphony No. 3 in D Minor (Bruckner), by the Hamburg Philharmonic Orchestra, conducted by Jose Eibenschütz. 9.10, Time and News. 9.20, Topical Talk. 9.30, Concert relayed from the Ostermann Restaurant. 10.20, See Report. 10.25, Concert relayed from the Atlantic, Bremen.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW. Relayd by Danzig, 662 kc/s, 453.2 metres.—12.5 p.m., Variety Music on Gramophone Records. In an interval at 12.20, News. 1.30, Programme arranged by the Post Office with Gramophone Records. 2.0, Agricultural Prices and Exchange. 2.30, Pro-

gramme for Children. 3.0, Talk for Women. 3.30, See Leipzig. 4.30, Book Review. 4.50, Talk: Arranging a Private Shoot. 5.15, Agricultural Prices. 5.20, See Report. 5.25, Talk: The History of the Baltic in the Literature of the Baltic Countries. 5.55, The World on Gramophone Records—Spain in Song and Dance—Talk with Gramophone Illustrations. 6.45, Talk by Kurt G. Sell: What People are talking about in America, relayed from America. 7.0, Weather and News. 7.10, Talk: In memoriam—Otto von Bismarck. 7.45, Symphony No. 9 in D Minor, Op. 125 (Beethoven), relayed from the Town Hall, Königsberg; The Augmented Opera House Orchestra, the Musical Academy Choir, the Choir of the Verein der Liederfreunde, and Soloists. 9.0, Weather, News, and Sports Notes.

HILVERSUM

Announced HUIZEN, 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Christian Radio Society (N.C.R.V.).—11.40 a.m., Police Notes. 11.55, Concert by the Val. Horst Trio; Soloist: P. Hurk (Flute); Overture, The Black Domino (Auber); Die Romantiker (Lanner); Gavotte (Haydn); Gramophone Records: Selection from Iris (Massenet); Serenade (Micheil); Selection from Martha (Flotow); Melody (Fetras); Gramophone Records: Selection from Thais (Massenet); Petite suite (Chaminade); Overture, Granda (Aylan). 1.40 to 2.10 p.m., Interval. 2.10, Religious Reading. 2.40, Talk for Women. 3.10, Concert by the Hendriks Trio: Trio in F (Saint-Saëns); Sonata, Op. 69, No. 3, for Cello (Beethoven); Habanera, Op. 1 (Fernandez-Arbo). 4.40, Talk for Stamp Collectors. 5.10, Talk for Young Photographers. 5.40, Agricultural Talk. 6.10, Talk. 6.40, Literary Talk. 7.10, Police Report. 7.25, Religious Announcements. 7.40, Concert by the Small N.C.R.V. Orchestra and a Women's Choir. 8.40, Talk. 9.10, News. 9.20, Orchestral Concert: Entry of the Gladiators (Fueki); Clarinet and Orchestra: Eleventh Solo (Klass); Uhuau-attaek (Bohm); Saxophone and Organ. Goodbye (Tosti); Pizzicato Polka (Strauss); Violin Solo: Du alter Stefanus (arr. Kreisler); Organ Solo: Domusungen (Fueki); Carillon Solo: Marquissette (Lindsay-Thiemer); Perpetuum mobil (Strauss); Trumpet and Orchestra: Air Varié (Plateel); Overture, Flotte Bursche (Suppe); Violin and Orchestra: The Canary (Poliakin); Saxophone and Organ: Melody (Rubinstein); Organ Solo: Selection from The Bird Fancier (Zeller); Xylophone Solo: Kunstreiter (Oertel); Trombone and Orchestra: Gesangsszene (Popp); March: The Gladiators Erewell (Blankenburg). 10.55, Popular Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 160 kc/s, 1,875 metres; 8.5 kW.—11.20 a.m., Programme of the Workers' Radio Society (V.A.R.A.); Recitations. 11.40 to 3.40 p.m., Programme of the Allgemeine Vereinigung Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.41, Orchestral Concert, conducted by Nieuw Treep: March (Schoutemeyer); Fantasia, A Talk with Delibes (Urbach); Two Dances (Sametini); Selection from Le Petit Duc (Lecocq); Gramophone Records: Selection from The Maid of the Black Forest (Jesch); Slav Dance, No. 6 (Dvorák); Waltz from Faust (Gonnod); Mazurka, La Messine (Ganne); Gramophone Records: Fantasia, Fortissimo (Kálmán-Feigel); Entry of the Spring Flowers (Koeckert); March, Sempre avanti (Fueki). 1.40 p.m., Popular Music on Gramophone Records. 2.10, Concert (cont'd); Impression (Rubinstein); Polish Dance (Rubinstein); Selection from William Tell (Rossini); Festival Overture (Lortzing). 2.40, Popular Music on Gramophone Records. 3.40 to 7.40, V.A.R.A. Programme. 3.40, Orchestral Concert: The Marschallise (de Flisle); National Dances (Mannfeld); Der Rose Hochzeitung (Jessel); La lettre de Manon (Gillet); The Skaters' Waltz (Waldteufel); Schön Rosmarin (Kreisler); Selection from Potpourri (Nedbal); Marche socialiste (Gramm). 4.30, Programme for Children. 5.10, Organ Recital by J. Jong. 5.40, Der Freischütz—Opera (Weber) (Concert Version), on Gramophone Records. 6.10, Orchestral Concert: Overture, The Grand Duchess of Gerolstein (Offenbach); Potpourri of French and Italian Opera Music (Barriere); The Doll's House (Engelmann); Sphärenklänge (Strauss). 6.40, Talk. 7.0, Massa-Revue (Kolvers). 7.40 to 10.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 7.40, Talk. 8.10, Pianoforte and Cello Recital by Mlle. Bosmans and M. Stad; Sonata in C (Aridi); Andante (Fumure), Op. 65, No. 2 (Sinding); Mazurka, Op. 11, No. 3 (Popper); Sonata in C, Op. 13 (Schäfer). In the interval at 8.40, Talk. 9.40, News. 9.55, Talk. 10.25, Popular Music on Gramophone Records. 10.40, Organ Recital by M. C. Steyn. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

NICE, 1,202 kc/s, 249.6 metres; 0.8 kW.—9.30 to 10.30 p.m., Programme in English by the I.B.C.: H. K. Hitchcock announcing.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—6.15 p.m., Announcements and Gramophone Records. 6.25, Sports Notes. 6.30, See Warsaw. 10.0, The Letter Box in French.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—6.20 p.m., Variety Concert. 7.10, Talk: Tuberculosis. 7.30, Variety Programme. 7.50, Talk: The Programme of the Board of Agriculture for 1933. 8.10, Concert. 8.40, Sports Notes. 8.50, Evening Concert. 9.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLagenfurt.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW; and HELSINKI, 815, kc/s, 368.1 metres.—5.55 p.m., Talk. 6.20 (from Helsinki), Pianoforte Recital by Karttu Bernhard. 6.45, Talk. 7.10 (from Helsinki), Military Band Concert, conducted by Lammi Näre; Sissumarssi (Hannikainen); Pirun polska (Kuhla); Dance measure (Saint-Saëns); Overture, The Mastersingers (Wagner). 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert conducted by Eysoldt: Jungmann-Marsch (Weinhold); Soloist: Overture, In Autumn (Grieg); Traum-Walzer (Millecker); Selection from Rienzi (Wagner); Suite, Au die Freunde (Schoenplug); Symphonic Prelude (Previsiol); Malerisches Ständchen (Graener); Ein Abend in Wien (Schubert); Selection from Die Kaiserin (Fall). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Economic Notes and Time. 2.50, Handwork for Children. 3.20, Readings for Young People. 4.0, Symphony Concert, conducted by Buschkötter; The Maria Theresa Symphony (Haydn); Linz Symphony (Mozart); The Unfinished Symphony (Schubert). 5.15, Talk: Nameless Inventors. 5.45, Weather, Time, Economic Notes and Sports Results. 6.0, Discussion: A Hundred Years of Prison Welfare Work in Wuppertal. 6.40, News. 6.45, Talk by Kurt G. Sell: What People are talking about in America, relayed from America. 7.0, Concert by the Münster Teachers' Choral Society, a Boys' Choir and Theodor Brockhaus (Organ); Organ Solo: Prelude and Fugue in C (Böhm); Canon, Mit Instrument and Saitenspiel (Sartorius); Madrigal, Frisch auf, singet all ihr musici (Demantius); Ein Musik-woll' fröhlich sein (Grätz); Madrigal (Donati); Der Gutzglauch auf dem Baum-sack (Semlin); Madrigal (di Lasso); Madrigal (Morley); May Song from Zeitkrantz (Knab); Herzlich tut mich erfrenen (Lechner); Organ Solo: Prelude and Fugue in G (Bach); Folk Song, Der Tag vertreibt die lustre Nacht (arr. Goffeier); Der Mensch hat nichts so eigen (Albert); Lab Gott getrost mit Singen (Gumpelzhalm); Der Mond ist aufgegangen (Schulz); Gott fuhr auch unser Vaterland from Chorgemeinschaft (Ludwig Weber). 8.15, Station 10 in the Polar Seas—Radio Play (Hanns Braun). 9.0 (approx.), News and Sports Notes. 9.20, Serenade, conducted by Wolf. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayd by Dresden, 941 kc/s, 319 metres.—12.15 p.m., Dialect Programme of Folk Music on Gramophone Records, followed by Exchange Quotations. 1.30, Art Review. 2.0, Reading for Young People. 2.15, Gardening Talk. 2.35, Exchange and Market Prices. 3.0, Talk: The Heavens in April. 3.30, Concert by the Station Orchestra, conducted by Hilmar Weber; Waltzes, Op. 25 Nos. 1 and 2 (Fuchs); Serenade Op. 95 (Zöllner); Ballet Music from Udine (Lortzing); An Evening in Toledo (Schmeling). 4.30, Review of Books. 4.50, Weather, Time, and Exchange Quotations. 5.0, Talk: Local Government in the Past and Present. 5.25, English Lesson. 5.50, Programme to be announced. 6.0, Talk: Religious Instruction. 6.30, Franz von Blon Concert by the Station Orchestra, conducted by the Composer, Heroic Overture; Dramatic Overture; Dance Suite in Eight Movements. 7.30, Talk: What People are Talking About in America, relayed from America. 7.45, A Humorous Radio Sequence. 8.45, Song Recital by J. M. Hanschild (Baritone). 9.15, News Bulletin. 9.30 (approx.), Gramophone Concert: Wenn Gott will rechte Gunst erweisen; In lauslicher Nacht (Zielher); Faschingskinder (Zielher); Deutschlands Ruhm (Schroeder); Arietta with Variations (Buxtehude); Des Rosen-

band (Schumann); Der Müselsolin (Schumann); Marek (Berndt); Münchener Saug und Klang (Reeg). 10.30 (approx.), Close Down. LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.30 p.m., Health Talk. 7.0 to 9.0, See Warsaw. 9.8, Time and News. 9.5 (approx.), Popular Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—6.0 p.m., Talk on History. 6.15, Miscellaneous Items. 6.30 till Close Down. See Warsaw. 10.0 (approx.), Close Down.

LYONS

LA DOUA, PTT, 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., Radio Gazette for Lyon and the South East. 7.30, Concert of Opéra Music. 8.0, Gala Programme, relayed from the Capital Theatre, Toulouse (See Paris, Eiffel Tower). News after the Programme.

MADRID

ARANJUEZ, EAQ, 9,860 kc/s, 30.43 metres; 20 kW.—10.30 p.m., Concert of Light Music. 10.45, Radio Chronicle. 11.0, Concert of Light Music (cont'd.). 11.35, Tourist Talk; Segovia. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO (EAJ7), 707 kc/s, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Programme of Musical Novelties and Variety Items by Ramon Gomez de la Serna. 8.15, News Bulletin and Political Review. 8.30 to 9.30, Interval. 9.30, Chimes, Time Signal and Political Review. 9.45 (approx.), Humorous Talk, followed by Concert by the Station Symphony Orchestra, conducted by Felipe Briones; Overture, Figaro (Mozart); Intermezzo from Goykas (Granados); Danse macabre (Saint-Saëns); Scheherazade (Rimsky-Korsakov); Andante from a Symphony (J. Bornúdez Silva); Symphonic Poem Torbellino (J. Bornúdez Silva); Prelude to La Revoltosa (Chapi). 1.45, News Bulletin and Programme Announcements for Listeners Abroad. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW. 6.25 p.m., Pianoforte Recital of Spanish Music by A. Rötter. 6.45, A Comedy (Havalka). 7.40, Chromatic Accordion Solos by R. Blaha. 8.0, See Prague. 9.15 (approx.), Close Down.

MOSCOW

230 kc/s, 1,304 metres; 100 kW.—4.30 p.m., Dramatic Programme. 5.30, Concert, relayed from the Conservatoire. 8.0, Review of the Week and Answers to Correspondents in English.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—4.0 p.m., Orchestral Concert, conducted by Erich Kloss; Overture, La finta semplice (Mozart); Andante and Minuet from the Second Symphony (Haydn); Selection from Czar and Carpenter (Lortzing); Waldstücken (Heinecke); Fantasia, Klein Ida (Walden); (v. Klein); Spanish Serenade (Welsch); Intermezzo from I quattro Rusteghi (Vig-Ferrari); Military March (Zielher). 6.15, Talk. 6.35, Talk: The Struggle for Tsinghan. 6.55, Time, Weather and Agricultural Notes. 6.5, Talk (to be announced). 6.25, Choral and Orchestral Concert, conducted by Hans Winter. Soloist: Marins Andersen (Tenor). Comedy Overture (Walterhausen); Cantata for Tenor, Choir and Orchestra, Frantanz (v. Bartel); March and Scherzo from The Love for Three Oranges (Prokofiev); Symphonic Poem, La Mer (Debussy). 7.30, La Malade imaginaire—Comedy in Three Acts (Molière). German Translation by Ludwig Fulda. 8.55, Choral Concert. 9.20, Time, Weather, News and Sports Notes. 9.50, Talk: What People are talking about in America, relayed from America (reproduction on Gramophone Records).

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayd by Fredriksstad, 620 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 62 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.15 p.m., Request Gramophone Concert. 5.0, French Lesson. 5.40, Pianoforte Recital by Jan Wölner Hansen. 6.0, Announcements, Weather and News. 6.30, English Lesson. 7.0, Time Signal. 7.1, Concert by the Philharmonic Orchestra, conducted by Odd Gruner Hoger-

MARCH 31st

FRIDAY

continued

Overture, The Bartered Bride (Smetana); Symphony in G Minor (Mozart); Lyric Suite (Gustavson); Four Symphonic Dances (Grieg). 8.30, Agricultural Report. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Recitations.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—7.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 7.20, Light Music on Gramophone Records. 7.30 (in an interval), Time Signal and Announcements. 7.45, The Pearl Fishers—Opera in Three Acts (Bizet). In the intervals, Talk and Announcements. 9.55, News Bulletin.

PARIS

EIFFEL TOWER, FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals). 5.45 p.m., Talk on the Theatre. 6.0, Le Journal Parlé. 7.20, Weather Report. 7.30, Gramophone Dance Music. 8.0, Gala Programme, relayed from the Capitol Theatre, Toulouse; Part I: Mozart Opera Music; Soloists: M. Rambaud, M. Sizes, and Marthe Ingrand (Songs); Overture, Figaro; Aria from Don Giovanni; Aria from The Magic Flute; Aria from Figaro; Interlude; Talk by the Mayor of Toulouse; The Town of Toulouse. Part II: Matinée d'amour (Mazellier), conducted by the Composer.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—5.45 p.m., Le Journal Parlé. 6.0, Talk. 6.10, Popular Music on Gramophone Records. 7.0, Talk on Music. 7.30, Vocal and Instrumental Concert: Soloists: Jeanne Isnard (Violin), Emma Boynet (Pianoforte), and Marguerite Soyer (Song). 9.30, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 174 kc/s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 6.30, Weather and Physical Culture (cont'd.). 6.45, Light Music on Gramophone Records. 7.0, Press Review and Weather. 11.0, Jewish Talk. 11.30, Concert by the Kretly Orchestra: The Surprise Symphony (Haydn); Adagio from the Pathetic Sonata (Beethoven); Overture, Athalie (Mendelssohn); Theme and Variations from the Front Quintet (Schubert); Waltzes (Schubert-Bigot); Two Preludes (Chopin-Bousquet); Divertissement (Lalo); Fragments poétiques (Gordard); Carnaval (Guiraud). In the intervals at 12 Noon, Exchange, News, and Weather, and at 12.30 p.m., Exchange. 1.0, Exchange and Announcements. 2.45, Exchange and Market Prices. 3.30, Elementary English Lesson. 5.10, Agricultural Talk. 5.30, Review of New Books. 5.50, Talk on Social Insurance. 6.0, Talk: Great Days of the French Revolution—the Fifth and Sixth of October. 6.20, Music by the Kretly Orchestra: Overture, Les Saltimbanques (Ganne); Walt (d'Hardelet); Sérénade discrète (Bosc); Last Love (Gungl); La Lettre à Manon (Gillet); Angéline sur la mer (Gombier). 6.45, Commercial Prices and News. 7.0, Literary Readings. 7.30, News, and Weather Report. 7.40, Gastronomic Review. 7.45, Brignol et sa fille—Comedy (Capus). In the interval at 8.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KOKA), 360 kc/s, 306 metres; 25 kW.—Relayed by W8XK on 48.66 metres and 25.27 metres (See Short-Wave List).—9.0 p.m., Talk by Dr. Emily Jones. 9.10, Business News. 9.15, S.A.I. Musicale (Carnegie Tech Chapter). 9.30, Weather Report. 9.32, Market Reports. 9.45, Johnny Muskrat. 9.50, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Muskingum College Music Clubs. 10.15, Dick Darling. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Our Daily Food, by George Bector and Judge Gordon, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report Philadelphia Company. 11.30, KDKA Orchestra. 11.45 to 3.30 a.m., KDKA Orchestra. New York Relay. 11.45, (Saturday) New York Relay. 12 Mid-night, Pepsodent Amos 'n' Andy. 12.15 a.m., Adventures of Aunt Lulu. 12.30, Five Star Theatre by Charlie Chaplin. 1.0, Nestlé's Programme. 1.30, Time Signal and Adventures in Health. 1.45, Howard Thurston, the Magician. 2.0, The First Nighter. 2.30, Armour Programme. 3.0, Dorothy Fields and Jimmy McHugh. 3.15, Vic and Sade. 3.30, Bridge School of the Air by E. Hall Downes. 3.45, Prof. Jack McFallen, Sara and Sassafras, from New York. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News Flashes. 4.20, Cora Williams Hines (Contractor). 4.30, Smith Ballou and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, Cotton Club Orchestra, from New York. 5.30, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—3.10 p.m., See Brno. 3.55, Talk. 4.5, Concert by the Ondrick Quartet: String Quartet in A, Op. 33 (Boccherini); String Quartet in B Flat, Op. 11 (Suk). 5.5, Market Prices. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Medical Talk. 6.0, Chimes. 6.1, News Bulletin. 6.10, Talk: Education and the Crisis. 6.25, Bach Violin Recital by K. J. Zumbek Chaconne: Adagio from the First Violin Sonata. 6.45, Programme of Slovak Literature and Music, with Introductory Talk. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Jeremias; Soloist, Marie Pixova: Overture, Prometheus, Op. 43 (Beethoven); Aria, Ombra felice (Mozart); Gavotte in Old Style (Jirak); Songs (Slovak); (a) The Child Ballad, (b) The Mountain Ballad; Suite for Orchestra (Haba). 9.0, Time Signal. 9.1, News Bulletin. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; LAUSANNE, 442 kc/s, 680 metres; and GENEVA, 395 kc/s, 760 metres.—5.0 p.m. (from Geneva). Interview with Young People. 5.15 (from Geneva). Reading. 5.30 (from Geneva). Talk: The International Labour Bureau. 6.0 (from Lausanne). Weather Forecast, News Bulletin and Announcements. 6.30 (from Lausanne), Lesson for Apprentices in Accountancy. 7.0 (from Lausanne), Chamber Music, Mlle. Madeleine Margot (Pianoforte), M. Fritz Kok (Violin) and Mlle. Denise de Meuron (Cello). 8.15, Cabaret Concert. 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva), Talk: The Work of the League of Nations. 9.30 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.15 p.m., Symphony Concert by the Radio Orchestra and the Opera House Orchestra, relayed from the National Opera House: Overture, Euryanthe (Weber); Symphonic Poem, Don Juan, Op. 20 (Rich. Strauss); Second Symphony in D (Brahms). News in the interval. 8.0, Weather and News, followed by Light Music. 9.30 (approx.), Close Down.

RJKAN.—See Oslo.

ROME

680 kc/s, 441 metres; 50 kW.—Relayed by Naples, 941 kc/s, 319 metres, and 2RO, 11,810 kc/s, 25.4 metres.—12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Concert of Light Music from Turin. In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.0, Pianoforte Recital by Carlo Zecchi, relayed from the Royal Academy of St. Cecilia. 6.0 (Naples), Shipping and Sports Notes. 6.10, Agricultural and Dopplavoro Notes. 6.20, Giornale Radio and Light Music on Gramophone Records. 7.0, Time and Announcements. 7.5, Report of the International Institute of Agriculture (in Italian, French, English, German and Spanish). 7.30, Sports Notes and Tourist Report. 7.45, Variety Concert: Extract from Le Roi de Lahore (Massenet). 8.30, The Wind of the Desert—Comedy in One Act (Pietro Orestano). 9.0, Concert (cont'd.). Extract from Suor Angelica (Puccini). 9.55, News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW.—Relayed at intervals by W2XAF and by W2XAD (see Short-Wave List).—7.30 p.m. to 12 Midnight, New York Relay. 7.30, Muted Strings. 7.45, Three Shades of Blue—Male Trio. 8.0, Sonata Recital. 8.15, Famous Loves. 12 Midnight, New Kenmore Hotel Orchestra. 12.15 a.m. (Saturday), Stock Reports. 12.30 to 1.30, New York Relay. 12.30, Drifting and Dreaming. 12.45, The Goldbergs. 1.0, Cities Service Concert. 1.30, WGY Farm Forum. 2.0, Best Foods, from New York. 2.30, Leo Reisman's Orchestra, followed by Programme Résumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; BASLE, 1,229 kc/s, 244.1 metres; and BERNE, 1,220 kc/s, 245.9 metres.—11.28 a.m., Time Signal from Nenchâtel Observatory. 11.30, Weather and News. 11.40 (from Berne). Orchestral Concert. 12.35 p.m., Weather and Exchange. 12.40 to 2.30, No Transmission. 2.30 (from Basle), Quartet Concert. 3.30 (from Basle), Programme for Children. 4.0 (from Basle), Variety Music on Gramophone Records. 4.30, Weather Report. 4.32 to 5.30, No Transmission. 5.30 (from Berne), Reading. 6.0, Time, Weather, Market Prices, Tourist Report, and Announcements. 6.20 (from Berne), Recital of Yodels. 6.40 (from Berne), Don Carlos—Opera in Four Acts (Verdi), relayed from

the Municipal Theatre, with Introductory Talk. In the interval at 8.30 (approx.), Weather and News. 10.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

RADIOTJANST (SASA), 689 kc/s, 436 metres; 55 kW.—Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 212.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 544 kc/s, 542 metres.—4.0 p.m., Weather Report. 4.5, Folk Music relayed from Falun, 977 kc/s, 307 metres. 4.30, Reading. 5.0, Popular Music on Gramophone Records. 5.45, A Microphone Report. 6.0, Talk. 6.15, Weather and News. 6.30, Political Talk, relayed from Göteborg. 7.0, Choral Concert, conducted by Heikki Klemetti. 7.45, Talk on Foreign Politics. 8.5, Variety Programme. 8.45, Weather and News. 9.0, Chamber Music (relayed from Göteborg); Soloist: Lars Fernman (Violin); Concerto grosso in D Minor (Vivaldi); Concerto in A Minor for Violin and Strings (Bach); Suite for Strings (Allberg); Variations on a Tchaikovsky Theme (Arensky). 10.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.30 a.m., Gramophone Concert: Slav March (Tchaikovsky); Canzonetta (Tchaikovsky); Clochette (Paganini); Capriccio in F Minor (Dohnányi); Prelude in C Sharp (Rachmaninoff); Viennese Rhapsody (Schmidt); Polovtsian Dances from Prince Igor (Borodin); Selection from Czar Saltan (Rimsky-Korsakov); Night on the Bare Mountain (Messiaen); L'apprenti Sorcier (Ducas); Baba Yaga (Liadov). 11.45, News. 12 Noon, Time and Exchange. 12.5 p.m., Orchestral Concert, conducted by Maurice de Villers: Overture, Anacreon (Cherubini); Selection from Don Carlos (Verdi); In the Steppes of Central Asia (Borodin); Orchestral Suite, Bouton d'or (Pierné); Selection from La Glauque (Fourdrain). 1.0 to 3.45, Interval. 3.35, Literary Talk in French. 4.0, Concert of Jazz Music, conducted by Roskam. 5.0, Trio Concert, relayed from Lille, 1,130 kc/s (265.4 metres). 6.0, Topical Talk in German. 6.15, Light Music on Gramophone Records. 6.30, Time and News. 6.45, Rossini Concert on Gramophone Records: Overture and Six Arias from The Barber of Seville; Overture, William Tell. 7.20, Lottery Results. 8.0, Matinée d'amour—Musical Play (Jules Mazellier), relayed from Toulouse P.T.T., 1,175 kc/s (255 metres). 10.0 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.—Relayed by Freiburg, 527 kc/s, 570 metres.—12.30 p.m., Concert from Langenberg. 1.0, Sponsored Concert arranged by the Post Office. 1.30, Advanced English Lesson. 2.0 to 4.0, Interval. 4.0, Concert by the Baden Academy of Music: Pianoforte Sonata in D, Op. 53 (Schubert); Two Pieces from the Nine German Arias, for Voice, with Obligato Violin and Bass Accompaniment (Händel); (a) Süsse Stille, (b) Meine Seele hört im Sehen; Second Movement from the Concerto in E Minor, Op. 36, for Cello and Pianoforte (Grützmacher); Max's Aria from Der Freischütz (Weber); Songs for Baritone (Brahms): (a) Waldesamkeit, (b) Sapphische Ode; Mephisto-Walzer for Pianoforte (Liszt). 4.50, Time, Weather, and Agricultural Notes. 5.0, Talk: Twenty-five years of Aerological Research at Lake Constance. 5.25, Talk: A Gift for Music. 5.50, Time and News. 6.5, Suggestions for Sunday Walks, by Rudolf Höllwirth. 6.20, Choral Concert of South German Folk Songs. 7.0, Intermittent Springs in Swabia—Radio Sequence. 7.40 (from Karlsruhe), Concert of Military Music by a Police Band. 8.30, Pianoforte Recital by Hubert Giesen: Waltzes by Schubert, Brahms, Chopin and Johan Strauss. 9.10, Time, News, Weather, Programme Announcements and Sports Notes. 9.30, Talk by Kurt G. Sell: What People are talking about in America, relayed from America. 9.45, Dance Music by the Stuttgart Philharmoniker. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 779 kc/s, 385 metres; 8 kW.—5.15 p.m., Instrumental Solos; Pianoforte Solo: Waltz in D (Chopin); Harp Solo: First Arabesque (Debussy); Violin Solo: Tes yeux (Bouincontro); Guitar Solo: Folie (Malac). 5.30, Music from Sound Films. 5.45, Tourist Talk. 6.0, Opera Music for Orchestra: Ballet Music from The Damnation of Faust (Berlioz); Prelude to Act I of Lohengrin (Wagner); March from The Valkyries (Wagner). 6.15, News, Racing Results and Market Prices. 6.25, Local News. 6.30, Operetta Music. 6.45, Accordion Music. 7.0, Light Orchestral Concert. 7.30, Opera Music: Aria, Je suis Titania, from Mignon (Thomas); Two Arias from Manon (Massenet); Aria from Così fan tutte

(Mozart). 7.45, Peer Gynt Suite (Grieg), by the Symphony Orchestra. 8.15, Light Music. 8.30, Music by a Viennese Orchestra: Waltz, Ever or Never (Waldteufel); In the Shadows (Finck); Chanson triste (Tchaikovsky). 8.45, Music from Opera: Arias from (a) Faust (Gounod), (b) Hérodiade (Massenet), (c) Sigurd (Reyer). 9.0, Military Music. 9.15, North African News. 10.0, Operetta Music. 10.15, Humorous Songs. 10.30 to 11.0, Programme in English by the I.B.C., W. Brown—Constable announcing: Always in my Heart; Just an Echo in the Valley; Here's hoping; A little Street where old Friends meet; Wheezy Anna; Mimi; Night after Night; Isn't it Romantic? 10.57, I.B.C. Good-night Melody. 11.0, Weather and Announcements. 11.5, Music by an Argentine Orchestra. 11.15, Military Music. 11.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—3.0 p.m., See Rome. 5.35 to 6.35, See Turin. 6.35, Light Music from the Café Dante. 7.0 (approx.) till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW.—Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—3.0 p.m., See Rome. 5.35, Giornale Radio, Agricultural and Dopplavoro Notes. 6.5, Giornale Radio. 6.30, Time, Announcements, Report of the Royal Geographical Society. 6.35, Gramophone Records of Popular Music. 7.0, Giornale Radio and Weather, and Gramophone Records (cont'd.). 8.0, Symphony Concert, conducted by Arrigo Pedrollo. Soloist: Arrigo Serato (Violin). Talk in the interval. 10.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in German. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW.—Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—3.40 p.m., Concert conducted by Isy Geiger: Overture (Michael Weiss); Potpourri, Suoni cuquo (Johannes Evert); Pianoforte Solos: (a) Von Rosen ein Ringelien (Walter Pfeuffer), (b) Vor einer alten Spieluhr (Müller-Melhorn); Song from Rosen im Schnee (Jascha Leowe); Pasodoble, Mia bella (Erwin Straus); Hungarian Song Potpourri, Spiel, Zigeuner (Geiger-Sandor); March, Der Sieger (Gustav Machlo). 5.10, Talk: The German Customs Union. 5.30, A Report on Traveling and Foreign Traffic. 5.45, Report of the Austrian Cyclists' Association. 6.0, Weekly Report on Physical Culture. 6.10, Talk, Petroleum Wells in Austria. 6.25, Time, Weather, and Programme Announcements. 6.35, Talk: Great Men of History—Bismarck and the New German Empire. 7.0, Concert by the Vienna Symphony Orchestra, conducted by Leopold Reichwein: Overture, The Thieving Magpie (Rossini); Symphony in C Minor, No. 9 (Haydn); Carnaval (Leopold Weibel); Symphonic Poem, Till Eulenspiegel's Merry Pranks, Op. 28 (R. Strauss). 8.20, Music from Paper. 8.50, News. 9.5, Road Report. 9.10, Concert from the Hotel Krantz-Ambassador.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—10.57 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Aviation Report and Anti-Gas Drill. 2.30, Naval and Colonial Report. 2.35, Review of Periodicals. 2.50, Popular Music on Gramophone Records. 3.20, Talk on History. 3.40, Talk on Marconi, relayed from Lwow, 758 kc/s (381 metres). 4.0, Violin Recital by Karin Rossander: Sonata, Il trillo del Diavolo (Tartini); La Folia (Corelli); Variations on a theme by Corelli (Tartini-Kreisler); Ave Maria (Schubert-Wilhelm); Air on the G String (Mattheson-Burmester); Capriccio Viennoise (Kreisler); Grave (Brenda); Hungarian Dance in D Minor (Brahms-Johann); Valse mignonne (Juon); Zigeunerweisen (Sarasate). In the interval, Announcements. 4.55, Programme Announcements. 5.0, Talk: Wypisanski. 5.20, News. 5.25, Light Music. 6.0, Miscellaneous Items. 6.20, Agricultural Press Review, relayed from Wino, 533 kc/s (563 metres). 6.30, Feuilleton. 6.45, Radio Journal. 7.0, Talk on Music. 7.15, Symphony Concert by the Philharmonic Orchestra, conducted by G. Fitelberg; Soloist: Alfred Cortot (Pianoforte); Concerto grosso in G Minor, No. 6 (Händel); Pianoforte Concerto in F Minor (Chopin); Symphonic Poem, Feste di Roma (Respighi); Polonaise in E Flat (Chopin). In the interval, Literary Talk. 9.40, Sports Notes. 9.45, Radio Journal. 9.55, Aviation Weather Report and Police Notes.

ZURICH.—See Schweizerischer Landessender.

ALGIERS

825.3 kc/s, 364 metres; 13 kW.—7.0 p.m., Financial News. 7.10, Shipping Notes. 7.15, Weather Forecast and Agricultural Notes. 7.20, Songs from Carmen (Bizet). 7.55, News Bulletin. 8.0, Time Signal. 8.2, Tourist Talk. 8.15, Sound Film Music. 9.30, Talk arranged by the Automobile Club. 8.35, News Bulletin. 8.40, Concert of Light Music by the Station Orchestra. 9.40, News Bulletin. 9.45, Variety Music. 9.55, Wireless Notes. 10.0, Dance Music relayed from the Hotel Aletti.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and GORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 2.45 to 4.30, Running Commentary on the International Rugby Match, Ireland v. Scotland, relayed from Lansdowne Road. 6.15, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Poetry Readings. 7.45, Gaelic Talk. 8.0, The Station Orchestra. 8.20, Choral Concert by Kennedy's Choir. 8.40, The Station Orchestra. 8.55, P. J. O'Connor Duffly reads his own Short Stories. 9.20, Vocal and Instrumental Music. 9.45, Concert by the All Ireland Instrumental Trio. 10.15, Irish Marches, by the Station Orchestra. 10.30, Time Signal, News Bulletin, Weather Report, and Close Down.

BARCELONA

RADIO BARCELONA; Call EAJ1; 860 kc/s, 348.8 metres; 8 kW.—6.0 p.m., Programme for Children. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations and Catalan Grammar Lesson. 8.0, Popular Music on Gramophone Records, and News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 9.5, Concert by the Station Orchestra. Popular March (Canals); Tendresse (Delmas); Zur Johannesnacht (Grieg); Sereenade from Don Giovanni (Mozart). 9.30, A Musical Comedy, relayed from Madrid (EAJ7). 11.0 (in an interval). News Bulletin.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist and Dopolavor Notes. 7.20, Giornale Radio. 7.30, Time and Announcements. 7.35 (approx.), Concert of Songs and Operetta Music. In the interval, Reading from The Book of Dreams (Veneziani). 9.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—4.0 p.m., Popular Music on Gramophone Records. 5.55, Time and Programme Announcements. 6.0, Talk. 6.40, Introductory Talk to the Following Transmission. 6.50, Der Wallenstein—Opera (Lortzing). 9.30 (approx.), News and Relay of European Stations.

BERLIN

KONIGS WUSTERHAUSEN, 183.5 kc/s, 1,635 metres; 40 kW.—12.45 p.m., News. 1.0, Gramophone Concert of Request Music relayed from Berlin (Witzleben). 2.0, Handwork for Children. 2.30, Weather and Exchange. 2.45, Reading: Die drei Schneiderinnen (H. F. Blunck). 3.0, Reading: Kaspar auf der Frühlingsweide (Hans Niggemann). 3.30, See Hamburg. 4.10, Talk: Bismarck and the Present Day. 5.0, Pianoforte Recital by Hermann Hoppe: Kinderszenen (Schumann); Polonaise in A Flat (Chopin). 5.30, Reading. 5.55, Weather for Farmers and Announcements. 6.0, The Quiet Hour: Have you a Sense of Humour? 6.30, A Poem. 6.35, Harpsichord Recital by Anna Barbara Specker: Passamezzo Variations (Scheidt); Suite (Casella): (a) Prelude, (b) Waltz, (c) Canon, (d) Polero, (e) Carillon, (f) Galop final. 7.0, See Langenberg. 8.0, Des tötten Bombergs Kumpanei—a Humorous Ghost Play (Ernst Keilburg). 9.0, Weather, News, and Sports Notes. 9.45, Weather Report for Slipping. 10.0, Programme from Munich. 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—3.0 p.m., Wind Instrument Concert, conducted by Johannes Fehsel: March, Jugend marschier (Hainstaengl); Overture, Stradella (Flotow); Waltz, Münchener Kind (Komzak); March, Am Freiheitsmorgen (Gudohr); Asehenbrüdel's Brantung (Dierker); Bayerischer Defiliermarsch (Scherzer); Overture, Light Cavalry (Suppe); Parade March (Joh. Strauss); Song Potpourri (Ratkay); March, Deutscher Pöhn (Hainstaengl); Potpourri, Jung Deutschland (Weinger). 4.0, Talk on the Oxford and Cambridge Boat Race. 4.10, Report of the Oxford and Cambridge Boat Race (on Gramophone Records). 4.25, Concert (contd.): March, Fridericus Rex (Radeck); Waltz, The Blue Danube (Joh. Strauss); Selection from Die Fledermaus (Joh. Strauss); March, Preussens Gloria (Pietke); Selection from La Traviata (Verdi-Schreiner); Volk aus Gewehr (Verdi-Schreiner); Die Fahne hoch (Wessel). 5.0, The Lost Atlantis—A Sketch (Herbert Ullrich). 5.50, Announcement. 5.55, The Witzleben Station informs its Listeners. 6.0, Topical Talk. 6.10, At Bismarck's House—a Radio Report relayed from Schönhausen. 7.0, April—a Variety Programme in Aid of the Winter Relief Fund, relayed from the Stadthalle, Magdeburg. 9.0, Weather, News, and Sports

SATURDAY

APRIL THE FIRST

PRINCIPAL EVENTS OF THE DAY:

NATIONAL

Running commentary on the Boat Race. Variety programme.

LONDON REGIONAL

Scotland v. England. Running commentary on Association Match from Glasgow. "Chopin," a play by W. Rooke-Ley and C. Martin.

MIDLAND REGIONAL

Orchestral and choral concert.

WEST REGIONAL

"The Radioptimists in Gum Trees," a revue by R. McDougall.

SCOTTISH REGIONAL

Three plays: "The Doctor's Bottle," "The Green Field," and "The Twisted Smile," by T. Kelly.

BELFAST

AT HOME

BRUSSELS (No. 1)

7.30 p.m. Operetta: "The Girl in the Taxi" (Gilbert), from Verviers.

BRUSSELS (No. 2)

7.30 p.m. Concert from the Conservatoire, Brussels.

HAMBURG HUIZEN

7.30 p.m. Bismarck Memorial Concert. 7.50 p.m. Operetta: "Ball im Savoy" (Abraham), from Groningen.

PALERMO PITTSBURGH

7.45 p.m. "La Casa innamorata" (Lombardo). 1.15 a.m. (Sunday). The Boston Symphony Orchestra, from New York.

STRASBOURG STUTT GART TOULOUSE

9 p.m. Concert of light music, relayed from Mulhouse. 7.15 p.m. Operetta: "Gipsy Love" (Lehar). 8 p.m. Extract from Operetta: "La Fille de Madame Angot" (Lecocq).

TURIN VATICAN CITY

7.45 p.m. Operetta: "Rompi-collo" (Pietri). 9.30 a.m. The Opening of the Holy Door. Relayed from St. Peter's, Rome.

Notes. 9.15 (approx.). Dance Music relayed from the Stadthalle, Magdeburg. 10.30, Dance Music Relay. 11.30 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODN.—See Oslo.

BORDEAUX-LAFAYETTE

PTT, 985 kc/s, 304 metres; 13 kW. 6.40 p.m., Sports Talk. 6.45, Talk on Economics. 7.0, News Bulletin, Exchange Quotations and Market Prices. 7.5, English Lesson. 7.20, News Bulletin. 7.30, Light Music on Gramophone Records. 8.0, Zaza—Play in Five Acts (Berton and Simon).

BRATISLAVA

1,076 kc/s, 297 metres; 14 kW.—3.10 p.m., Leopold Concert by the Station Orchestra. Conductor: J. Oldchizel. 4.10, See Prague. 4.20, Light Music on Gramophone Records. 4.45, Talk on Baku. 5.0, Concert of Light Music by the Poup and Thüringer Scharnadel Quartet. 5.45, Talk for Housewives. 6.0 to 6.10, See Prague. 6.25, See Moravská-Ostrava. 7.5, See Prague. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW. Relayed by Gleiwitz, 1,184 kc/s, 253 metres.—8.45 a.m., Navy Day, Launching of the Battle Ship, Deutschland, relayed from Wilhelmshaven. 9.30, See Vatican City. 10.15, Time, Weather, News and Tides. 11.0, Launching of the Second Battle Ship B, relayed from Wilhelmshaven. 11.30, Concert, relayed from Heilsberg. 12.5 p.m., Weather for Farmers, followed by Popular Music on Gramophone Records. 12.45, Time, Weather, News and Exchange. 1.5, Variety Music on Gramophone Records. 1.45, Programme arranged by the Post Office with Gramophone Records. 2.10, Agricultural Prices. 3.0, Programme to be announced. 3.30, See Hamburg. 4.30, Book Review. 4.50, Talk: The Town of Meran. 5.10, Talk on Wireless. 5.30, Gramophone Concert of Opera Music: Prelude to Aida (Verdi); Aria from Aida (Verdi); Bell Chorus from I Pagliacci (Leoncavallo); O mimi, tu più non torni from La Bohème (Puccini); Intermezzo from Madame Butterfly (Puccini); Aria from Rigoletto (Verdi). 6.10, See Berlin (Witzleben). 7.0, Weather for Farmers. 7.5, Puckball der Instrumente, Words by Fritz Joachim and Music by Hans Sattler. The Station Orchestra conducted by Ernst Prade. 7.50, Announcements. 8.0, Variety Programme relayed from Langenberg. 9.0, Time, Weather, News, Sports

Notes and Programme Announcements. 9.30, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW. 5.0 p.m., Theatre and Film Notes. 5.15, See Prague. 5.25, German Transmission: News and Light Music on Gramophone Records. 6.0, See Prague. 6.10, Talk on Sports. 6.25, See Moravská-Ostrava. 7.5, See Prague. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R.; 590 kc/s, 509 metres; 15 kW.—11 a.m., Concert by the Small Orchestra, conducted by P. Leemans: Overture, Die Frau Meisterin (Suppe); Suite, Conte d'avril (Widor); Serenade, Et moi aussi (Margutti); Selection from Romeo and Juliet (Gounod); Violin Solo, Gitare (Moszkowsky-Sarasate); Arabesque (Montagne Phillips); Selection from The Desert Song (Romberg). 12 Noon, Le Journal Parlé. 12.10, Concert relayed from the Grand Hotel, Antwerp. 4.0, Concert by the Radio Orchestra, conducted by C. Walpot: Hungarian March (Berlioz); Waltz, Moonlight on the Alster (Petras); Overture, Masaniello (Anber); Réverie for Violin and Orchestra (Vieuxtemps); Selection from Lakmé (Delibes); Intermezzo, Bruissement sous bois (Razigade); Symphonic Poem, Le Rouet d'Orphale (Saint-Saëns); Ballet Music from Le Cid (Massenet). 5.0, Talk: Walloon Folklore. 5.15, Concert by the Small Orchestra, conducted by P. Leemans: Petite Suite No. 2 (Gilsou); Nocturne (Brenta); Scenes enfantines (Strens); Poème for Cello (Guillaume). 5.45, The Marriage of Mlle. Plumme—Sketch (Jean de Coenne). 6.0, Concert (contd.): Aspiration for Strings (Dubois); Chevauchée fantastique (Brenta). 6.15, Talk on London. 6.30, Review of International Events, and Talk for Pigeon fanciers. 7.0, Variety Programme. 7.30, The Girl in the Taxi—Operetta (Gilbert), relayed from the Grand Theatre, Verviers. In the intervals at 7.55, Light Music on Gramophone Records; at 9.30, Le Journal Parlé; and at 9.40, Dance Music on Gramophone Records. 10.20, Light Music on Gramophone Records. 11 p.m., Close Down.

BRUSSELS (No. 2)

I.N.R.; 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—11.0 a.m., Concert relayed from the Grand Hotel, Antwerp. 12 Noon, Le Journal Parlé. 12.10 p.m., Concert by the Small Station Orchestra, conducted by P. Leemans: Overture, Der Böttestudent (Müllbacher); Serenata (Carenghi); Selection from Paganni (Lehar); Pianoforte Solos (MacDowell): (a) Prelude, (b) Witches' Dance; Waltz (Abraham); Hungarian Rhapsody No. 14 (Liszt). 4.0, Dance Music relayed from the St. Sauveur Palais

de Danse. 5.15, Talk on Charlemagne. 5.30, Recital of Songs to the Lute by M. Toetel. 5.50, Gramophone Records: La Péri (Lukas). 6.10, Talk: What the Flemish Tourist should see in Holland. 6.30, Film Review. 7.0, Viennese Music on Gramophone Records: Overture, Die Fledermaus (Joh. Strauss); Selection from The Count of Luxembourg (Lehar); Selection from The Merry Widow (J. Strauss); Selection from The Last Waltz (O. Strauss). 7.30, Concert by Farmer Pupils of the Conservatoire, relayed from the Conservatoire. In the intervals, Programme by A. Remes and Le Journal Parlé. After the Relay, Orchestral Concert relayed from the Mondria Hall, Antwerp. 11.0, Close Down.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW. Programme also relayed on 840 metres from 6.50 (approx.) to 11.0 p.m.—4.30 p.m., Jazz Music on two Pianofortes. 5.10, A Dialogue. 5.40, Choral Concert. 6.20, The Letter Box. 6.50, Verdi's Less Familiar Arias—Recital by Wilhelm Gregor: Arias from I due Foscari, Attila, Macbeth, Sicilian Vespers, and Don Carlos. 7.20, Talk. 8.0, Variety Programme. 10.0, Gypsy Concert from the Café Sportlich. CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—11.0 a.m., Time and Chimes from the Town Hall. 11.5, String Ensemble Concert, relayed from the Wivex Restaurant. 1.0 to 1.10, Interval. 1.30, Gramophone Concert. 2.0, Programme for Children. 2.30, Concert by Louis Prells Instrumental Ensemble. Soloist: Solveig Skalka (Songs); March (Kreuzberger); Cuban Love Song (Stothart-Hugh-Fields); Italian Serenade (Caludi); To maai maai vaere (F. Henriques); Potpourri, Fahnens Blau (Dostal); Manhattan Serenade (Alter); Novelty Foxtrot, Dancing Stars (Rawicz); Songs: (a) Serenade (Drigo); (b) Song (Spoliansky); (c) Ekko vil du svar mig (Enders); (d) Please (Rainger); (e) Det hele er et Eventyr (Muando); (f) Song from A Kiss in Spring (Kálmán); Pianoforte Novelty, Go on (Rawicz); Radio Napoli (Murzilli); Selection from Miss Denmark (Howalt); Ja, der Himmel über Wien (Fall); Waltz, Souvenir de Semmering (Lukesch); Anedito d'amore (Leoncavallo); Blue Flame (Grove); Annemarie (Alhoff-Hinz). 4.40, Exchange and Fish Market Prices. 5.0, Time and Chimes from the Town Hall. 5.5, Talk. 5.20, French Lesson. 5.50, Weather Forecast. 6.0, News. 6.15, Time Signal. 6.30, Talk: Young People and their Leisure Hours. 7.0, Chimes from the Town Hall. 7.5, Concert of Viennese Dances by the Station Orchestra, conducted by Fritz Mahler. March from The Gipsy Baron (Joh. Strauss); Waltz, Wienerbühl (Joh. Strauss); Galop, Kosakenritt (Müllbacher); Polka, Tritsch-Tratsch (Joh. Strauss); Military March No. 2 in G (Schubert); French Polka (Joh. Strauss); Waltz, Wiener Mad'ln (Ziehrer); Polka (Joh. Strauss). 7.40, Reading. 8.10, Folk Music by the Station Orchestra. Maroszeker Tánze (Kodály); Romanian Folk Dance (Bartok); Ritornella ostanata (Vogel); Russian Folk Melody (Ljadov). 8.50, The Artist and the Young Woman—Sketch (Franz Molnar). 9.5, News. 9.20, Orchestral Concert. 9.50, Dance Music relayed from the National Scala. In the interval at 11.0, Time and Chimes from the Town Hall. 11.15 (approx.), Close Down.

CORK.—See Athlone.

CRACOW

959 kc/s, 312.8 metres; 1.5 kW. 6.0 p.m., Miscellaneous Items and Announcements. 6.15, Review of Foreign Politics. 6.30, Close Down. See Warsaw. 12 Midnight (approx.), Close Down.

DANZIG.—See Heilsberg.

DITLSDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., Light Music on Gramophone Records. 11.30, News Bulletin. 11.45, Concert of Popular Music. 5.30 to 7.0, Programme in English by the I.B.C. Dancers-Walkers. B. McNabb, and F. Lamping announce. Times subject to alteration. 5.30, Concert of Popular Songs for 1st of Theatrical Listeners: You're calling me over the Sea; This is Heaven; Smiling Irish Eyes; La Campanella; On Top of the World; Dream Mother; Lily of Laguna; Old Vienna Moon. 6.0, Octet Concert for Doves Listeners: Excuse; The Picninnies' Picnic; Serenade; Twilight on the Waters; Trämmerli; The Butterfly; Immoresque; The Grasshopper's Dance. 6.30, Military Band Concert for Folkstone Listeners: Overture; Masaniello (Anber); March; Step lightly; In a Chinese Temple Garden (Kotelbey); Wiesbaden March; Sanctuary of the Heart (Kotelbey); En Promenade; Overture, Poet and Peasant (Suppe); Highland Scenery. 7.0, Local News and Popular Music on Gramophone Records. 7.30, Radio Gazette. 8.0, The Listeners' Hour and News. 9.0, Concert. 10.0, Célé Concert. 11.0 till Close Down, Programme in English by the I.B.C. Times subject to alteration. 11.0, International Broadcasting Club Concert of Special Request Items. Orchestra: Shamrockland; Please; Song: Come Back to Erin; Selection

APRIL 1st

SATURDAY

continued

from Florida; Song: The Rose of Trade; Selection from Chu Chin Chow; Rakes of Cloumel Jig; Let's put out the lights and go to sleep. 12 Midnight, Variety Concert: Sketches of Song: Baby won't you please come home?; Our little Nipper; Problems: I'm fading away; The Haunted Room; Show Boat Blues. 12.30 a.m. (Sunday), Popular Songs: My Fate is in your Hands; Melody Divine; Mona; The Skaters; Waltz; Darling Old Mother of Mine; Dark Red Roses; A Convict's Dream; Give me my Heart. 1.0, Concertina Solos: Lopeziana; Irish Medley; Marilyn; Scottish Reels; Harmonica Duet; Polly; Horrupie Medley; Bonnie Lass of Bon Accord; Orange and Blue. 1.30, Popular Songs: Around the Corner; Grammy's Old Arambair; I'm betting the Roll on Roamer; Xylophone Solos: (a) The Huntsman, (b) Handsome Gigolo; Down the Railroad Track; Little Brown Jug; Xylophone Solo: Looping the Loop. 2.0 (Sunday), Dance Music; To-day's the Day; Round the Marble Arch; By the Bend of the River; Paradise; Good-night, Vienna; Hurt; Just another little dream of you; Potpourri; Oh with the show; When the Band Goes Marching by; It ain't no Fault of Mine; I wonder why; Lullaby of the Leaves; Five minutes to Twelve; Bathing in the Sunshine. 2.57, I.B.C. Goodnight Melody. 3.0 (approx.). Close Down.

FLensburg. See Hamburg.

FLORENCE. See Turin.

FRANKFURT

1.157 kc/s, 255 metres; 17 kW. Relayed by Cassel, 1.220 kc/s, 245.9 metres. 2.30 p.m., Concert from Stuttgart. 3.50, Economic Notes. 4.0, Concert from Stuttgart. 5.15, Economic Notes. 5.25, Dialogue between August Winnig and Friedrich Westphal: The Development of the German Labour Movement. 5.50, Discussion between Werner Kutz and Paul Kramhals: What is meant by Organic Thought? 6.15, Time, Economic Notes. 6.30, Bismarck a Portrait. 7.15, See Stuttgart. 9.15, Time, News, Weather, and Sports Notes. 9.45, See Munich. 11.0 (approx.). Close Down.

FREDRIKSTAD. See Oslo.

FREIBURG. See Stuttgart.

GENEVA. See Radio-Suisse Romande.

GL.NCA. See Turin.

GLEIWITZ. See Breslau.

GOTEBORG. See Stockholm.

GRAZ. See Vienna.

HAMAR. See Oslo.

HAMBURG

(ch. in Morse), 806 kc/s, 372 metres; 15 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres. 3.30 p.m. (from Bremen), Wind Instrument Concert, conducted by Frede Niemann: March, Hurra die Garde (Blankenburg); Overture, Poet and Peasant (Suppe); Paraphrase on Ein Vöglein sang im Lindenbaum (Eberle); König-Karl-Marsch (Uprat); Selection from Lohengrin (Wagner); March (Hilferle); Hungarian Dance, No. 5 (Brahms); Potpourri, from the Rhine to the Danube (Rhode). 4.30, Talk: The Younger Generation. 4.55 (from Hanover), Extracts from Morgen ge's uns gut—Musical Play (Bomatky). 6.0, Talk: Australia as a Centre of the Air Traffic. 6.25, Weather Report. 6.30, Concert by the Station Chamber Orchestra, conducted by Gerhard Manzsch. Soloist: Gerhard Gregor (Organ). 7.30, Bismarck Memorial Concert. The Orchestra of the Hamburg Ex-Servicemen's Union, conducted by Spießberg. Addresses by Herr von Faberk and Herr Kieckbusch. 9.0, Time, Weather and News. 9.20, Discussion on the Protection against Gas. 9.30, Dance Music from the Sagedalen Festival. 10.20, Ice Report.

HAIIOVER. See Hamburg.

HEILSBERG

1,085 kc/s, 276.5 metres; 60 kW. Relayed by Danzig, 662 kc/s, 453.2 metres. 12.15 p.m., Gramophone Concert. In an interval at 12.20, News. 1.30, Programme arranged by the Post office with Gramophone Records. 2.0, Agricultural Prices and Exchange. 2.30 (from Danzig), Programme for Children. 3.0, Concert by the Small Organ Orchestra: Overture, Ali Baba (Cherubini); Second Italian Suite (Beethoven); Waltz, Sehnsucht (Reininger); Zwischen Hut und Dinstre (Lenschner); Finale from Ariadne, die Tochter der Luft (G. Bach); Potpourri, Magyar dalok (Lohar); Rheingüter-Walzer (Sandoböcker); Oriental Sketchn, Oase (Wismar); Klaviermann-Intermezzo (Lindemann). In an interval at 4.0 (approx.), Film Notes. 4.25, Talk: Making April Fools Now and the Past. 5.0, Programme Announcements. 5.10, Programme Announcements in Esperanto. 5.15, Agricultural Prices. 5.20, Ice Report. 5.25, Market Prices. 5.35, Talk: Why should the Experienced Salesman attend a Trade School? 6.0, Schubert Song Recital by Maria von Basilides: Die Mutter Erde; Nacht um Träume; Geheimnis; Die Fröhle; Nachtstücke; Liebe schwärmt; Die Liebe hat gelogen; An die Leute; Der Schmetterling. 6.30, Talk by Dr. Ferdinand

Neumann, the Founder of the East Prussian Deaf and Dumb Institute. 6.55, Weather and News. 7.0, See Langenberg. 9.30, Dance Music from Berlin (Witzleben). 11.30 (approx.), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). 11.40 a.m. till Close Down Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Concert by the Little V.A.R.A. Orchestra conducted by P. Duchtant. 1.55 p.m., Popular Music on Gramophone Records. 2.30, Technical Talk. 2.50, Trio Concert: Trio No. 7 (Mozart); Ducky Trio Op. 90 (Dvorák). 3.40, Concert by De Filidelfers conducted by Hugo de Groot. 4.10, Talk. 4.30, Programme of Songs by P. Collin and H. Stuuror. 4.45, Organ Recital by Johan Jong. Selections from The Geisha (Jones). Talk: Glow-worm Idyll (Siedel); Serenade (Laufer); Curly Locks (Powell). 5.20, Literary Talk. 5.40, Concert by De Filidelfers conducted by Hugo de Groot. Vielleicht bist du das grosse Glück (Erwin); Signora ans Spanien (May); Die Juggler (Grotzsch); Annabel Lee (Nelson); Atlantis (Robrecht); Russenfantasia (Walter); Waltz (Dur and Haydn); I don't want to go to Bed (Lapine); V.A.R.A. March (de Groot). 6.10, Concert by De Wielwaald Choir conducted by P. Tiggels. 6.40, V.R.O. Programme. 7.40, Demonstration by M. G. Cavallero of the Translating Machine, German-English Translaphonophone. 7.50, Ball in Saxe-Opera (Abraham) relayed from the Municipal Theatre, Groningen. In the interval at 8.50, Recitations. 10.20, News. 10.30, Concert by the V.A.R.A. Orchestra conducted by Hugo de Groot. Marche Ieraine (Gauner); In laus-chiger Nacht (Ziehler); Onchback Potpourri (Urbach). 10.55, Variety Items. 11.0, Concert (contd.). selection from Flotte Bursche (Suppe); Potpourri, From A to Z (Geiger); La petite Tonkinoise (Scott); Chinese Street Serenade (Sade); Selection from The Vagabond King (Friin). 11.40 (approx.). Close Down.

HORBY. See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 5.5 kW.—11.55 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert by the K.R.O. Orchestra, conducted by M. van 't Woud. 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, H.R.O. Programme. 4.40, Concert by the Harlem Salon Orchestra, conducted by J. Steffer. 6.0, Press Review. 6.20, Concert (contd.). 6.50, Talk. 7.10, Police Notes. 7.25, Sports Notes. 7.40, Concert by the K.R.O. Boys, conducted by P. Austenhover: Sevilla (Abraham); Die Fenster auf der Lang ist da (May); A Vision of Salome (Bodewalt Lampe); The Clock is playing (Blauwe); Ich bin in Stimmung (Boelle); Zigeuner, du hast mein Herz gestohlen (Eigen and Grothe); Comedy Overture (Keller-Bela); In Gasthaus im goldenen Stern (Rotter); For you, Rio Rita (Santenzen). 8.25, News Bulletin. 8.30, Bonhomme's Son-in-Law—Radio Play. 9.10, Concert (contd.): Das ist Wien, und es bleibt immer so (Stolz); Valse poudree (Popy); Ich weiß nicht wissen wer du bist (Stolz). 9.25, Recitations. 9.40, Concert (contd.): Madrid (Speyer); Wir tanzen Welt-schlager (Groschert); Was kann so schön sein (Brotzsky); Potpourri, Servus Wien (Dostad); Waltz, Donauwellen (Ivanovici); Tango, Oh Sofia (In Mann); Waltz (Rouberg); Song from Drei von der Kavalierie (Erwin). 10.40, Variety Music on Gramophone Records. 11.40 (approx.). Close Down.

INNSBRUCK. See Vienna.

JUAN-LES-PINS

NICE, 1,202 kc/s, 249.6 metres; 0.8 kW.—9.30 to 10.30 p.m., Programme in English by the I.B.C. Announcer: H. K. Hitebeck.

KALUNDBORG. See Copenhagen.

KIEL. See Hamburg.

KLAGENFURT. See Vienna.

KOSICE. See Prague.

LAHTI

167 kc/s, 1,795 metres; 10 kW. Relayed by Helsinki, 815 kc/s, 368.1 metres.—5.15 p.m., Concert by the Station Orchestra, conducted by Erkki Linko. 6.5, Songs by the Station Quartet. 6.30, Dramatic Programme. 7.0, Dance Music by the Dallapé Orchestra. 8.15 till Close Down, Dance Music, relayed from the Grand Hotel. 10.0 (approx.). Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert. In the interval at 1.0 p.m., News. 1.35, Popular Music on Gramophone Records. 2.30, Economic Notes and Time. 2.30, Programme for Children. 3.10, Talk: Touring in the Rhineland and Westphalia. 3.30, English Reading: (a) Choral and Mandoline Concert. Choir: (4) German Folk Song (Schulken), (b) French Folk Song, Marlborough (arr. Neubner), (c)

Swedish Folk Song, Spinn, spinn (arr. (Jungstr.), (d) English Folk Song, To a Brook (arr. Wagner); Mandoline Music: (a) Symphony in E Minor (Wigki), (b) Loredi Paraphrase (arr. von Stoyes); Choir: (a) Die Hütte (Kaum), (b) Dämmerung (Kaum), (c) Golgotha (Neumann); Mandoline Music: Waltz, Münchner Kindl (Kunzak); Choir: (a) Abend auf der Heide (Kuhnmann), (b) Deutscher Glaube (Nagler). 5.20, Talk on Retail Trade. 5.45, Weather, Time, Economic Notes and Sports Results. 6.0, Talk: The Strength and Weakness of Conscience. 6.20, Topical Talk. 6.30, Talk: Man and Society. 6.55, News. 7.0, Soap Bubble—an April Revue, arranged by Alfred Erich Stitz. 9.5, News and Sports Notes. 9.45, See Munich. 11.0 (approx.). Close Down.

LAUSANNE. See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. Relayed by Dresden, 941 kc/s, 319 metres.—12.15 p.m., Mandoline Concert, followed by Exchange Quotations. 1.0, Wireless Hints and Notes. 1.30, Programme for Children. 2.15, Review of Books. 2.45, Exchange Quotations. 3.0, Talk on Music. 3.30, Wind Instrument Concert from Berlin (Witzleben). 5.0, Dialogue for Young People: Are we still the Football Generation? 5.30, German Lesson for Germans. 5.50, A Modern Dictionary. 6.0, Extracts from Bismarck's Speeches. 6.15, Concertina and Accordion Concert. 7.0, Some Merry Birds from my Garden (Dr. Friedrieh Castelle). 7.30, Concert by the Zwickau Teachers' Choral Society. 8.15, Humorous Programme with Extracts from Roda-Roda, Fritz Müller-Partenkirchen, Wilhelm Busch, and Others. 9.5, News Bulletin. 9.20 (approx.), Concert of Light Music and Dance Music by the Emde Orchestra; Soloist, Fritz Kaulvers (Tenor); Waltz, Es war in Wien (Schattmann); Mazurka in G (Drlla); Gavotte (Rebber); Waltz, Abend in Wien (Krüger-Doman); Waltz from Frederica (Lohar); Potpourri, Fabelhaft (Schmidt-Hagen); Wenn mir der Rhein nicht wär' (Bungert); Margret am Tore (Jensen); Der Wirt vom Heidekrug (Krome); Overture, Gipsy Love (Lehar); Wiener Zügvaet (Santenzen); Selection from Frau Lima (Lüneke); Der Schwur (Bohm); Die Katzen und der Hausherr (Blüthenann); Der Papagei Löwe. 10.0, Tattoo relayed from Weimar. 10.30 (approx.). Close Down.

LINZ. See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW. 6.30 p.m., Talk on Philosophy. 7.0, Concert of Military Music. 9.0, Time and News. 9.5 (approx.), Concert of Light Music.

LWOW

783 kc/s, 381 metres; 16 kW.—6.10 p.m., Miscellaneous Items. 6.30, See Warsaw. 10.0, Concert by a Mandoline Band, conducted by Adam Epler. 11.0 (approx.). Close Down.

LYONS

LA DOUA, PTT, 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., Radio Gazette for Lyons and the South East. 7.35, Programme relayed from the Salle des Fêtes, Pont de Beauvoisin; Addresses and Musical Programme. News after the Programme.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 29 kW.—Programme for Listeners in the Canary Islands, Guinea and America. 6.0 p.m., Concert of Popular Music. 7.15, Talk. 7.30, Light Music. 8.0, to 10.30, Interval. 10.30, A Musical Comedy relayed from Madrid (EAG 7). 11.45, Radio Chronicle. 12 Midnight (approx.). Close Down.

MADRID

(EAG7), 707 kc/s, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations and Request Gramophone Records. 8.15, News Bulletin. 8.30 to 9.0, Interval. 9.0, Linguaphone English Lesson. 9.30, Chimes, Time Signal and Transmission of a Musical Comedy. Conductor: Alvarez Cantos. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO. See Stockholm.

MILAN. See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—5.25 p.m., Vocal Quartet Concert. 6.0 to 6.10, See Prague. 6.25, Military Band Concert, conducted by R. Klobouk. 7.5, See Prague. 9.15, Concert of Light Music by the Station Orchestra. 10.30 (approx.). Close Down.

MOTALA. See Stockholm.

MUHLACKER. See Stuttgart.

MUNICH

563 kc/s, 533 metres, 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—3.10 p.m., Orchestral Concert, conducted by

Erich Kloss: Ratisbona-Marsch (Schlenk); Ballet Overture (Kronner); Sommerheller (Göbler); Fantasia, Der ewige Verdi (Rhode); Waltz from Der arme Jonathan (Müller); Der Traum der Reserysten (Ziehler); Waltz, Nina-Nanna (de Michel); March, Unter dem Doppeladler (J. F. Wagner). In the interval, Running Commentary on the Oxford and Cambridge Boat Race, relayed from London. 4.50, Talk for Young People. 5.20, Chamber Music by the Poltroueri Quartet. Soloist: Udo Dammert (Pianoforte). String Quartet (Donizetti); Pianoforte Quartet in E Flat, Op. 47 (Schumann). 6.10, Wireless Notes. 6.25, Zither and Song Recital by August Pfel and G. Pfel; Wiener Künstler-Marsch (Schramm); Overture, Festklänge (Haase); Song: 's Herz in der Brust; Gavotte, Traum am Arbersee (G. Pfel); Song: Lob der Frauen (G. Pfel); Regner Grüsse (G. Pfel). 6.50, Wireless Notes. 7.10, Variety Programme: Part I: A Floating Island in the Atlantic; Part II: The Mediterranean dries up; Part III: Prohibition in Bavaria; Part IV: Return from the Moon. 9.20, Time, Weather, News and Sports Notes. 9.45, Serenade, conducted by Erich Kloss. 11.0 (approx.). Close Down.

NAPLES. See Rome.

NOTODDEN. See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—3.15 p.m., Sponsored Concert on Gramophone Records. 4.15, Programme for Children. 5.15, Folk Music and Songs to the Hardanger Fiddle. 5.45, Talk on Economics. 6.0, Announcements. Weather and News. 6.30, Talk. 7.0, Time Signal. 7.1, Concert by the Station Orchestra, conducted by Hugo Kramm: March, Stars and Stripes (Souza); Waltz (Lindsay); Russian Fantasia (Schierman); Piece (Svendsten); Talk for Tourists: Selection from The Mikado (Sullivan). 8.40, Weather and News. 9.0, Topical Talk. 9.15, Humorous Recitations. 9.45, Gramophone Dance Music. 11.0 (approx.). Close Down.

OSTFRSUND. See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—Transmits at intervals from 7.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 7.20, Sports Notes. 7.30, Time Signal and Announcements. 7.45, La casa innamorata—Opera in Three Acts (Carlo Lamberto). In the intervals: Book Review and Announcements. 9.55, News Bulletin.

PARIS

EIFFEL TOWER, FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals). 5.45 p.m., Talk on Music. 6.0, Le Journal Parle. 7.20, Weather Report. 7.30, Moi—Comedy (Labié) 9.0 (approx.). Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—5.45 p.m., Le Journal Parle. 6.0, Answers to Correspondence. 6.5, Variety Music on Gramophone Records. 7.0, Talk: The Event of the Week. 7.5, Theatre Review. 7.30, Chamber Music Concert. 8.10, Dance Music by the Sonora Orchestra. 10.0, News. 10.15 (approx.), Gramophone Dance Music. 11.0 (approx.). Close Down.

PARIS

RADIO PARIS; Call CFR, 174 kc/s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 6.30, Weather and a.m. Physical Culture (contd.). 6.45, Popular Music on Gramophone Records. 7.0, Press Review and Weather. 8.0, Concert by the Conservatoire Concert Society, relayed from the Conservatoire. 10.30 to 11.30, Interval. 11.30, Concert by the Radio Paris Orchestra: Herbin (Auvray); Selection from Ariane (Massenet-Mouton); Selection from Venus and Adonis (Fugere-Mouton); Selection from Monsieur de Pourceaugnac (Delsaux); Prelude to Faust (Gounod-Auvray); Prelude to Colombine (Busser-Delsaux); Selection from Don Quichotte (Massenet-Mouton); Selection from Mirella (Gounod-Borelli); Entrance from Robert Macaire (Chantier-Salabert); Overture, Pénélope (Fauré-Martin); Cadez Rous-elle (Foudrain); Cassandre (Gabriel-Marie-Oudine); Colombine (Meignard); Selection from Robert le Diable (Meyerbeer-Foudrain). In the intervals at 12 Noon, Exchange, News, and Weather, and at 12.30 p.m., Exchange. 1.0, Exchange. 2.0, Programme for Children. 2.45, Exchange and Market Prices. 2.50, Dance Music by the Radio Paris Orchestra. 3.30, Market Prices, Weather, Agricultural Report and Exchange. 6.0, Legal Talk. 6.20, Agricultural Talk. 6.45, Commercial Prices and News. 7.0, Songs of To-day and Yesterday; Variety Programme. 7.30, News and Weather. 7.40, Review by René Dorin. 7.45, Three Comedies: (a) Le serment d'Ilorace (Muzer), (b) Drôle de visite (Mycho), (c) Scenes des Tribunaux comiques (Moinaux). In the interval at 8.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres. (See Short-Wave List).—7.0 p.m., Programme to be announced. 10.30, Behind the Law—Tales of the Pennsylvania Police. 10.45, Little Orphan Annie, from New York. 11.0, Hotel Lexington Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.27, Strange Facts. 11.29, Temperature Report—Philadelphia Company. 11.30, A Recital by Bill and Alex of the Downtown Y.M.C.A. 11.45, Fields and Hall, from New York. 11.59, Time Signal. 12 Midnight, Homey and Old-Fashioned Quartet. 12.15 a.m. (Sunday), Adventures of Aunt Lulu—KDKA Players. 12.30, Atkinson String Ensemble. 12.45 to 4.0, New York Relay. 12.45, Townsend Murder Mystery. 1.0, American Taxpayers' League. 1.15, The Boston Symphony Orchestra. 3.15, Salon Singers. 3.30, Cuckoos. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Messages to United Presbyterian Missionaries. 5.20, Messages to Dwellers Far North.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—3.10 p.m., See Bratislava. 4.10, Talk on Economics. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Popular Music on Gramophone Records. 5.5, Agricultural Talk. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: A Musical Play (Haus Krása). 6.0, Chimes. 6.1, News Bulletin. 6.25, See Moravská-Ostrava. 7.5, Song Recital by Jarmila Novotna, relayed from the Lucerna Hall. In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.1, News Bulletin. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

RABAT

721.1 kc/s, 416 metres; 6 kW.—12.30 to 2.0, Concert conducted by Louis Roche: Carnaval (Guiraud); Kitten on the Keys (Gouffroy); First Movement from the Pastoral Symphony (Beethoven); Song; News and Weather; Violin Solo, Domy propos (Bivrier); Selection from Samson and Delilah (Saint-Saëns); Nocturne for Cello (Pierne); Selection from Les Saltimbanques (Ganne); Song; Minuet (Boccherini); Overture to an Operetta (Roche). 3.30, Educational Programme. 4.0, Variety Music on Gramophone Records. 5.0 to 7.0, Interval. 7.0, Arab Programme—Concert. 7.45, Le Journal Parlé. Weather and News. 8.0, Concert of Light Music: Selection from Lischen et Fritzchen (Offenbach-Tavani); Song from Véronique (Moussorg); Selection from Un bon garçon (Vain-Salabert); Tendre fleur du riant printemps from Les Saltimbanques (Ganne); Selection from Gri-gri (Lincke); Ce n'est pas la peine from Ciboulette (Hahn); Selection from White Horse Inn (Benatzky). 9.0, Variety Music on Gramophone Records.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; LAUSANNE, 442 kc/s, 680 metres; and GENEVA, 395 kc/s, 760 metres.—5.0 p.m. (from Geneva), Scientific Talk. 5.30 (from Geneva), Book Review. 6.0 (from Geneva), Weather Forecast, News Bulletin and Announcements. 6.30 (from Geneva), Talk on Films. 7.0, Concert by the Organum Accordion Club, with Yodel Solos, relayed from La Chaux-de-Fonds; Marche des Amoureux (Lamber); Hungarian Dances, Nos. 5 and 6 (Brahms); Yodel Solo, Choral and Trümpferei (Schumann); Yodel Potpourri of Russian Melodies (Wilke); Yodel Solos. 8.0, Concert of Light Music by the Station Orchestra, conducted by R. Echenard. 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva), Dance Music. 10.30 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Concert by the Station Quartet, followed by Choral Music on Gramophone Records. After the Concert, Dance Music. 1.0 a.m. (Sunday), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.15 p.m., Concert by the Estonia Musika Osakond Choir conducted by Julian Avik relayed from the Conservatoire. 7.5, News. 7.25, April Fools' Day Jokes. 8.0, Weather and News, followed by Dance Music. 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

APRIL 1st

SATURDAY

continued

ROME

(1 RO), 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Orchestral Concert. In the interval from 12.30 to 12.45, Giornale Radio and Exchange. 3.30, Programme for Children. 3.45, Report of the Royal Geographical Society and Giornale Radio. 4.0, Exchange and Announcements. 4.15, Reading. 4.30 to 5.15, Organ Recital by Franco Michele Napolitano, relayed from the Conservatoire of San Pietro a Marella. Naples: Prelude and Fugue in D (Mendelssohn); Three Choral Preludes (Bach); Passacaglia (Bach); Prelude, Fugue and Variations (Frank); Choral in E (Frank); Fantasia on a Choral (Bartolucci); Finale from the Second Symphony (Vienna). 6.0 (Naples), Shipping and Sports Notes. 6.10, Lesson in Morse. 6.20, Giornale Radio, Agricultural and Dopplavoro Notes. 7.0, Time, Announcements and Light Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 7.45, Relay from a Theatre. In the intervals: Review of Books, Literary Notes and News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WCY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF and by W2XAD (See Short-Wave List).—12 Midnight, El Tango Romantico, from New York. 12.15 a.m. (Sunday), Stock Reports. 12.50, Lady Fingers (Pianists). 12.45 till Close Down, New York Relay. 12.45, The World Today, by James G. MacDonald. 1.0, Viennese Programme. 1.30, The Economic World Today. 2.0, Blue Danube. 2.30, George Olsen's Orchestra. 3.0, B. A. Rolfe and his Orchestra.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; BASEL, 1,229 kc/s, 244.1 metres; and BERNE, 1,220 kc/s, 245.9 metres.—9.30 to 10.45 a.m., See Vatican City. 11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Berne), Light Music on Gramophone Records. 12.35 p.m., Weather and Exchange. 12.45 (from Basle), Wireless Notes. 1.0 (from Basle), Book Review. 1.30 (from Basle), Negro Spirituals on Gramophone Records. 2.0 (from Basle), Talk: The Legal Investigation of Street Accidents. 2.30 (from Basle), Chess Lesson. 3.0 (from Basle), Swiss Songs on Gramophone Records. 3.30 (from Basle), A Children's Visit to the Basle Station. 4.0 (from Basle), Folk Songs and Music on Gramophone Records. 4.30, Weather Report. 4.32 to 5.30, No Transmission. 5.30 (from Basle), Talk: Passenger Traffic on the Rhine between Cologne and Basle. 6.0, Chimes from the Zurich Churches, followed by Time, Weather and Market Prices. 6.15 (from Basle), Reading from Egmout (Goethe). 6.45 (from Basle), Potpourri of Student Songs, followed by Old Heidelberg—Play (Meyer-Förster). 8.40, Weather and News. 8.50 (from Basle), Dance Music on Gramophone Records. 10.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

RADIOTJANST (SASA), 689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.0 p.m., Weather Report. 4.5, Programme for Children. 4.30, Popular Music on Gramophone Records. 5.30, Variety Programme. 5.55, Song Recital by Signe Hammarström. 6.15, Weather and News. 6.30, Variety Programme. 7.30, Talk. 8.0, Old Dance Music. 8.45, Weather and News. 9.0, Modern Dance Music. 10.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.30 a.m., Haydn Anniversary Concert (Born April 1st, 1732); Conductor, Maurice de Villers; Quartet in B Minor for Strings; Overture, L'Isola disabitata; Gohsemmennett; Prelude and Air from The Seasons; Symphony No. 13; Air from The Seasons; Finale from the Symphony, La Idée. 11.45, News. 12 Noon, Time and Exchange. 12.5 p.m., Gramophone Concert of Variety Music. 1.0, Dance Music on Gramophone Records. 2.0 to 2.45, Interval. 2.45, Talk in French on Mendelssohn. 3.0, Gramophone Concert: Norwegian Dances (Grieg); Ballet (Egyptian (Luigini); Ballet Music from Sylvia (Delibes). 3.45, Legal Talk in French. 4.0, Pasteloup Sym-

phony Concert, relayed from the Théâtre des Champs-Élysées, Paris. 6.0, French Lesson. 6.15, Gardening Talk in French. 6.30, Time and News. 6.45, Gramophone Concert of Variety Music. 7.20, Lottery Results. 7.30, Concert by the Union Municipal Band, relayed from Barr; Soloist, M. Roskam (Cello); Overture, Il Seraglio (Mozart); Selection from The Girl in the Taxi (Gilbert); Serenade and Tarantella for Cello (Squire); Ballet Music from Coppélia (Delibes); Four Pieces from Au temps passé (Fernand); Hungarian Rhapsody for Cello (Popper); Overture, The Caliph of Bagdad (Boieldieu); Marche aux Flambeaux (Meyerbeer). 9.0, Concert relayed from the Café Moll, Mulhouse; Conductor, M. G. Jaquet; Soloists, G. Jaquet (Violin) and G. Cahrol (Pianoforte); Overture, Le roi d'Ys (Lalo); Waltz, Barcarolle (Waldteufel); Rhapsody for Violin and Pianoforte, Tzigane (Ravel); Selection from The Tales of Hoffmann (Offenbach); Serenade, Il Bacio (de Micheli); Intermezzo, En revant (Fassione); Sevillana (Fassione). 10.0, Quintet Concert, relayed from Radio Coloniate (Paris) (11,705 kc/s, 25.63 metres). 11.0 p.m. (approx.), Close Down.

STUTT GART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW. Relayed by Freiburg, 527 kc/s, 570 metres.—12.30 p.m. (from Freiburg), Orchestral Concert, conducted by Pfaff. 1.30, Time, News, Weather, and Programme Announcements. 1.45 (from Karlsruhe), Four German Poems (Maria Kahle). 2.0, Talk on Flowers. 2.30, Programme for Children. 3.30 (from Mannheim), Concert by the Mannheim Philharmonic Orchestra, conducted by Hans Leroy: Huldigungsmarsch (Wagner); Prelude to Hansel and Gretel (Humperdinck); Waltz, Wiener Zugvögel (Translaten); Overture, Peter Schmill (Weber); Ballet Music from Les petits mens (Mozart); Rendez-vous bei Lehar (Hrubý); Overture, Banditenstreich (Suppé). 5.0, Time and Sports Notes. 5.25, Talk on Alpine Scenery. 5.50, Talk in connection with Navy Day and the Commissioning of the Battleship. 6.15, Time, News, Weather and Snow Report. 6.30, A Picture Book without Pictures—A Literary and Musical Sequence (H. C. Andersen). 7.15, Gipsy Love Operetta in Three Acts (Lehar). 9.0, Time, News, Weather, Snow Report and Programme Announcements. 9.25, Franz Völker sings on Gramophone Records. 9.45, See Munich. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—5.15 p.m., Military Music. 5.30, Hommage à Schubert (Guilleminet), by the Symphony Orchestra. 5.45, Extracts from Sound Films. 6.0, Light Music. 6.15, Racing Results, Market Prices, and News. 6.25, Local News. 6.30, Music by an Argentine Orchestra. 6.45, Light Music. 7.0, Concert by a Viennese Orchestra: Deux yeux (Hlavenka); Selection from Corario (Ganne); Waltz from The Bird Fancier (Zeller); L'étoile polaire (Waldteufel); Waltz (Strauss); Brise argentine (Dacquin). 7.30, Opera Music. 7.45, Military Music. 8.0, Extracts from La fille de Madame Angot—Opera in Three Acts (Leopold). 8.40, Orchestral Music. Le pont d'Amphale (Saint-Saëns); Overture, Poul and Pasant (Suppé); Berceuse from The Fire Bird (Stravinsky). 9.0, Instrumental Music. 9.15, North African News. 9.30, Concert for Listeners in Morocco. 10.0, Request Concert. 10.30 to 11.0, Programme in English, by the I.B.C. to W. Brown-Constable announcing, Pianoforte Solos: Memories of Maurice Chevalier. 10.30, A Little Love Nest for Two; The Trumpeter; Paradise; Tameful Melodies; Miss Hoodigan's Christmas Cake; She was only Somebody's Daughter; Widdicombe Fair. 10.58 I.B.C. Good-night Melody. 11.0, Weather and Announcements. 11.5, Balalaika Music and Russian Songs. 11.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—4.10 to 6.35 p.m., See Turin. 6.35, Pianoforte Recital of Music by Pich-Mangiaglioli, with Commentary, Filigrana; Sarabandiera (Closa Impetuoso). 7.0 (approx.), till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—4.10 to 5.0 p.m., Orchestral Concert, conducted by Ugo Tansini. 5.35, Giornale Radio, Agricultural and Dopplavoro Notes. 6.5, Giornale Radio.

6.30, Time, Announcements and Tourist Report. 6.35, Gramophone Records of Popular Music. 7.0, Giornale Radio, Weather and Gramophone Records (cont'd). 7.30, Talk: Events and Problems. 7.45, Rimpollo—Operetta in Three Acts (Pietri). In the intervals, Review of Books and Notes on Art. After the Operetta, Giornale Radio and Dance Music from Florence. 10.30 (approx.), Close Down.

VATICAN CITY

15,120 kc/s, 19.81 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—9.30 to 10.45 a.m., Relay from St. Peter's, Rome, of the Opening of the Holy Door. Procession to the Singing of the Hymn "Veni Creator" by the Choir of the Sixtine Chapel, finishing at the Atrium of the Basilica. The Holy Father goes from the Throne to the Holy Door and knocks Three Times. At the First Knock he says: "Aperite mihi portas justitie, and the Choir sings: 'Ingressus in eas conturbet Dominus.' At the Second Knock: 'Introibo in domum tuam Domine, and the Choir: 'Alorabo ad te plenum sanctum tuum in timore tuo. At the Third Knock: 'Aperite mihi portas quantum nobiscum Deus, and the Choir: 'Qui fecit virtutem in Israel. Opening the Holy Door and Purification of the Threshold. The Chimes of St. Peter's. The Holy Father sings: 'Actiones nostras quaesumus. The Choir: 'Iubilate Deo omnia terra. The Holy Father sings: 'Deus qui per Moysen. Singing of the Hymn: 'Pange lingua gloriosum marem certaminis. The Holy Father enters into the Basilica. Singing of the Motet Ave verum Corpus natum. Showing of the Major Relics of Our Saviour's Passion. The Holy Father imparts the Apostolic Benediction. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—3.30 p.m., Mandoline Concert. Overture, La dame blanche (Boieldieu); Cavatina (Raff); Schön Rosmarin (Kreisler); Gavotte from Signon (Thomas); Tango, Meine Königin (Reinlich Bass); Spanish Waltz (Hellmesberger); Japanese Lantern Dance (Yoshitomo). 3.40, Talk: The Comic Paper. 4.5, Radio Report from the Danube River Port in Vienna. 5.5, Orchestral Concert. March, Kreuz und quer (Josef Litzelberger); Waltz, Wiener Boubons (Joh. Strauss); Overture, Orpheus in the Underworld (Offenbach); Potpourri, Wiener Leben (Ziehrer); English Waltz, In einem kleinen Cafe in Hernals (Herman Leopold); Potpourri, Perlen vom Lautensaal (Martin Uhl). 6.5, Sayings and Proverbs. 6.10, April Jokes. 6.25, Time, Weather, Sports Notes, and Programme Announcements. 6.35, Choral Concert, Deutsches Freilichtspiel (Eduard Göttsch); Mit gedämpfter Stimme (Karl Führieh); Violin Solo, Erlenfahrt (Joseph Reiter); Baritone Solo, Rosenlieb (Carl Lafite); Leuzungung (Max Egger). 7.0, Hary Janos Opera (Kodaly), by the Vienna Symphony Orchestra, the Vienna Opera House Chorus and the Vienna Boys Choir. News in an interval. 9.45, Announcements. 9.50, Gramophone of Light Music.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—10.55 a.m., Time Signal and Fanfare from the Tower of St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.10 p.m., Weather Forecast. 12.15, Educational Programme from Lwow (788 kc/s, 381 metres). 12.55 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Military Report. 2.35, Programme for Young People. 3.0, Light Music on Gramophone Records. 3.40, Religious Talk, relayed from Lwow. 4.0, Divine Service, relayed from the Castro Brama, Wilno. 5.0, Programme Announcements. 5.5, Light Music. In the interval, News. 6.0 to 6.20, Gardening Notes. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Concert by the Station Orchestra, conducted by S. Nawrot; Soloists, M. Fogg (Song) and E. Dubrovnik (Balalaika); March, The Washington Post (Souza); Suite (Friml); Songs; Balalaika Solos: (a) Melody (Andriev), (b) Potpourri (Dubrovnik), (c) Coniaryenne (Wieniawsky); Dance No. 2 from Der Jämon (Rubinstein); Sur les bords du ruisseau (Bouffé); American Intermezzo (Rektemwald); Songs; Dance Suite (Mracek); Melody (Svensson); Balalaika Solos: (a) Serenade (Gabriel-Marie), (b) Potpourri of Russian Songs (Dubrovnik); Polka (Dubrovnik); Waltz, L'étoile polaire (Waldteufel); Overture to a Revue (Lincke). In the interval, Sports Notes and Radio Journal. 9.5, Chopin Recital. 9.40, Talk: The Revolution of the Sound Film. 9.55, Weather and Police Announcements. 10.0, Dance Music. In the interval at 10.30, News for Members of the Polish Polar Expedition. ZURICH.—See Schweizerischer Landessender.

LYONS' COMPONENTS

Specified Again — this time for the "A.V.C. A.C. MONODIAL SUPER"

FOR THE A.V.C. RECEIVER CHASSIS:

1 VOLUME CONTROL, P5-250A, 250,000 ω	6 6
1 WIREWOUND POTENTIOMETER, 5,000 ω	5 6
15 "B.A.T." (Best-After-Test) FIXED RESISTANCES, 1-WATT, viz.: 2 \times 250 ω , 3 \times 1,000 ω , 1 \times 2,500 ω , 1 \times 10,000 ω , 1 \times 30,000 ω , 1 \times 50,000 ω , 1 \times 75,000 ω , 2 \times 100,000 ω , 1 \times 250,000 ω and 2 \times 1 Megohm : @ 10 $\frac{1}{2}$ d. each	13 1 $\frac{1}{2}$
1 "B.A.T." RESISTANCE, 2-WATTS, 4,000 ω	1 9
1 "B.A.T." RESISTANCE, 3-WATTS, 6,000 ω	2 9
1 "B.A.T." "Q.M.B." MAINS SWITCH, No. 729	1 9
1 "B.A.T." "Q.M.B." MAINS SWITCH, No. 728	1 6

FOR THE 2.5-WATTS A.V.C. POWER CHASSIS:

1 "B.A.T." 1-WATT RESISTANCE, 10,000 ω	10 $\frac{1}{2}$ d.
1 "B.A.T." 1-WATT RESISTANCE, 50,000 ω	10 $\frac{1}{2}$ d.
1 "B.A.T." 2-WATT RESISTANCE, 700 ω	1 9
1 "B.A.T." 2-WATT RESISTANCE, 1,000 ω	1 9

FOR THE 5-WATTS A.V.C. POWER CHASSIS:

1 HD.30, 30 ω "HUM-DINGER"	2 6
1 POWER RESISTANCE, 2,500 ω , 10 WATTS	7 6
4 "B.A.T." 1-WATT RESISTANCES AT EA. (1 ea. 100 ω , 5,000 ω , 10,000 ω and 50,000 ω)	10 $\frac{1}{2}$ d.
1 "B.A.T." 3-WATTS RESISTANCE, 500 ω	2 9

CONVERSION KIT:

(CONVERTS AN EXISTING MONODIAL FOR A.V.C.)

1 VOLUME CONTROL, P5-250A, 250,000 ω	6 6
10 "B.A.T." 1-WATT RESISTANCES, viz.: 2 \times 250 ω , 1 \times 2,500 ω , 1 \times 10,000 ω , 1 \times 50,000 ω , 1 \times 75,000 ω , 2 \times 100,000 ω and 2 1-Megohm	8 9
1 "B.A.T." 2-WATT RESISTANCE, 4,000 ω	1 9
1 "B.A.T." 3-WATT RESISTANCE, 6,000 ω	2 9

IMPORTANT NOTICE.

- "B.A.T." (Best-After-Test) PRODUCTS ARE GUARANTEED 100% BRITISH-MADE.
- "B.A.T." RESISTORS WILL EASILY DISSIPATE TWICE THEIR VERY NOMINAL POWER RATINGS.
- TO PAY MORE FOR RESISTANCES IS ABSURD AND UNNECESSARY—TO PAY LESS IS INVITING DISAPPOINTMENT.
- IF YOU WISH TO OBTAIN OUR LABORATORY TREATISE "OHMS LAW WITHOUT TEARS" (SECOND EDITION) SEND TO-DAY FOR YOUR FREE AND POST FREE COPY.

This 16-page 2-colour Art Brochure describes in non-technical language how to employ fixed resistances for all radio and allied applications. Numerous Figs., worked examples, colour-code, 4-Scale "A.B.A.C.," etc. This Brochure also contains a 2-page detailed, independent Laboratory Report, proving the great superiority of our World-Famous "B.A.T." 1, 2, 3 and 5-Watt Resistances.

If difficulty is experienced in obtaining our Products, write:—

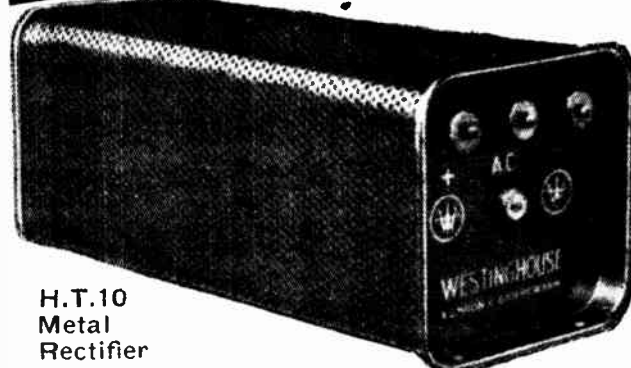
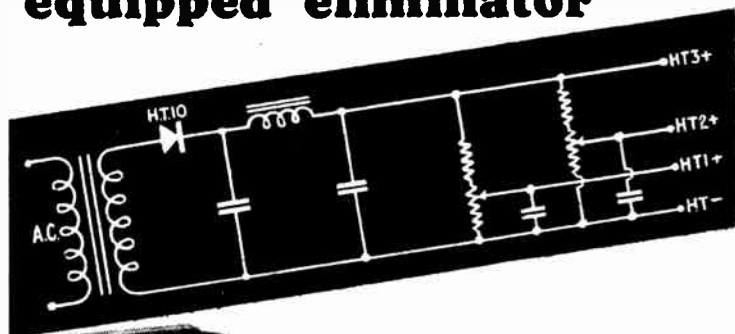
CLAUDE LYONS LIMITED,
76, OLDHALL ST., LIVERPOOL.
LONDON: 40, BUCKINGHAM GATE, S.W.1.

YOUR Q.P.P. RECEIVER

where the anode current is naturally varying, needs a reliable and constant source of high-tension current such as will be ensured by the use of a



METAL RECTIFIER equipped eliminator



H.T.10
Metal
Rectifier

If you intend to construct your own eliminator for this purpose, do it the Westinghouse Way, as shown in circuit above, using the reliable H.T.10 Metal Rectifier, which has been specially designed to meet these requirements, and to give good voltage regulation. Details, circuit and blue print of this eliminator—suitable for most Q.P.P. receivers employing either detector and push-pull, or detector, L.F. and push-pull—together with a copy of "The All Metal Way, 1933," our 44-page book on rectification—will be sent on receipt of coupon, together with 6d. stamp.

THE WESTINGHOUSE BRAKE & SAXBY SIGNAL CO., LTD.,
82, YORK ROAD, KING'S CROSS, LONDON, N.1.

COUPON

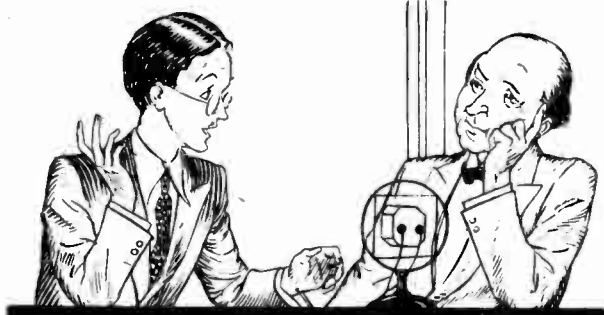
Westinghouse Publicity, 82, York Road, King's Cross, London, N.1.

Please send me "THE ALL METAL WAY, 1933," giving full particulars and prices of your rectifiers.

Name

Address

W.W.253



there will be a discussion between —

The quality of reproduction of the human voice is one of the acid tests of good reception—the piano is the other. With the ATONIC Supercharged Radio Battery, speech is vastly improved through the reserve of power which this Battery gives your set. It puts punch and power into every sound and syllable; a delicacy to every note.

ATONIC



THE SUPER-CHARGED RADIO BATTERY

is made by the same big battery Company that makes stationary batteries for B.B.C. Transmitting Stations. Could you have a greater guarantee of the wealth of experience and sound construction behind these unusually fine batteries? Give your set ATONIC and see how good it really is.

IF YOUR DEALER CANNOT SUPPLY
WRITE TO :—

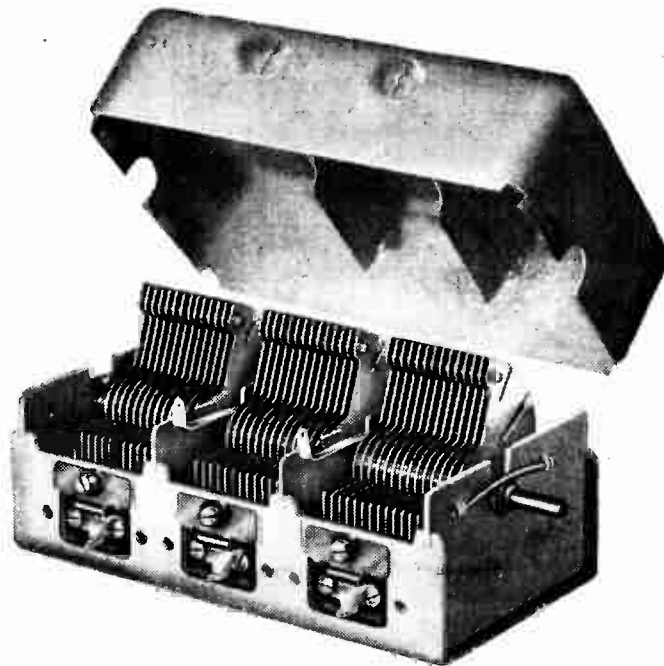
THE
ALTON BATTERY COMPANY
LTD.

ALTON HANTS

Telephone: ALTON 67.

Telegrams: "BATTERY, ALTON."

The only GANGED CONDENSER



specified for the FERROCART III

"The aim . . . has been to obtain a maximum of selectivity . . . and the choice of suitable components becomes quite limited . . . The sharper tuning renders ganging more critical and necessitates the choice of a ganged condenser with very accurately matched sections."—"Wireless World," Feb. 24

British Radiophone ganged condensers have been chosen exclusively for use in the "Ferrocart III" because they are the only condensers that will satisfactorily tune with the new Ferrocart coils.

British Radiophone Ganged Condensers are constructed with such precision that accuracy is guaranteed between any two sections to within 1 m. mfd. or 1/2% whichever is the greater. The main frames are built up from sheet steel so as to resist all tendency to distort. The best aluminium is used for the vanes, which are of substantial thickness and well spaced by a unique method eliminating any possibility of error. Patented spring loaded bearings fitted with keep plates are employed, preventing end play and ensuring smooth spindle rotation.

Specified for the "WIRELESS WORLD" FERROCART III

- Standard 3 gang Condenser with R.H. Trimmers complete with cover (type 341) 28/-
- Escutcheon and Disc Drive Assembly with pilot lamp attachment 5/-
- Volume control 10,000 ohms, type 474 5/-
- Q.M.B. Change-over switch, type 450 1/9

Write for full descriptive literature.

BRITISH RADIOPHONE LTD.
ALDWYCH HOUSE, ALDWYCH, LONDON, W.C.2.

Telephone: 1101born 6744.

RADIOPHONE GANGED CONDENSERS

The Wireless World

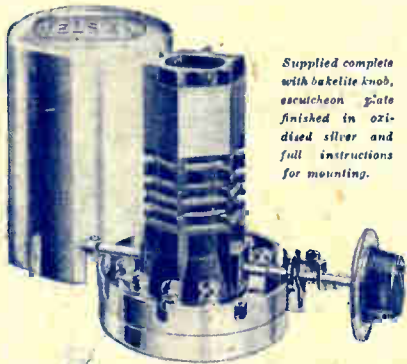
4^D

THE PRACTICAL RADIO JOURNAL

with Complete Foreign Programmes

Friday, March 31st, 1933.

TELSEN SCREENED TUNING COILS



Supplied complete with bakelite knob, eucalypton plate finished in oxidised silver and full instructions for mounting.

SUITABLE as aerial coils, or as anode coils, following a S.G. valve, giving selectivity comparable with a well-designed band-pass filter.

- Single Screened Coil 8/6
- Twin Matched Coils 17/-
- Triple Matched Coils 25/6



TELSEN RADIO COMPONENTS ARE 100% BRITISH

Announcement of the TELSEN ELECTRIC Co. Ltd., Aston, BIRMINGHAM

SONOCHORDE

offers the Most Complete Range of Dual Matched Speakers

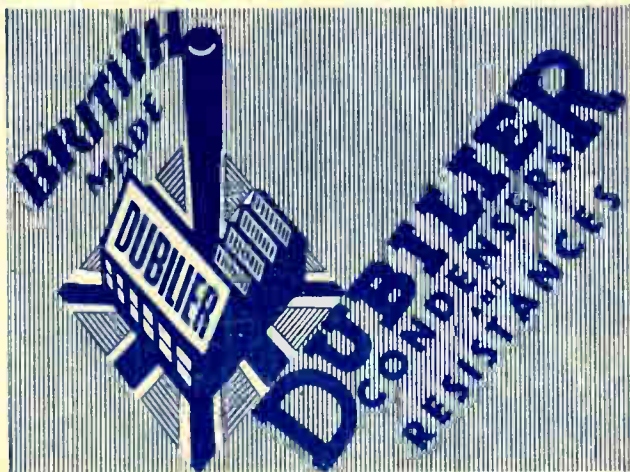
The latest range of Sonochorde Dual Matched Speakers includes models that will cover all requirements. Whether your set is D.C., A.C. or battery operated, there is a Sonochorde Speaker specially designed to meet your needs. Sonochorde moving coil speakers utilise the famous concentric disc suspension which ensures permanent alignment of the speech coil. Write to-day for complete list.



Sonochorde Reproducers Ltd.
1, Willesden Lane, London, N.W.6.

Phone: Maida Vale 6096 (5 lines).

Distributors in Belgium—Von der Becke and Marsily, 40, Rempart Kludorp, Antwerp, Belgium, under the trade name SONOVOX.



HIGHEST QUALITY AT LOWER PRICE LEVELS

Exclusively Adopted and Recommended by

★ **McMICHAEL, EDDYSTONE, G.E.C., PETO-SCOTT and PHILIPS, etc.**

M-L Anode Converters merely require connecting to a 6 or 12v. L.T. Battery to give smooth, constant H.T. and G.B. Current. Built to last, Models from £8.

Special Models for McMichael, G.E.C., Philips and Peto-Scott short-wave receivers £9.10.0. Eddystone Model £8.5.0.

GET H.T. CURRENT FROM L.T. BATTERY WITH



ANODE CONVERTERS

Write for Full Details post free from Dept. 1, ROTAX LTD., WILLESDEN, LONDON, N.W.10

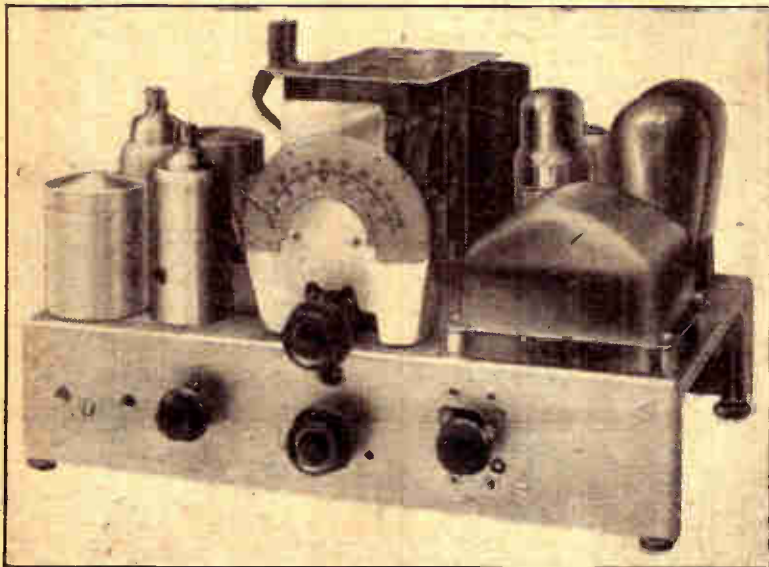


Models to suit all long- and short-wave receivers

ATWATER KENT

The CHASSIS of MODEL 137

In Atwater Kent Chassis construction nothing is missing that tends to better performance. Neither, for the sake of pandering to a passing (and quickly regretted) phase for "cheapness" is anything skimped.



Atwater Kent Model 137 in its various forms is made to please and to last. It is a 7-Valve super-het covering 200 to 2,000 metres. It embodies such refinements as **AUTOMATIC VOLUME CONTROL** (which enables the volume to be set to the exact level required and which definitely prevents fading), **THREE-POINT TONE SWITCH** (which allows a choice of tone either high or medium or low to suit individual tastes), **LARGE MAINS ENERGISED M/C LOUD SPEAKER** (which gives superb range of volume and tone), **FULL VISION ILLUMINATED DIAL** (which is calibrated in k.cs and compensated to ensure equal and adequate separation—9 to 10 k.c.—over the entire tuning range), **GRAMOPHONE PICK-UP SWITCH**, etc.

Ask your dealer for a demonstration. Illustrated literature gladly sent on request.

ATWATER KENT MODEL 137.

TABLE MODEL (as illustrated)	25 Gns.	RADIOGRAM	45 Gns.
CONSOLE	32 Gns.	RADIOGRAM with Automatic Record Changer	52 Gns.

(These prices do not apply in I.F.S.)

G. A. BRITAIN Ltd., Showrooms, 5, Hanover Sq., London, W.1.

Telephone: Mayfair 3466/7.

Also Sole Distributors for Irish Free State. Dublin Depot: 40, Dawson St.

DONT HAVE RADIO TROUBLES

The **DOCTOR OF RADIO** will solve them for you



The PIFCO Radiometer is as essential to the radio owner as a stethoscope is to the doctor. It diagnoses instantly the cause of any trouble, however abstruse. This amazing instrument ensures a new standard of radio reception by locating trouble in all its stages. Ask to see it demonstrated at your radio dealer's or electrician's. If any difficulty, send P.O. direct to—



PIFCO LTD.
High Street, MANCHESTER
or 150 Charing Cross Road,
London, W.C.2.

De Luxe Model for Electric Receivers, Mains Units and Battery Sets.

£2 : 2 : 0

Standard Model "All-in-One" Radiometer for Battery Sets only, as shown here. **PIFCO ALL IN ONE RADIOMETER**

If you prefer a Cork-Tipped Cigarette.. **SMOKE THE BEST**

PLAYER'S

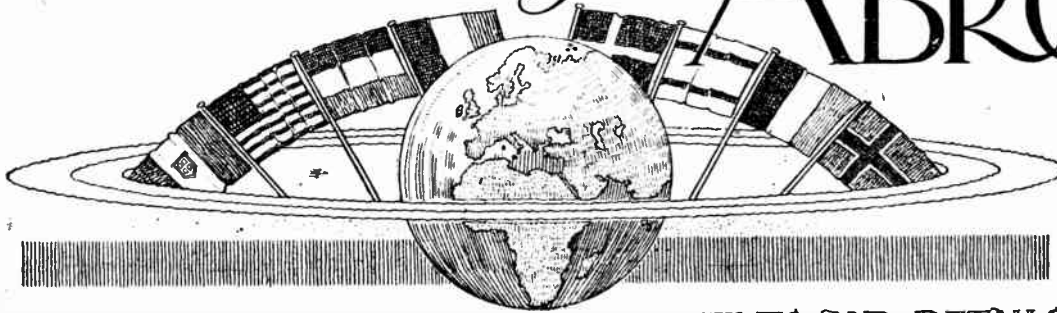
CORK TIPPED



10 for 6^d 20 for 11^d

The Wireless World

PROGRAMMES from ABROAD



BROADCASTING STATIONS
ARRANGED IN ORDER
OF WAVELENGTH

TIMES AND DETAILS OF
FULL WEEK'S FOREIGN
TRANSMISSIONS.

Metres.	Kc.	kW.	Station.	Tuning Positions.	Metres.	Kc.	kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)		453.2	662	0.25	Agen (France)	
1875	160	8.5	Huizen (Holland)		450.3	666	20	Madona (Latvia)	
1796	167	40	Lahti (Finland)		447.1	671		Paris, Ecole Supérieure, PTT (7.0 kW.); Bjukan (0.15 kW.), Notodden (0.08 kW.) (Norway) (relays Oslo).	
1725	174	75	Radio Paris, C.F.R.						
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (S.-W. Stn. DJA on 31.38 m.)		441.2	680	50	Rome, IRO. (S.-W. Station, 2 RO on 25.4 m.)	
1554.4	193	30	Daventry National		435.4	689	55	Stockholm, SASA (Sweden)	
1538	195	7	Ankara (Angora) (Turkey)		430.4	697	2.5	Belgrade (Yugoslavia)	
1481	202.5	100	Moscow, RV1 (Old Komintern) (Russia)		424.3	707	2	Madrid, EAJ7 (Union Radio). (After 7.9 p.m.)	
1446	207.5	13	Eiffel Tower, P.L. Paris		424.3	707	100	Moscow, Imini Stalina (Russia)	
1412	212.5	120	Warsaw 1 (Poland)		419.5	715	1.5	Berlin, No. 1, Witzleben (Germany)	
1380	217.5	100	Novosibirsk, RV6 (Russia)		416.4	720.5	5	Rabat (Morocco)	
1354.4	221.5	30	Motala (Sweden). (Relays Stockholm)		413	725	60	Athlone (Irish Free State)	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)		408.7	734	16	Katowitz (Poland)	
1275	235	0.5	Tunis-Kasbah (Tunisia)		408.8	743	25	Sottens (Radio Suisse Romande) (Switzerland)	
1230	244	0.6	Boden (Sweden). (Relays Stockholm)		398.9	752	25	Midland Regional	
1200	250	5	Stamboul (Turkey)		394.2	761	12	Bucharest (Roumania)	
1200	250	21	Reykjavik (Iceland)		389.6	770	120	Leipzig (Germany)	
1190	252	200	Luxembourg (Testing)		385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
1170	256	25	Tashkent, RV11 (Russia)		385.1	779	10	Stalino, RV26 (Russia)	
1154	260	7.5	Kalundborg (Denmark). (Relays Copenhagen)		381	788	16	Lwow (Lemberg) (Poland)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)		378.4	797	50	Scottish Regional (Falkirk)	
1083	277	60	Oslo (Norway)		372.2	806	1.5	Hamburg (Germany)	
1071	280	35	Tiflis, RV7 (Russia)		370.1	810.5	0.8	Radio, L.L. Paris	
1035	290	36	Kiev, RV9 (Russia)		368.1	815		Seville, EAJ5 (Union Radio) (1.0 kW.) (Spain); Bolzano (1.0 kW.) (Italy); Hel- sinki (10 kW.) (Finland) (relays Lahti); Khar'kov, RV20 (10 kW.) (Russia).	
1000	300	100	Moscow (Russia) (S.-W. Stn. on 50 m.)		365.8	821	0.7	Fredriksstad (Norway). (Relays Oslo)	
938	320	20	Kharkov, RV4 (Russia)		364.1	824	1	Bergen (Norway)	
857	350	100	Leningrad (Russia)		363.6	825	13	Algiers (Algeria)	
840	357	18.5	Budapest (Hungary)		360.6	832	60	Mühlacker (Stuttgart) (Germany)	
825	363.6	50	Sverdlovsk, RV5 (Russia)		355.9	843	50	London Regional (Brookmans Park)	
770	389	0.6	Ostersund (Sweden). (Relays Stockholm)		352.1	852	7	Graz (Austria). (Relays Vienna)	
760	395	1.3	Geneva (Switzerland). (Relays Sottens)		348.8	860	7.6	Barcelona, EAJ1 (Spain)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)		348.8	860	10	Leningrad, RV70 (Russia)	
690	434.6	1.5	Oulu (Uleaborg) (Finland)		345.2	869	11.5	Strasbourg, PTT (France)	
680	441.2	0.6	Lausanne (Switzerland). (Relays Sottens)		341.7	878	35	Brno (Brunn) (Czechoslovakia)	
574.7	522	0.7	Hamar (Norway). (Relays Oslo)		338.2	887	15	Brussels II, Velthem (Belgium). (In Flemish)	
574.7	522	7	Ljubljana (Yugoslavia)		335	896	5	Cadiz (Spain)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (Relay Stn.)		334.4	897	1.9	Poznan (Poland)	
568.1	528	2	Grenoble (France)		331.5	905	50	Milan (Italy). (Relays Turin)	
566	530	0.25	Hanover (Germany). (Relays Hamburg)		328.2	914	60	Poste Parisien (France)	
563	533	16	Wilno (Poland). (Relay Station)		325	923	60	Breslau (Germany)	
560	536	0.25	Angsburg (Germany). (Relays Munich)		321.9	932	10	Göteborg (Sweden). (Relays Stockholm)	
560	536	1.5	Kaiserslautern (Germany). (Relays Munich)		318.8	941	0.25	Dresden (Germany). (Relays Leipzig)	
558.6	537	1	Tampere (Finland). (Relays Helsinki)		318.8	941	1.5	Naples, INA (Italy). (Relays Rome)	
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)		315.8	950	1.6	Marseilles, PTT (France)	
542	554	10	Sundsvall (Sweden). (Relays Stockholm)		312.8	959	1.7	Cracow (Poland)	
537.6	558	3	Palermo (Italy)		312.8	959	10	Genoa, IGE (Italy). (Relays Turin)	
533	563	60	Munich (Germany)		309.9	968	1	Cardiff	
525	571	15	Riga (Latvia)		307	977	0.7	Radio Vitus (Paris). (S.-W. Stn. on 43.75 m.)	
517	580	15	Vienna (Rosenhügel) (Austria)		307	977	0.75	Zagreb (Yugoslavia)	
509	589	15	Brussels No. 1, Velthem (Belgium). (In French)		304	986	13	Bordeaux Lafayette, PTT (France)	
500.8	590	20	Florence, IPI (Italy). (Relays Turin)		301.5	995	50	North National (Manchester)	
496.8	605	1.2	Trondheim (Norway)		298.8	1004	11	Tallinn (Esthonia)	
488.6	614	120	Prague, No. 1 (Czechoslovakia)		296.1	1013	20	Hilversum (Holland). (7 kW. before 4.40 p.m.) (Exchanges wavelengths with Hilversum every three months.)	
480	625	50	North Regional (Manchester)						
472.4	635	60	Langenberg (Germany)		293.5	1022	0.7	Limoges, PTT (France)	
465.8	644	1.5	Lyons la Doua, PTT (France)		293.5	1022	2.6	Kosice (Czechoslovakia)	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland)		291	1031	10	Viiipuri (Viborg) (Finland). (Relays Helsinki)	
			Sau Sebastian, EAJ8 (0.6 kW.); Pori (1.0 kW.) (Finland); Danzig (0.5 kW.) (relays Heilsberg); Klagenfurt (0.5 kW.) (Austria) (relays Vienna); Porsgrund (0.7 kW.) (relays Oslo); Tromsö (0.1 kW.) Bodo (0.5 kW.) (Norway); Upsala (0.15 kW.) (Sweden) (relays Stockholm).		288.3	1040	50	Scottish National (Falkirk)	
					286	1049	0.8	Bournemouth (Relay Station)	
								Montpellier (France)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Table with columns: Metres, Kc., kW, Station, Tuning Positions, Metres, Kc., kW, Station, Tuning Positions. Lists various international broadcasting stations and their technical specifications.

PRINCIPAL SHORT-WAVE STATIONS.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent G.M.T.)

Table with columns: Metres, Kc., Call Sign, Station, Tuning Positions, Metres, Kc., Call Sign, Station, Tuning Positions. Lists principal short-wave stations with call signs and transmission times.

FOREIGN SUNDAY PROGRAMMES

APRIL THE SECOND

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL

Bach's St. Matthew Passion, Part 2, from the Queen's Hall.

LONDON REGIONAL

Service from Royal Masonic School, Bushey. Orchestral concert.

MIDLAND REGIONAL

Organ and pianoforte recital.

NORTH REGIONAL

Service from Jesmond Presbyterian Church.

WEST REGIONAL

Choral programme from Bristol Cathedral.

SCOTTISH REGIONAL

Service from St. Cuthbert's Church, Edinburgh.

BELFAST REGIONAL

Service from St. Patrick's Cathedral, Armagh.

ABROAD

BRUSSELS (No. 1)

2 p.m. Oratorio: "Les Béatitudes," by César Franck, relayed from Liège.

BRUSSELS (No. 2)

9.30 a.m. Wagner concert from Antwerp.

COPENHAGEN

11 a.m. Concert conducted by Fritz Mahler.

HILVERSUM

2.10 p.m. Concert from Amsterdam, conducted by Dr. W. Mengelberg. 7.55 p.m. Marek Weber's Orchestra.

LYON-LA-DOUA

3.45 p.m. Oratorio: "The Messiah" (Handel), from the Salle Rameau.

PRAGUE

8 p.m. Concert conducted by Otakar Jeremias with Stanislav Novak, solo violin.

ROME

4 p.m. Symphony concert from the Augusteo. 7.45 p.m. Operetta: "The Toreador" (Caryl and Mackton).

STRASBOURG

2 p.m. Concert from the Conservatoire, Paris.

TURIN

7.45 p.m. Operetta: "Rompicollo" (Iietri), from the Scala, Milan.

VIENNA

7 p.m. Operetta: "Rip Van Winkle" (Planquette). 8.35 p.m. "Frühling" (F. Lehár).

5.0, Concert by the Station Orchestra, conducted by F. Dyk. 6.0, Programme, relayed from **Danska Stianvica**. 7.30, See **Prague**. 9.20, Light Music and Dance Music, relayed from the Carlton Hotel. 10.0 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 60 kW.; and **GLEWITZ**, 1,184 kc/s, 253 metres.—9.0 a.m., Catholic Service and Sacred Concert, relayed from the Kreuzkirche. 10.30, Talk with Readings: The Annunciation of the Virgin Mary in German Literature. 11.0, See **Hamburg**. 1.0 p.m., News Bulletin. 1.10, The Rhymed Unrhymed by Tranggott Conrad. 1.25, Agricultural Talk. 1.40, Talk: The Breeding of Beavers. 2.0, Talk: The Sudan as a Tourist Resort. 2.50, So treiben wir den Winter aus—a Folk Song Play for Children (Heibert Grützer). 3.20, Talk: Henry the Lion. 3.45, Concert by the Station Orchestra, conducted by Franz Marszalek. 5.30, Humorous Variety Programme with Walter Simlinger. 6.0, Weather Forecast and Sports Report. 6.30, Talk: The Polish Army. 7.0, See **Hamburg**. In an interval, News Bulletin. 9.0, Time, Weather, News, Sports Notes and Programme Announcements. 9.30, Dance Music from **Berlin (Witzleben)**. 11.0 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—11.5 a.m., Concert by the Station Orchestra, conducted by B. Bakala: Overture in Italian Style (Schubert); First Peer Gynt Suite, Op. 46 (Grieg); Polonaise from Eugene Onegin (Tchaikovsky); Waltz (Kern); Melody (Weis); March, Entry of the Gladiators (Fucik); Selection from The Goldsmith of Toledo (Offenbach); Potpourri (Morena). 12.30 p.m., Agricultural Talk. 2.0, See **Bratislava**. 2.15, Light Music on Gramophone Records. 4.30, Concert by a Women's Choir. 5.0 to 5.45, German Transmission. Concert of Sacred Music. 6.0, Military Band Concert, conducted by F. Zita. 7.0, See **Prague**. 9.20, See **Bratislava**. 10.0 (approx.), Close Down.

BRUSSELS (No. 1)

1.N.R., 590 kc/s, 503 metres; 15 kW.—9.0 a.m., Concert by the Small Station Orchestra, conducted by P. Lecmans. 9.50, Gramophone Records (Schumann): (a) Impromptu in B. (b) Allegro from the Sonata in G, Op. 78. 10.5, Concert (cont'd.). 11.0, Concert of Light Music by the Radio Orchestra, conducted by F. André. 12.0 Noon, Le Journal

Parlé. 12.10 p.m., Concert relayed from the Grand Hotel, Antwerp. 12.30, Le Camelot—Sketch (Blandin). 12.40, Concert (cont'd.). 2.0, Les Béatitudes—Oratorio (Franck), relayed from the Conservatoire, Liège. 4.15, Dance Music from the St. Sauveur Palais de Danse. In the interval at 4.30 (approx.), Football Results. 5.15, Gramophone Records of Light Music. 5.30, Violin Recital of Polonaise: Polonaise in D (Trindelli); Polonaise brillante in A (Wieniawsky); Ballade and Polonaise (Vieuxtemps). 6.0, Gramophone Records. 6.15, Religious Address. 6.30, Le Journal Parlé. 7.0, Lehrstück—Antata (Hindemith), by the Radio Orchestra, conducted by F. André, and Soloists. 7.35, The Man with the Case—Comedy in One Act (Guillot). 8.0, Concert by the Radio Orchestra, conducted by M. André: Waltz, Tales from the Vienna Woods (Strauss); Ballet with Chorus, The House Party (Poulenc). 9.0, Le Journal Parlé. 9.10, Hot Jazz, with Commentary. 9.30, Concert by the Max Aelys Orchestra, relayed from the Ancienne Belgique. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish. 9.0 a.m., Extracts from the Quartet in E Flat, Op. 127 (Beethoven), on Gramophone Records. 9.30, Wagner Concert, relayed from the Royal Flemish Theatre, Antwerp. 11.0, Concert relayed from the Grand Hotel, Antwerp. 12 Noon, Le Journal Parlé. 12.5 p.m., Concert by the Radio Orchestra, conducted by Franz André. 4.0, Concert by the Symphony Orchestra, conducted by Arthur Menlemans: Overture, Semiramis (Rossini); Selection from La Traviata (Verdi); Nocturne from Cocorico (Ganne); La Source (Delibes); Conte pastoral amusant (Godard); Suite from Greta Green (Gairaud); The Butterfly Chase (Kéler-Béla); Waltz, Gold and Silver (Lehár). In the interval at 4.15, Sports Notes. 5.0, Organ Recital by Louis Joos, relayed from the Carmelite Church; Prelude to Parsifal (Wagner); Cantabile (Franck); Berceuse (Vierne); Alla brave (Bach). 5.30, Concert by the Little Orchestra, conducted by Pierre Lecmans. 6.15, Religious Address by the Reverend Father Gestel. 6.30, Music Review by Paul Gilson. 7.0, Concert by the Symphony Orchestra, conducted by Arthur Menlemans: Overture, The Mastersingers (Wagner); Concerto for Pianoforte (De Jong); Soloist: The Composer: Fête Polonaise (Chabrier). 7.40, Sketch (Thiry). 8.0, Concert (cont'd.): Scènes napolitaines (Massenet); Flemish Songs; Eleyx for Orchestra and Organ (De Roo); Italian Caprice (Tchaikovsky); Flemish Songs;

ATHLONE

725 kc/s, 413 metres; 60 kW.; and **CORK**, 1,337 kc/s, 224.4 metres.—8.30 p.m., Time Signal. 8.31, Concert by the Station Orchestra. 9.0, Soprano Solos by Violet Pearson. 9.20, The Station Orchestra. 9.45, Traditional Fiddle Music by Frank O'Higgins. 10.0, Anglo-Irish Songs by M. O'C. Maguire. 10.15, Pipe Solos. 10.30, Programme of Ceilidhe Music, relayed from the Maunson House. 11.0, Time Signal, News, Weather Report and Close Down.

BARCELONA

RADIO BARCELONA, Call EAJI, 860 kc/s, 348.8 metres; 8 kW.—11.0 a.m., Chimes from the Cathedral and Weather Forecast. 11.15, Municipal Band Concert, conducted by Juan Lamote de Grignon. 1.0 p.m., Light Music on Gramophone Records. 1.30 (in an interval), Theatre Notes. 2.0, Film Review, followed by Concert by the Station Sextet. 3.0, Programme for Hospitals and other Benevolent Institutions. 4.0 to 5.30, Interval. 5.30, Agricultural Talk and Light Music on Gramophone Records. 6.0, Dance Music relayed from the Ritz Hotel. 7.45, Orchestral Concert with Songs by Concepcion Gallo. 9.0, An Opera, on Gramophone Records. 10.45, Chess Lesson. 11.0 (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—9.45 a.m., Agricultural Notes. 10.5, Sacred Music, relayed from the Church of St. Domenico. 10.30, Bible Reading. 12 Noon, Giornale Radio. 12.10 p.m., Light Music on Gramophone Records. In the intervals at 12.55, Weather Reports; and at 1.0, Time Signal and Announcements. 1.15 to 2.0, Interval. 2.0, International Football Match, Italy v. Switzerland, relayed from **Geneva**. 7.0, Sports Notes and Giornale Radio. 7.30, Time Signal and Announcements. 7.45 (approx.), Variety Concert: Soloists: Anna Molten (Soprano) and Lino d'Angelo (Baritone). In the interval, Readings. 9.30, Light Music from the Grande Hotel Moderna. 9.55, News.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 183.5 kc/s, 1,635 metres; 60 kW.—10.30 a.m., See **Leipzig**. 11.0 to 1.0 p.m., See **Hamburg**. In the interval at 11.55, Nauen Time Signal. 1.0, Talk for Parents. 1.30, Programme for Children. 2.0, Reading. 2.30, See **Langenberg**. 3.15, Reading from the Poems of Maria Franziska Forst. 3.30, Talk on Great Philosopher, Fichte. 4.0, See **Rome**. 4.35, Talk on Art: Black and White Illustration. 5.0, Spitzweg Bilder, Op. 101 (Hugo Kann). 5.30, Talk: Problems of National Education. 6.0, Calling out the Fire Brigade—an Instructive Sketch (Meta Briv). 7.0, Hans Franck reads from his own Works. 7.35 (approx.), See **Langenberg**. 9.0, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Dance Music and Light Music from **Berlin (Witzleben)**. 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—10.30 a.m., See **Leipzig**. 11.0 to 1.0 p.m., Programme from **Hamburg**. 1.0, An Interview with Pupils of the Bismarck College. 1.30, Talk for Young People: A Trip through Ice Land. 2.15, Talk: Does Illness have any bearing upon Character? 2.30, Orchestral Concert, conducted by Werner Schmidt-Boelcke. In the interval: Programme of Folk Songs. 5.0, Talk: The Joys and Sorrows of a Motorist. 5.40, Report on International Affairs. 6.0, Pastoral Symphony No. 6 in F, Op. 68 (Beethoven), by the Berlin Wireless Orchestra, conducted by Hans Pfitzner. 6.45, Sports Notes. 6.55, Announcement. 7.5, Concert by a Mandolin Orchestra, conducted by Bruno Heuze. 7.30, Concert by the Berlin Wireless Orchestra, conducted by Bruno Seidler-Winkler: Overture, Preciosa (Weber); Ländliches Tanzidyll, Op. 13 (von Vignau); Symphonic Poem, Orpheus (Liszt); Entry of the Guests into the Wartburg, from Tannhäuser (Wagner); Two Pieces (Wolf-Ferrari): (a) Overture, Susanna's Secret, (b) Intermezzo, from The Jewels of the Madonna; Russian Dances (Bulharian); Ballet Music from Faust (Gounod). 9.0, Weather, News, and Sports Notes, followed by Gramophone Report on the Final of the Competition for the German Hockey Association's Silver Shield, and Concert of Dance Music and Light Music. 11.0 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BRATISLAVA

1,078 kc/s, 279 metres; 14 kW.—2.0 p.m., Programme, relayed from **Banska Stianvica**.

Marche héroïque (Saint-Saëns). 9.0, Le Journal Parlé. 9.10, Light Music on Gramophone Records. 10.0, Concert by the Penguin Club.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—8.0, Programme for Workers. 8.20, Religious Programme. 9.15, Military Band Concert. 10.0, Light Music on Gramophone Records. 11.0, Radio Journal. 11.15, Gramophone Records (cont'd.). 2.0 p.m., Programme for Parents. 3.0, Romanian Music and Light Music by the Jean Marco Orchestra. 4.0, (in an interval), Radio Journal. 5.0, Talk: 5.20, Talk on Agriculture and Zoology. 6.0, Time signal. 6.2, Concert by the Station Orchestra: Two Marches from Alceste (Gluck); Second Suite from L'Arlesienne (Bizet); American Suite (MacDowell). 6.30, Talk. 6.45, Concert by a Viennese Quartet. 7.15, Concert by the Station Orchestra (cont'd.). Selection from Eine Nacht in Venedig (Strauss); Violin Solo, The Canary (Polakini); Waltz, Appassionato (Ketybey). 7.45, Radio Journal.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW.—Also relayed on 840 metres from 5.0 to 11.0 p.m. 10.15 a.m., Protestant Service, followed by Concert of Classical Music by the Opera House Orchestra. 1.0 p.m., Variety Music on Gramophone Records. 2.0, Agricultural Talk. 2.45, Programme for Schools. 3.15, Concert, relayed from the Hubay Palace. 4.30, Talk by Bishop Zubravec. 5.20, Song Recital. 6.0, Sports Notes. 6.15, The Rose of Stamboul—Operetta in Three Acts (Fall). 8.45, Talk. 9.0, Reading, followed by Music by the Karl Bura Cigány Band, relayed from the Hotel Metropole.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and **KALUNDBORG**, 260 kc/s, 1,153 metres; 7.5 kW.—11.0 a.m., Town Hall Chimes. 11.2, Orchestral Concert, conducted by Fritz Mahler, relayed from the Axelborg Studio. 12 Noon, Talk in English: The Universities of Oxford and Cambridge. 12.20 p.m., Talk in German. 12.40, Talk in French. 1.30, Gramophone Concert of Popular Music. 1.55, Programme for Children. 2.25, Nineteenth Popular Concert from the Axelborg Studio: The Orchestra conducted by Emil Reesen; Soloist: Margherita Flor (Songs). 4.0 (also on **Skamlebaek**, 9,520 kc/s; 31.51 metres). Divine Service from the Christianborg Castle Church. 5.20, Talk. 5.50, Weather and News. 6.15, Time Signal and Sports Notes. 7.0, Town Hall Chimes. 7.2, Military Band Concert. 7.25, Reading (Hans Andersen). 8.5, Concert (cont'd.). 8.30, Copenhagen Tales in Song. 8.55, Concert (cont'd.). 9.25, News Bulletin. 9.35, Concert (cont'd.): Danish Music. 10.0, Dance Music from the Wives Restaurant. In an interval at 11.0, Town Hall Chimes. 11.30 (approx.), Close Down.

CORK.—See Athlone.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., Radio Gazette and News Bulletin. 11.30, Concert for Invalids. 4.0 to 8.0, Programme in English by the I.B.C., C. Danvers-Walker, B. McNabb, and F. Lamping announcing. 4.0, Programme for Children. 4.30, Children's Club Concert. 5.0, International Broadcasting Club Concert for Durham Listeners: Rakoczy March (Berlioz); Song, All through the Night (Traditional); Short Talk by Malcolm Dillon, Esq.; Song: Temple Bells (Woodforde-Finden); The Empire (Tullip); Air from Les Millions d'Harlequin (Drigo); Song: March of the Musketeers (Friml); Organ Solo: Bird Songs at Eventide (Coates); Song: A Beggar can sing the Song of a King (Guest); Medley of British Songs; Xylophone Solo: Carnival of Venice (arr. Gaston); Song: Wid Re Moon, Moon, Moon (Cook); Fairy on the Clock (Myers); Song: A Banjo Song (Homer); Regimental March of the Durham Light Infantry. 6.0, Military Band Concert: Scottish Patrol (Williams); Valse triste (Sibelius); Carry on (Dundas); Review of the Troops, General Mulcahy March (Brace); Wood Nymphs (Contes); The Standard of St. George (Alford). 6.30, Song: Captain Mac (Sanderson); Molly Bawn (Lover); Hits of all Countries (arr. Connelly); Glorious Devon (German); Silent o'Moyle (arr. Hughes); Jus' keepin' on (Phillips-Carter); Potpourri of Intermezzos (arr. Ancliffe). 7.0, Organ Recital: The Butterfly Waltz (Raiton); Trees (Rasbach); On Wings of Song (Mendelssohn); Roses of Picardy (Haydn Wood); Less than the Dust (Woodforde-Finden); The Match Parade (Webb); Home (Steeden); The White Dove (Grey). 7.30, Concert of Dance Music: This is the rhythm for me; Knave of Diamonds; Sitting in the Dark; F along, Kentucky Moon; Have you

APRIL 2nd

SUNDAY

continued

been lonely?; Willow, weep for me; Fit as a Fiddle. 8.0, Concert of Opera and Operetta Music. 9.0, Songs: I'm playing with fire (Berlin); Brother, can you spare a dime? (Harburg); A Ghost of a chance (Washington); Pianoforte Solo: Everyone says I love you (Kalmar); Her name is Mary (Sievier); You're still my Sweetheart (Yellen); Just an Echo in the Valley (Woods); Pianoforte Solo: Butterflies in the Rain (Reaves and Myers). 9.30, Concert of Light Music: Valse des Alouettes (Drigo); Baritone Solo: Onaway awake Beloved (Cowen); Song: Try a little tenderness (Woods); Parade of the Tin Soldiers (Jessel); Xylophone Solo: Fairy Tiptoe (Frederick); Contralto Solo: Silvered is the Raven Hair, from The Mikado (Sullivan); Old Music Hall Memories. 10.0, Orchestral Concert: Classical Selection (arr. Ewing); One Fine Day, from Madame Butterfly (Puccini); Autumn Leaves (Voglein); Old Spanish Song (Aubert); Träume (Wagner); Waltz Song, from La Bohème (Puccini); Shepherd's Hey (Grainger). 10.30, Popular Half-Hour: A Boy and girl were dancing; Jack in the Box; Young and Healthy; The World is so small; Someone to care for; The Ghost Walk; Rhapsody in Blue; Selection from The Show Boat. 11.0, Concert of Light Music; Waltz, Tales from the Vienna Woods (Strauss). Songs: (a) Little Grey Home in the West (Lohr); (b) Roses of Picardy (Haydn Wood); Vienna, Vienna, Songs; (c) The Last Rose of Summer (Moore); (d) Take a Pair of Sparkling Eyes, from The Gondoliers (Sullivan); Waltz, Frühlingsstimmen (Strauss). 11.30, Hawaiian Band Concert; Hawaiian Hotel (Traditional); Duet: Makin' Wicky Waeky down in Waikiki (Hoffmann); Kilina (Traditional); Manilla Moon (Gaston); Duet: Song of the Islands (King); Hawaiian Love (Gaston); My Waikiki Mermaid (Traditional); Palikiko Blues (Traditional). 12.0 Midnight, Club Concert for Durham Listeners: Rakoczy March (Berlioz); Song: All through the Night (Traditional); A Short Talk by Malcolm Dillon, Esq.; Song: Temple Bells (Woodford Pinden); The Empire (Tulip); Les Millions d'Harlequin (Drigo); Song: March of the Musketeers (Friml); Organ Solo: Bird Songs at Eventide (Coates); Song: A Beggar can sing the Song of a King (Guest); Medley of British Songs; Xylophone Solo: Carnival of Venice (arr. Gaston); Song: Wid de Moon, Moon, Moon (Cook); Fairy on the Clock (Myers); Song: A Banjo Song (Momer); Regimental March of the Durham Light Infantry. 1.0 a.m. (Monday), Variety Music: Big Pond Medley; Cooking Breakfast for the one I love; Au revoir; The Solicitor; When a woman loves a Man; Oh, Sebastian; I found you. 1.30, Songs: Good-bye to all that; Make the best of it; It happened in Monterey; Pianoforte Solo: Popular Song Medley; I need a good kind of man; Treasure; Song of the Dawn. 2.0, The London Fire Brigade; Three's a Crowd; A Bedtime Story; Sweethearts for ever; Let's all sing like the Birdies sing; Pu-leeze, Mr. Hemmingway; My romance; I guess I'll have to change my Plan; Till to-morrow; How deep is the ocean?; Marching along together; Just because you're young; Let's all dance the Polka; You'll always be the same Sweetheart. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—10.30 a.m., See Leipzig. 11.0, See Stuttgart. 12 Noon, See Langenberg. 1.30 p.m., Agricultural Talks. 2.30, Programme for Children. 3.30, See Stuttgart. 5.0, Sacred Concert, relayed from Trier Cathedral; Address by Dr. Bornwasser, Bishop of Trier. 5.50, Talk: Germany's Decision. 6.20, Sports Notes. 6.30, Reading: The Holy Coat of Trier (Cörres). 7.0, The Daughter of the Regiment—Comic Opera in Two Acts (Donizetti), relayed from the State Theatre, Cassel. 9.20, Time, News, Weather, and Sports Notes. 9.45, Serenade from Langenberg. 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 800 kc/s, 372 metres; 1.5 kW. Relayd by Bremen, 1,112 kc/s, 263.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—10.30 a.m., See Leipzig. 11.0 (from Hanover), Concert, relayed from Landesheater, Brunswick. 11.55, Time and Weather. 12 Noon (from Flensburg), Orchestral Concert. 1.0 p.m., Programme for Children. 1.35, Reading of Ballads (Hans Friedrich Binck). 2.0, Military Band Concert, relayed from the Stadthalle, Schwerin. 3.15, Running Commentary on the German Hockey Match for the Silver Shield, relayed from Vossberg. 4.0, Literary Talk with Reading: Xanthippe. 4.15 (from Bremen),

Choral and Mandoline Concert. 5.5, Reading (Fritz Görries). 5.30, The St. Matthew Passion (Oratorio) (Schütz), relayed from the Church of the Holy Spirit, Kiel. 6.30, Talk on Sail-planing. 6.40, Sports Report. 6.55, Weather. 7.0, Dance Music from Opera—Concert by the Philharmonic Orchestra, conducted by Richard Richter, relayed from the Musikhalle; Soloist: Inge Burmester; Overture, and Baccanale from Tannhäuser (Wagner); Gavotte from Alessandro Stradella (Plotow); Gingerbread Waltz from Hansel and Gretel (Humperdinck); Salome's Dance from Salome (R. Strauss); Eli's Dance from The Merry Wives of Windsor (Nicolaï); Waltz from La Bohème (Puccini); Dance Song from S. Jettis Roi (Adam); Peasant Dance from Der Freischütz (Weber); Clog Dance from Czar and Carpenter (Lortzing); Ballet Music from Act One of Alessandro Stradella (Plotow); Waltz from Der Rosenkavalier (R. Strauss). In the interval, News. 9.0, Time and News. 9.10, Topical Talk. 9.20, Dance Music, relayed from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.; and DANZIG, 662 kc/s, 453.2 metres.—11.0 a.m. to 1.0 p.m., Programme from Hamburg. 1.0 p.m., Talk on Chess. 1.30, Talk for Young People. 2.0 (from Danzig), Concert by the D.H.V. Male Voice Choir. 3.15, Concert of Old and new Operetta Music by the Little Station Orchestra, conducted by Eugen Wilken. Sports Notes in the interval. 5.0 (from Danzig), Talk. 5.30, Meditations (Reinhold Braum). 6.0, Song Recital with Guitar Accompaniment. 6.25, Talk: The Romantics and Ourselves. 6.45, Sports Notes. 7.0, See Vienna. 9.20 (approx.), News and Sports Notes, followed by Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—9.40 to 11.40 a.m., Programme of the Liberal Protestant Radio Society (V.P.R.O.). 9.40, Organ Solos. 9.45, Programme by the V.C.J.B. Verse-Speaking Choir, relayed from Amsterdam. 10.5, Organ Solos. 10.10, Divine Service, relayed from Bloemendaal. 11.40 to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Orchestre (A.V.R.O.). 11.40, Time Signal. 11.41, Talk on Pictures. 12.10 p.m., Concert by the Wireless Orchestra, conducted by Nico Treep, with Interludes by a Mixed Choir. 1.40, Weekly Book Talk. 2.10, Concert by the Concertgebouw Orchestra, conducted by Dr. Willem Mengelberg, relayed from the Concertgebouw, Amsterdam; Soloist: Marguerite Long (Pianoforte); Sixth Symphony (Beethoven); Baron Hop Suite (Voorvolen); Pianoforte Concerto (Ravel). 3.40, Radio Play. 4.25, Variety Music on Gramophone Records and Sports Notes. 4.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 4.40, Programme for children. 5.40, Concert by the V.A.R.A. Orchestra, conducted by Hugo de Groot. In the interval at 6.30, The Adventures of Messrs. Wakker and Trospehit. 6.50, Orchestral Concert, conducted by H. de Groot; Soloist: H. v. Bremen (Soprano). 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time Signal. 7.41, News Bulletin. 7.55, Concert of Light Music by Marek Weber and his Orchestra. In the interval at 8.40, Recitations. 9.25, Popular Music on Gramophone Records. 9.40, Concert by the Pupils of Rose Schindberg and the Wireless Orchestra, conducted by Nico Treep; Overture, The Secret Marriage (Cimarosa); Dignare (Handel); Aria from Giulio Cesare (Handel); Meiner allerliebsten Schönen (L. C. Bach); Wenn nach der Stürme Toben (Bach); Die Seile des Weltalls (Mozart); Trio from Orpheus (Glinka); Wiedergeliebte (Bräunlin); O Tod, wie bitter bist du (Bräunlin); Gramophone Records: Songs from The Huguenots (Meyerbeer); Duet from L'enfant prodige (Debussy); Printemps que commence, from Samson and Delilah (Saint-Saëns); Sanguilla (Bizet); Quartet from Rigoletto (Verdi). 10.55, Light Music on Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—12.10 to 4.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 12.10, Sextet Concert. 1.50, Religious Address. 2.10, Concert by the Sempere Crescendo Orchestra, conducted by A. van Nisseele; Soloist: H. C. Willems (Pianoforte). 3.40, Programme for Invalids. 4.40 to 7.25, Programme of the Christian Radio Society (N.C.R.V.). 4.40, Divine Service, relayed from the Reformed Church, Leiden. 6.10, Organ Recital by A. Smink. 6.40, Sacred Music on Gramophone Records. 7.25 till Close Down, K.R.O. Programme. 7.25, Talk. 7.50, Football Results. 7.55, Concert by the K.R.O. Boys, conducted by P. Lustenhouwer; Soloist: J. Mossel (Songs). 8.40, News. 8.45, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen; Soloist: Anna El Tur (Songs); Selection from Prince Igor (Borodin); Prélude à l'après-midi d'un faune (Debussy); Air from L'enfant prodige (Debussy); Selection from

The Damnation of Faust (Berlioz). 9.25, Song Recital by Anna El Tour. 9.40, Orchestral Concert (contd.); Overture, A Life for the Czar (Glinka); Air from Christinas Eve (Rimsky-Korsakov); Suite, La Source (Debussy); Valse fantastique (Glazunov). In the interval, News. 10.20, Epilogue by the Small Choir, conducted by J. Pickkers. 10.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,202 kc/s, 249.6 metres; 0.8 kW.—7.30 p.m., Radio Concert. 7.50, News Bulletin. 8.0, Radio Concert. 9.30, Programme in English by the I.B.C. H. K. Hitchcock announcing.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—10.30 a.m., See Leipzig. 11.5, Extracts from Bismarck's Speeches. 11.35, Music Talk. 12 Noon, Orchestral Concert, conducted by Eysoldt. 1.30, Shorthand Lesson. 1.50, Talk: The Stars in April. 2.10, Agricultural Talk. 2.30, Maundy Thursday in Liturgical Song—Sacred Concert by the Knechtsteden Abbey Choir, with Introductory Talk and Commentary by Dr. Dominkus Johnner, Prior of the Benedictine Abbey of Beuron; Responsorium; Gradual, Introit, Offertory and Communion from the Mass for Maundy Thursday; Antiphon; Domine, tu mihi lavas pedes; Processional Hymn; Pange lingua. 3.30, Running Commentary on the West German Handball Championship. 4.0, See Stuttgart. 5.0, Talk: The Minorities Question. 5.20, Radio Report on Gramophone Records. 5.40, Reading: Der letzte Tag (Hans Franck). 6.6, The World on Gramophone Records: Folk Songs from Caruthia. 6.25, Talk: The German Population in Bulgaria. 6.45, Sports Report. 7.0, Hubert Pfeiffer Memorial Concert by the Bürgerhaus Choir, the Velbert Concert Society and Soloists. 7.35, Legends and Fairy Tales in German Opera—Concert by the Station Orchestra, conducted by Kühn, Soloists: Hansen (Soprano), Woelke (Baritone), Krenshand (Tenor), and Strienz (Bass). Commentary by Paul Heinrich Gehly. Overture, Oberon (Weber); Tenor Aria from Der Freischütz (Weber); Bass Aria from Der Freischütz (Weber); Ballet Music from Undine (Lortzing); Baritone Aria from Hans Heiling (Marschner); Overture and Senta's Ballad from The Flying Dutchman (Wagner); Siegfried's Rhine Journey (Wagner); The Legend of the Grail from Lohengrin (Wagner); Suite from Hansel and Gretel (Humperdinck). 9.5, News and Sports Notes. 9.20, Concert of Light Music and Dance Music, conducted by Eysoldt. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—10.30 a.m., Vergnügte Ruh, beliebte Seelenlust—Cantata (Bach), by the Municipal and Gewandhaus Orchestra and Soloists. 11.0 to 1.0 p.m., Programme from Hamburg. 1.0, Weather and Time Signal. 1.5, Programme Announcements. 1.25, Agricultural Hints. 1.30, Chamber Music by the Dessau String Quartet; String Quartet (Franz Meyer-Ambros); String Quartet in One Movement, Op. 13 (Robert Keldorfer). 2.10, Reading. 2.45, Hugo Kaun Song Recital by Arthur Fleischer. 3.20, The Golden Pitcher—a Fairy Tale (E. Th. A. Hoffmann, arranged as a Radio Play by Dr. H. Harksen). 4.50, Concert of Light Music by the Leipzig Symphony Orchestra, conducted by Willy Steffen. 5.30, Das Liebesmahl der Apostel—a Biblical Scene for Male Voice Choir and Orchestra (Richard Wagner). 6.0, Topical Reports: (a) The Launching of the Battleship Deutschland and of the Second Battleship. (b) The Final of the Competition for the German Hockey Association's Silver Shield. 6.50, Topical Talk. 7.0 till Close Down, See Vienna. In the interval at 9.20 (approx.), News. 11.0 (approx.), Close Down.

LINZ.—See Vienna.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—3.45 p.m., The Messiah—Oratorio (Handel), relayed from the Salle Ramon, Conductor: M. Witkowski. After the Oratorio, Programme relayed from Paris, and News Bulletin. 10.0 (approx.), Close Down.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 20 kW.—10.30 p.m., Concert of Light Music. In the interval at 10.45, Humorous Talk. 11.35, Talk. 11.40, Popular Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—8.0 to 9.0 a.m., Topical Re-

view. 11.30, Concert by the Madrid Municipal Band, conducted by M. Villa. 2.0 p.m., Chimes, Time Signal, Theatre Notes and Concert by the Artys Orchestra. 4.0 to 7.0, Interval. 7.0, Chimes and Dance Music relayed from the Ritz Hotel. 8.30 to 10.30, Interval. 9.30, Chimes and Time Signal. 9.35 (approx.), Pianoforte Recital by Carolina Paczenik, Interlude by Ramon Gomez de la Serna, Song Recital by Jose Auguri, and Music by a Cuban Orchestra. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW. 10.0 p.m., See Prague. 11.5, See Brno. 12.30 to 12.45 p.m., See Prague. 2.0, See Bratislava. 3.15 to 5.45, See Prague. 6.0, See Brno. 7.0, See Prague. 9.20, See Bratislava. 10.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayd by Augsburg and Kaiserslautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres.—10.30 a.m., See Leipzig. 11.0, Concert by the Station Orchestra, conducted by Karl List; Soloist: Josef Köhler (Cello). 12.5 p.m., Time, Weather, and Programme Announcements. 12.15 (from Nürnberg), Agricultural Talk. 12.35, Gramophone Concert of Popular Music. 1.30, Chess Lesson. 2.15, Wireless Hints. 2.35, Programme for Children. 2.55, Orchestral Concert, conducted by Ezech Kloss, with Humorous Interlude in Palatine Dialect. 4.20, Der ledige Hof (The Lone Farm)—Radio Play in Five Scenes (Ludwig Anzengruber). 5.50, Immortal Words and Works—Literary and Musical Programme. 6.30, Weather and Sports Notes. 6.40, Talk: Among the Farmers of the Palatinate. 6.55 (approx.), Popular Concert by the Munich Philharmonic Orchestra, conducted by Willy Haedel-Christiansen, relayed from the Tonhalle; Ballet Music from Prometheus (Beethoven); Three Movements from the Septet in E Flat, Op. 20 (Beethoven); Organ Piece (Beethoven); Symphonic Poem, Francesca da Rimini (Tchaikovsky); Italian Caprice (Tchaikovsky); Overture and Opening Song from Prince Methusalem (Joh. Strauss); Czardas from Die Fledermans (Joh. Strauss); Wiener Blut (Joh. Strauss). In the second interval, News. 10.0 (approx.), Time, Weather, and News, followed by Serenade from Langenberg.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayd by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 448.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—9.15 a.m., Weather and Road Report. 9.50, Chimes and Divine Service Relay. 4.0 p.m., Concert of Operetta Music, relayed from the Hotel Continental. 5.0, Talk. 5.30, Sacred Song Recital by Dagny Sandvik. 6.0, Parliamentary Review. 6.15, Weather and News. 6.30, Chamber Music. 7.0, Time Signal. 7.2, Programme dedicated to Mandal—Talks and Concert of Norwegian Music, Songs and Dances. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Orchestral Concert: Selection from Rigoletto (Verdi); Summer Evening (Heyerdahl); Prelude (Granados); Blakkokker (Liljefors); Norwegian Peasant Dance (Bordi); Mock Morris (P. Grainger).

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW. 9.25 a.m., Bible Reading. 9.40, Sacred Music. 10.5, Agricultural Talk. 11.45, Giornale Radio. 12.0 noon, Concert by the Sunny Babel Quartet. 12.30 p.m. (in an interval), Time Signal, Announcements and Weather Forecast. 1.0 to 4.30, Interval. 4.30 to 5.0, Light Music on Gramophone Records. 7.0, Dopplavoro Announcements and Giornale Radio. 7.20, Sports Talk. 7.50, Time Signal and Announcements and Light Music on Gramophone Records. 7.45, Symphony Concert, conducted by E. Russo; Scenes africaines (Massenet); Truffico Bottechino (Respighi); Symphony, No. 9 (Beethoven). In the interval, Talk. 9.0, Song Recital. 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW.—Time Signals (in 2,650 metres), at 9.26 a.m., and 10.26 p.m. (Preliminary and 6-dot Signals)—12 Noon, News Bulletin. 12.15 p.m., Weather Report. 12.30 to 1.30, Concert by Jean Ibsen and his Orchestra; Part I: Cigony Music; Part II: L'archet (Mozart); Ich liebe dich (Grieg); Sons les tilleuls (Massenet); March from The Ruins of Athens (Beethoven). 5.45, Le Journal Parlé. 6.45, Programme for Children. 7.20, Weather Forecast. 7.30, Gramophone Concert: Part I: Extracts from (1) The Huguenots (Meyerbeer), and (b) La Juive (Halévy); Part II: Variety Music. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—8.45 a.m., Bible Reading. 9.0, News. 9.5 to 10.40, Sponsored Concerts. 10.40, Sponsored Gramophone Concert. 11.15, Extracts from Sound Films—Sponsored Programme. 11.45, Sponsored Talk. 11.50, Half-an-Hour of Fantasy by Paul Weill. 12.20 p.m., Interval. 12.30, Sponsored Concert. 1.0 to 6.45, Interval. 5.45, Journal Parle. 6.0, Sports Notes. 6.15, Popular Music on Gramophone Records. 6.30, Catholic Review. 7.0, Interval. 7.15, Popular Music on Gramophone Records. 7.45, Interval. 8.0, L'Ephémère—Radio Play (Michel Ferry). 8.30, Interval. 8.40, Orchestral Concert, conducted by M. Arbanet: Overture, Le Voyage en Perse (Filipecq); Song of the Mill (Lazzari); Joyeuxment (Rhéne Baton); Canzonetta for Clarinet and Strings (Pierné); Minuet from Henry VIII (Saint-Saëns); Réverie interrompte (Tchaikovsky); Danse russe (Tchaikovsky); Ballet Music from Coppelia (Delibes); March of the Highlanders (Godard). 9.40, News.

PARIS

RADIO PARIS; Call CFR; 174 kc/s, 1,725 metres; 75 kW.—6.45 a.m., Light Music on Gramophone Records. 7.0, Press Review and Weather. 7.30, Physical Culture. 9.0, Elementary Book-keeping Lesson. 9.20, Advanced Book-keeping Lesson. 9.40, Spanish Lesson. 10.30 to 11.0, Programme in English by the I.B.C. Gramophone Concert, Mr. T. St. A. Ronald announcing. 11.0, Religious Address. 11.20, Sacred Music. 11.30, Bilboquet. 11.45, Press Review, News, and Weather. 12 Noon, Gramophone Concert, Part I: Programme for Children. Part II: Classical Music. 12.30 to 1.30 p.m., Interval. 1.30, Gramophone Concert of Popular Music. 2.0 to 2.30, Programme in English by the I.B.C. Orchestral Concert. March, Washington Post (Souza); Selection from The Count of Luxembourg (Lohár); Foxtrot, In a Shanty in old Shanty Town; Selection from Lilac Time (Schubert); Waltz (Fall); Selection from Chi Chin Clow (Norton). 2.30, Gramophone Concert of Light Music. 3.0 to 4.0, I.B.C. Programme in English by the I.B.C. 3.0, Tea-Time Variety Hour, Announcer: Mr. S. H. C. Williams. 4.0, Fifth Lenten Sermon, relayed from Notre Dame. 5.30, Variety Concert. 6.0, Popular Concert. 6.30, Variety Concert. 7.0, Music Hall Programme. In the intervals at 7.20, News, sports Notes and Weather, and at 8.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relay by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m.,

APRIL 2nd

SUNDAY

continued

Dick Daring, from New York. 9.15, Temple of Song, from New York. 9.30, Vesper Services from Shadyside Presbyterian Church. 10.30, Pages of Romance, from New York. 11.0, Sealed Power, from New York. 11.30, Time Signal. 11.31, Weather Report. 11.32, Teaberry Sport Review. 11.37, Press News Reeler. 11.44, Temperature Report. 11.45, The Fireflies. 12 Midnight, Time Signal and Smith Ballew and his Orchestra. 12.30 to 3.45 a.m. (Monday), New York Relay. 12.30, Great Moments in History. 1.0, The Land where the Good Songs go. 2.0, Twenty Thousand Years in Sing Sing. 2.30, Walter Winchell. 2.45, Pickens Sisters. 3.0, D. W. Griffith's Hollywood. 3.15, Lopez and the two Doctors' Comic Congress. 3.45, Don Lucas Piano Opera. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last-minute News. 4.20, Alexander Roy (Tenor). 4.30, Jesse Crawford (Organist), from New York. 5.0, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—10.0 a.m., Brahms Concert by the Prague Quartet. Clarinet Quintet, Op. 115; Pianoforte Quintet in F Minor, Op. 81. 11.0, Chimes. 11.5, See Brno. 12.30 p.m., Agricultural Report. 12.45, Social Report. 12.55 to 2.0, Interval. 2.0, See Bratislava. 4.15, Variety Music on Gramophone Records. 4.30, Talk. 5.0, German Transmission: Concert by the Stalstein Choral Society, and News. 6.0, See Brno. 7.0, Literary and Musical Programme. 7.30, Recital of John Dowland's Madrigals by the Aim Vocal Quartet. 8.0, Time Signal. 8.1, Concert by the Station Orchestra, conducted by Otakar Jeronias. Soloist: Stanislav Novak (Violin). 9.0, Time Signal. 9.1, News Bulletin. 9.20, See Bratislava. 10.0 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; Lausanne, 442 kc/s, 680 metres; and Geneva, 395 kc/s, 760 metres.—8.55 a.m. (from Geneva), Chimes. 9.0 (from Geneva), Protestant Service Relay. 10.0 (from Geneva), Light Music on Gramophone Records. 11.0 (from Geneva), Readings. 11.30, News Bulletin and Weather Forecast. 11.40 (from Geneva), Light Music on Gramophone Records. 1.0 to 2.0 p.m., Interval. 2.0 (from

Geneva), Running Commentary on the International Football Match—Italy v. Switzerland—relayed from the Parc des Sports. 5.20 (from Lausanne), Religious Address. 6.0 (from Geneva), Chopin Cello Recital by Henry Buezod: Sonata in G Minor, Op. 65; Introduction and Polonaise brillante, Op. 3. 6.40 (from Lausanne), Sports Results, News, and Announcements. 7.0 (from Lausanne), Concert of Chamber Music by the Ribaucourt Quartet. 8.0, Concert by the Station Orchestra. 9.0, News and Weather. 9.15 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres, and 2RO, 11,810 kc/s, 25.4 metres.—9.10 a.m., News, Sports Notes, and Amusement Guide. 9.30, Agricultural Report. 9.45, Bible Reading. 9.58, Mass from the Church of the Annunciation, Florence. 11.0 to 11.30, Interval. 11.30 to 1.30 p.m., See Turin. In the interval at 1.0 p.m., Time and News. 2.0, Relay of the Football Match, Italy v. Switzerland, from Geneva. 4.0, Symphony Concert, conducted by Bernardino Molinari, relayed from the Teatro Augusto: Suite for Strings (Guerrini); Partita (Petrossi); Suite from Robinson e Venerdì (Rieti); Concerto for Pianoforte and Strings (Pizzetti). 6.30, Sports Notes, Dopolavoro Notes and News. 7.0, Time and Announcements. 7.30, Sports Notes. 7.40, The Toreador Operetta in Three Acts (Ivan Caryll—Lionel Monckton). In the intervals, Two Talks. After the Programme, News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relay at intervals by W2XAF on 31.48 metres; and by W2XAD on 19.56 metres.—7.0 to 9.0 p.m., New York Relay. 7.0, Clyde Doerr and his Saxophone Octet. 7.15, International Radio Forum. 7.30, Joe Green and his Marimba Band. 8.0, Wayne King's Orchestra. 8.30, Hour of Worship. 12 Midnight, Dr. Frank Sill Rogers (Organist). 12.15 a.m. (Monday), Wheatonville—Sketch from New York. 12.30, Horse Sense Philosophy. 12.45 to 2.30, New York Relay. 12.45, Musical Programme. 1.0, Chase and Sanborn Hour. 2.0, General Electric Sunday Circle Concerts. 2.30, American Album of Familiar Music, followed by Programme Resume.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; BASEL, 1,229 kc/s, 244.1 metres; and BERNE, 1,220 kc/s, 245.9 metres.—9.0 a.m. (from Berne), Catholic Service. 9.45 (from Berne), Popular Music on Gramophone Records. 10.10 (from Berne), Gassenhauer Trio (Mozart), on Gramophone Records. 10.25 (from Berne), Reading, Des Königs getreue Dienerin (Hedwig Anneler). 10.40 (from Berne), Cornelius and Reger Song Recital by Erwin Tüller (Tenor) and Ernst Schläfli (Baritone). 11.0 (from Berne), Die Musik kommt. Two Hundred Years of Marching Music. 11.28, Time and Weather. 11.30, News. 11.40 (from Berne), A Musical Menu on Gramophone Records. 12 Noon (from Basel), Report on the Sample Fair's Grand Prix for Motor-Bicycles and Sidecars. 12.30 p.m. (from Berne), Agricultural Notes. 12.32, Musical Programme. Ländler. Music by Immergrün. Songs by Grithli Wenger. 1.0 (from Berne), Talk: Small Swiss Gardens and Possibilities for their Development. 1.50, Report on the Italy v. Switzerland Football Match. 3.40 (approx.) (from Berne), Paris Waltzes on Gramophone Records. 4.0, Weather. 4.35 to 5.30, Interval. 5.30 (from Berne), Talk on French Literature from 1820 to 1930. 6.0, Time, Weather, and Sports Notes. 6.10 (from Berne), Organ Recital of Music by Jean Titezone, Nicholas Gigault, and Louis Claude d'Amint, relayed from Saint Nicholas Cathedral. Organist: Josef Gogniat. 6.40 (from Berne), Folk Songs by the Bunnpliz Women's Choir, conducted by Walter Aeschbacher. 6.55 (from Berne), Talk: Freiburg Legends. 7.25 (from Berne), Offenbach Music on Gramophone Records. 7.45 (from Berne), Le sixième sixième—One Act Operetta (Offenbach). 8.30, Weather and News. 8.40 (from Berne), Gramophone Concert by Jack Hylton's and Paul Whiteman's Bands. 9.15, Sports Notes. 9.25 (approx.), Close Down.

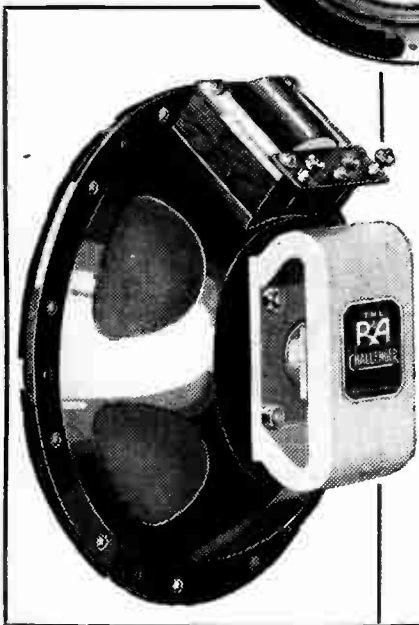
SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—10.0 a.m., Divine Service Relay. 11.45, Weather and Ice Report. 1.30 p.m., Concert by the Orpheus Choir, relayed from the Royal Academy of Music. Conductor: Sven Lizell. 2.30, Talk in German: A Picture of Salzburg. 2.50, Programme for Children. 3.35, Popular Music on Gramophone Records. 4.30, Reading. 5.0, Evensong, relayed from Malmö, 1,301 kc/s, 231 metres. 6.15, Weather and News.

Advertisement for ETA valves. Text: 'No! Not a New Set-NEW VALVES -ETA VALVES'. Includes 'FREE' offer, 'AMERICAN SETS', and 'THE ELECTRICAL TRADING ASSOCIATION'. Price: 'PRICES FROM 5/6'. Bottom text: 'As low in price as a really good valve can be'.

Advertisement for PIX Invisible Aerial. Image of hands holding a wire. Text: 'Just press it up—anywhere'. 'and it sticks. No staples or nails required, no wetting—just press it up around the room above the picture rail, up the staircase to the loft—in fact anywhere. One pull and it's down and leaves no mark. It is invisible when fitted. The PIX Invisible Aerial has a large conductive surface completely insulated. A 60ft. length is as good as an outside aerial if fitted at the same height inside the house. No wires to rust or corrode. The PIX Invisible Aerial does away with expensive outside poles, insulators and lead-in tubes. Use the world's most convenient and cheapest complete aerial—PIX. Beware of inferior imitations.' Bottom text: 'Ask your dealer for 2'- Double length 3/6. THE BRITISH PIX COMPANY, LTD. (Dept. 493), 118/26, Southwark Street, S.E.1.'



The R. & A. "Challenger" P.M. Moving Coil Reproducer has been repeatedly specified for use with Kit Sets because of its uniform excellence of reproduction and its remarkably low price, and the many hundreds of letters of appreciation sent us by enthusiastic owners testify to its remarkable performance. Ask your dealer to demonstrate.

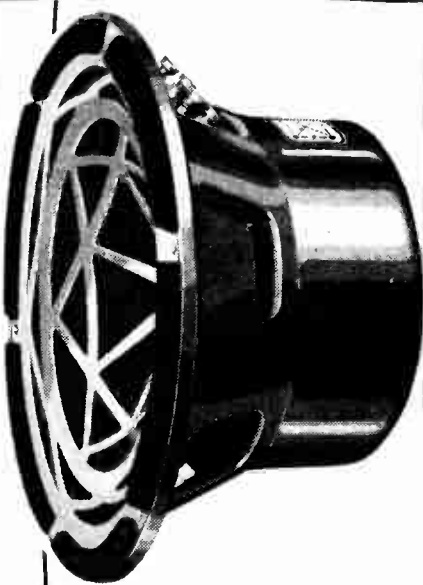
"Wireless World" Test Report states:—"Performance... is such that it merits discussion from an absolute standpoint and without regard to the very reasonable price asked... overall sensitivity... slightly better than average of its class... the reproduction in the bass below 100 cycles, quite definitely above average... full bodied bass without boom... speech natural... balance in music exceptionally good."

"CHALLENGER" Complete with 3-ratio Transformer 35/-

The R. & A. "Victor" P.M. Moving Coil Reproducer De luxe is notable for an entire absence of objectionable resonances which are so common to the average loud speaker, and for its even response over the whole orchestral range, thus dispensing with the need for costly dual-compensated loud speakers to give faithful reproduction. Your dealer will gladly demonstrate this superb instrument. "Wireless World" Test Report states:—

"The outstanding feature... is the uniform distribution of the output energy over the frequency range... especially noticeable in the bass, where the majority of P.M. units rely on a resonance in the vicinity of 100 cycles to give a false impression of sensitivity... The important range... between 75 and 100 cycles is free from objectionable resonances... The 60 cycle resonance is helpful in correcting the loss of amplification below 100 cycles which occurs even in some of the best amplifiers. In the upper register there is no sharp cut off... there is still an appreciable output at 12,000 cycles."

"VICTOR" de luxe Complete with 6-ratio Transformer 70/- Your dealer can supply



-the finest value ever offered!

REPRODUCERS & AMPLIFIERS LTD. FREDERICK ST., WOLVERHAMPTON.

APRIL 2nd

SUNDAY

continued

6.30, Concert, Märta Byström (Songs), Axel Runquist (Violin), and W. Witowsky (Pianoforte); Sonata in E for Violin and Pianoforte (Sibelius); Three Songs (Backer-Gröndahl); Pianoforte Solos; (a) Meditation (Jonsson), (b) Improvise in F Sharp (Björkander); Songs (Grieg); (a) Mit einer Wasserlilie, (b) Erstes Begegnen, (c) Song, (d) Margareten's Wiegenlied; Pianoforte Solo; Suite, Aus Holbergs Zeit (Grieg), 7.30, L'homme que j'ai tué-Play (Maurice Ravel), 8.45, Weather and News, 9.0, Concert of Light Music, 10.0 (approx.), Close Down.

STRASBOURG

869 kc s, 345 metres; 11.5 kW, 8.30 a.m., Orchestral Concert of Classical Music, conducted by Maurice de Villers, 9.45, Protestant Service in French, 10.30, Catholic Service in German, 11.0, Popular Music on Gramophone Records, 11.45, News, 12 Noon, Time and Dance Music on Gramophone Records, 1.0 p.m., Gardening Talk in French, 1.15 to 2.0, Interval, 2.0, Symphony Concert, relayed from the Conservatoire, Paris, 3.30, Sacred Concert by the Cathedral Choir and Soloists, relayed from the Palais des Fêtes, Conductor, M. Boel, 6.0, Talk: Games for Children, 6.15, Sports Notes, 6.30, Time and News, 6.45, News and Sports Notes, 6.45, Variety Music on Gramophone Records, 7.20, Lottery Results, 7.30, Concert, relayed from the Salle des Fêtes, Thann, Conductor: E. Reiller, Soloists: C. Guirsson (Pianoforte), M. Schmitt Weiss (Violin), J. Rufenech (Cello) and A. Schreiber (Clarinet), March from Tannhäuser (Wagner); Overture, The Nuremberg Doll (Adam); Selection from La Fille de Madame Angot (Lecocq); Violin Solos; (a) Andantino (Martini-Kreisler), (b) Reverie (Danel), (c) Tempo di Minuetto (Pugnani-Kreisler); Pianoforte Solos; (a) Prelude in G Minor (Bach-Balmainov), (b) Nocturne (Schumann); Trio, Op. 11, for Pianoforte, Clarinet and Cello (Beethoven); Coronation March from Louise (Charpentier); Overture, Le lac des Fées (Anber); Ballet Music from Faust (Gounod), 9.25, Jazz Music relayed from the Savoy, 11.0 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc s, 360.5 metres; 60 kW; and FREIBURG, 527 kc s, 570 metres.—10.30 a.m., See Leipzig, 11.0 a.m., Band Concert from Freiburg, 12 Noon, Topical Talk, 12.15, Offener Gester: Song Recital by Bruno Müller (Baritone), 12.45, Agricultural Talk, 1.10, Gramophone Records of Waltzes, 2.0, Reading from the Works of Hans Carossa, 2.0, (from Karlsruhe, Mandoline Concert), 2.30, See Frankfurt, 3.25, Concert by the Stuttgart Philharmonic Orchestra, conducted by Gustav Göhrich; Soloists: Rudolf Ritter (Tenor); Overture, Alessandro Stradella (Plotow); Prayer from Oberon (Weber); Selection from Der Evangelinmann (Kienzl); Aria from Der Evangelinmann (Kienzl); Le Farandole (Bizet); Aria from Joseph (Méhul); Intermezzo from Cavalleria rusticana (Mascagni); Othello's Death from Othello (Verdi); Old Dances and Marches, 5.0, Sports Notes, 5.15, Die Hermanns Schlacht Drama (Christian Dietrich Gräbe), 6.30, Humorous Upper Bavarian Programme; Three Radio Sketches, 7.0 (approx.), See Frankfurt, 9.15, Time, News, Weather Programme Announcements and Sports Notes, 9.45 (from Mannheim), Song Recital: Gesänge um Gott (Wilhelm Lucks), 10.15, Programme from Langenberg, 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc s, 385 metres; 8 kW.—11.15 a.m., News, 11.30, Catholic Service, 12 Noon, Amusement Guide and Market Prices, 12.5 p.m., Instrumental Solos, 12.15, Popular Melodies, 12.30, Orchestral Music, 12.40, Agricultural Prices, 12.45, Protestant Service, 1.15, News Bulletin, 1.20, Light Orchestral Music, 1.45, Operetta Music: Extracts from La Vie Parisienne (Offenbach), Paganini (Lehár), and The Land of Smiles (Lehár), 2.0, Music by a Viennese Orchestra, 2.15, News and Racing Results, 2.20, Popular Melodies, 2.30, Opera and Opera-Comique Music: Selection from Rigoletto (Verdi); Overture, The Huguenots (Meyerbeer); Overture, Mignon (Thomas); Prelude to the First Act of Carmen (Bizet); Overture, The Barber of Seville (Rossini), 3.0, Popular Melodies, 3.15, Racing Results and News, 3.20, Accordion Music, 3.30, Dance Music, 4.0, Light Orchestral Music, 4.15, News and Racing Results, 4.20, Opera Music: Selection from Lohengrin (Wagner), and Le Roi d'Ys (Lalo), 4.30, L'apprenti sorcier (Paul Dukas), by the Symphony Orchestra, 4.45, Opera Melodies: Selection from Manon Lescaut (Anber); Carmen (Bizet); Si j'étais roi (Adam) and Mignon (Thomas), 5.0, News Bulletin, 5.15, Cello Recital, 5.30 to 6.0, Programme in English by the I.B.C.: W. Brown Constable announcing, 5.30, Concert of Light Music: There's Something about a Soldier; Have you Ever Been Lonely?; Selection from Cavalcade; I want to go Home; I may Never pass your way Again;

The Night was made for Love; When anybody plays or sings; Love will find a way, 6.0, Military Music, 6.15, News Bulletin, 6.25, Local News, 6.30, Music by a Viennese Orchestra, 7.0, Sound Film Music, 7.15 Orchestral Music, 7.30, La Fille et le Garçon Concert Version of the Sound Film, 8.10, Accordion Recital, 8.30, Operetta Music: Selection from The Bayadère (Källman), Le Conte Obligato (Moretti), and Rose Marie (Prinz), 8.45, Popular Concert, 9.15, North African News, 9.30 to 11.0, Programme in English by the I.B.C., 9.30, Variety Music: My Lover; A Music Hall Show in Grandpa's Day; Poppies; The Mountain Re-train; Blue Hawaii; Sweeping the Clouds Away; Maggie and me and the Baby, 10.30, Variety Half-Hour, A selection of good old songs; Love's Old Sweet Song; The Good Ship Yacki Hick; Lola; It's a Great Big Shame; Lily of Laguna; The Spaniard that Blighted my Life; Plantation Memories, 11.0, News and Weather, 11.5, Orchestral Music, 11.30 (approx.), Close Down.

TRIESTE

1,211 kc s, 247.7 metres; 10 kW.—8.40 a.m., See Turin, 8.55, Mass from the San Costo Cathedral, 10.0, Religious Address, 10.20, Agricultural Report, 10.40 to 11.0, Interval, 11.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc s, 273.7 metres; 7 kW, Relayd by Milan, 905 kc s, 331.5 metres; Genoa, 959 kc s, 312.8 metres; and Florence, 599 kc s, 500.8 metres.—8.40 to 8.55 a.m., Giornale Radio, 9.40, Agricultural Report, 10.0, Mass from the Church of the Annunciazione, Florence, 11.0 to 11.15, Religious Programme, 11.30, Concert by the Radio Orchestra. In the interval at 12 Noon, Time and Announcements, 12.30, Orchestral Concert, 1.15 to 2.0, Interval, 2.0, Running Commentary on the international football Match, Italy v. Switzerland, relayed from Geneva. In the interval, Light Music on Gramophone Records, and Sports Notes, 4.0, See Rome, 5.0, Giornale Radio and Sports Notes, 6.0, Time and Announcements, 6.10, Light Music on Gramophone Records, 6.30, Time, Announcements, and Gramophone Records, 7.0, Giornale Radio, Sports Notes, and Gramophone Records, 7.45, Rompicello-Operetta in Three Acts (Pietro), relayed from the Scala, Milan. In the intervals, Talk and Theatre Notes. After the Operetta, Giornale Radio.

VIENNA

581 kc s, 517 metres; 15 kW, Relayd by Graz, 852 kc s, 352.1 metres; Innsbruck, 1,058 kc s, 283 metres; Klagenfurt, 662 kc s, 453.2 metres; Linz, 1,220 kc s, 245.9 metres; and Salzburg, 1,373 kc s, 218.5 metres.—10.25 a.m., Symphony Concert by the Vienna Symphony Orchestra, conducted by Hugo Riemannberger, Soloists: Cornelius Czarnikowski (Pianoforte), 11.45 to 1.0 p.m., Concert of Light Music, 2.0, Time and Programme Announcements, 2.5, Review of Books, 2.30, Chamber Music by the Rotshchild Quartet: String Quartet in F (Kavely); String Quartet in C, Op. 59, No. 3 (Beethoven), 3.30, Talk: The World of Islam, 4.0, Orchestral Concert of Light Music, 5.25, Talk: With the Germans in Romanian Banat and Transylvania, 5.55, Hans Heyck reads from his own works, 6.25, Variations on an Original Theme, Eroica Variations (Beethoven), 6.50, Time, Sports Notes and Programme Announcements, 7.0, Rip van Winkle Quartet in Three Acts (Piquette), 8.20, News Bulletin, 8.35, Frühling-Operetta in One Act (Lehar), 9.35, Dance Music from the Café Splendide.

WARSAW

212.5 kc s, 1,411 metres; 120 kW.—10.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow, 11.5, Programme Announcements, 11.10, Weather Forecast, 11.15, Concert by the Warsaw Philharmonic Orchestra, conducted by L. Gröndela, Soloists: Mme. Elsa Breus (Songs) and M. Karim Rossini (Violin). In the interval, Talk, 1.0 a.m., Veterinary Talk, 1.20, Concert of Popular Music by a Mandoline Orchestra, 1.40, Talk: Household Management during the Crisis, 2.0, Choral Concert, followed by Music by the Mandoline Orchestra (contd.), 3.0, Programme for Children, 3.25, Light Music on Gramophone Records, 3.45, Talk, 4.0, Pianoforte Recital by Mme. Dwojmo-Solomon, 4.35, Song Recital by S. Zimez; Air from Eugen Onegin (Tchaikovsky); Song from Verbum nobile (Moniuszko); Song (Chaykovsky); Ochi di fati (Drezza); Air from The Barber of Seville (Rossini), 4.55, Programme Announcements, 5.0, Concert of Light Music. In the interval, News, 6.0, Miscellaneous Items, 6.25, Talk: Mind and Matter, 7.0, Choral Concert, 7.55, Sports Notes, 8.5, Concert by the Station Orchestra, conducted by Nicolas der Pals, 9.5, Song Recital by M. Salecki, 9.30; Dance Music, 9.55, Aviation Weather Report and Police Notes, 10.0, Dance Music.

ZURICH.—See Schweizerischer Landessender.

MONDAY

APRIL THE THIRD

PRINCIPAL EVENTS OF THE DAY:

ALGIERS
824 kc/s, 364 metres; 13 kW.—7.0 p.m., Financial News. 7.10, Shipping Notes. 7.15, Weather Forecast and Agricultural Report. 7.20, Songs from Sound Films. 7.40, Press Review. 7.55, News. 8.0, Time Signal. 8.2, Book Review. 8.15, Tchaikovsky Concert by the Station Orchestra: Overture, Romeo and Juliet, Waltz from Eugene Onegin, 8.35, Talk on Algiers. 8.50, News. 8.55, Tchaikovsky Concert (cont.): The Pathetic Symphony. 9.25, News. 9.40, Instrumental Solos. 9.55, News Bulletin. 10.0 (approx.), Close Down.

ATHLONE
725 kc/s, 413 metres; 60 kW.; and **CORK**, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Talk on Housing by the Minister of Local Government and Public Health. 8.0, Concert by the R.I.A.M. Students' Musical Union, relayed from the Royal Academy. 8.0, What's in a Name?—Sketch by the 'Lidia Players'. 9.30, The Station Orchestra. 10.0, Pipe and Fiddle Music. 10.15, Irish Music by the Station Orchestra. 10.30, Time Signal, News, Weather Report and Close Down.

BARCELONA
RADIO-BARCELONA, Call EAJ1, 860 kc/s, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 6.30, Quintet Concert, relayed from the Café de la Rambla. 7.30, Sports Notes, Exchange Quotations and Talk in Catalan. 8.0, Light Music on Gramophone Records and News Bulletin. 9.0, Chimes from the Cathedral. Weather Forecast, Exchange Quotations and Market Prices. 9.5, Humorous Review of the Week in Verse. 9.15, Concert of Sardanas. 10.0, Literary and Musical Programme. 10.30, Catalan Radio Gazette. 11.0, News Bulletin. 11.15 (approx.), Concert by the Station Orchestra: Overture, The Barber of Seville (Rossini), Suite, Les Erynnies (Massenet). 11.30, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Report, and Popolayoro Notes. 7.20, Giornale Radio. 7.30, Time and Announcements. 7.35 (approx.), Madame Butterfly—Opera (Puccini) on Gramophone Records. In the intervals, Talk and Announcements. After the Opera, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—6.0 p.m., Talk. 6.40, Light Music on Gramophone Records. 6.50, Introductory Talk to the following Transmission. 7.0, An Opera, relayed from the National Theatre. In an interval at 8.30 (approx.), News Bulletin.

BERLIN
KÖNIGS WUSTERHAUSEN, 183.5 kc/s, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert, relayed from Berlin (Witzleben). 2.0, Talk for Women; Making Spring Pullovers. 2.30, Weather and Exchange. 2.45, Review of Books on Revolutions. 3.0, Educational Talk. 3.30, See Berlin (Witzleben). 4.30, String Quartet, Op. 9 (Rudolf PETERKA). 5.0, Talk for Civil Servants. 5.30, Friedemann Bach Recital for two Flutes and Pianoforte, with Introductory Talk. 5.55, Weather and Announcements. 6.0, Talk: The Author, Hans Franck. 6.30, A Poem. 6.35, Light Music by the Kirschoke Band; Minuet from the Divertimento (Mozart); Slegmund's Love Song from The Valkyries (Wagner); Intermezzo (Clemens Schmalstieg); Waltz, Wiener Bombers (Joh. Strauss). 7.0, Heinrich von Kleist a Radio Play (Hans Franck). 8.30, The Brandenburg Concerto in G, No. 3 (J. S. Bach) by the Chamber Orchestra, conducted by Edwin Lindner. 9.10, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Concert from Leipzig. 11.0 (approx.), Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—2.35 p.m., Brahms Concert: Sonata in A for Pianoforte and Violin, Op. 100; Hungarian Dances (Brahms-Jochum). 3.15, Talk: The A.B.C. of Political Economy. 3.30, Demonstration on the occasion of the First National Meeting of the German Christians' Movement, relayed from the Herrenhaus. 4.30, Talk: The Development of Modern Shorthand. 4.50, Talk for Young People. 5.10, Concert of Light Music from the Café Moka-Effé. 5.30, Reading of Short Stories. 5.55, The Witzleben Station informs its Listeners. . . . 6.0, Topical Talk. 6.10, Talk: The World at the Turning Point—Theoretical and Political Man. 6.35, Talk on Music. 6.45, Announcement. 6.50, Pianoforte Recital by Alfred Cortot, with the collaboration of the Berlin Philharmonic Orchestra, conducted by Eugen Jochum: Pianoforte Concerto in A Minor, Op. 54 (Schumann). 7.25, Second Symphony in D, Op. 73 (Brahms) by the Berlin Philharmonic

NATIONAL LONDON REGIONAL Symphony concert from the Queen's Hall. Variety programme.
MIDLAND REGIONAL Band and orchestral concert.
NORTH REGIONAL Band programme; Marches of the Northern Regiments.
WEST REGIONAL "The Mirror," a play by H. A. Vachell, from Bristol.
SCOTTISH REGIONAL "What's Intil?" a programme of old favourites and new pieces.
BELFAST Vaudeville programme.

AT HOME

ABROAD

BRUSSELS (No. 1) 7 p.m. Oçava: "Lara" (Marsick).
BRUSSELS (No. 2) 7.30 p.m. Chamber music from Salle Patria, Antwerp.
BUDAPEST 7.10 p.m. Igor Stravinsky concert, conducted by the composer.
HAMBURG 6.30 p.m. Brahms concert relayed from Hanover.
HILVERSUM 7.55 p.m. Operetta: "Ten Maids and No Man" (Suppé).
LANGENBERG 7.15 p.m. Operetta: "Das Spitzentuch der Königin" (J. Strauss).
RADIO-PARIS 7 p.m. Opera: "The Barber of Seville" (Rossini).
ROME 8 p.m. Orchestral concert, conducted by U. Tansini.
STRASBOURG 7.30 p.m. Concert from Metz.
TURIN 8 p.m. Sponsored concert.
WARSAW 7.15 p.m. Operetta: "Night of Love" (Valentimov).

Orchestra, conducted by Eugen Jochum. 8.10, A Night in a Lending Library—Programme arranged by Walter Grossstay. 9.10, Weather, News and Sports Notes, followed by Dance Music from the Wilhelmshallen at the Zoo. 11.0 (also relayed by Zeeson on 31.38 metres), Light and Shadow Pictures of Welfare Work in a City (arranged by Dr. Franz Kloidt).

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by F. Dyk: Overture, Masaniello (Ambert); Ballet Suite from Nannotta (Lalo); Selection from Dalibor (Smetana). 4.10, See Prague. 4.50, Light Music on Gramophone Records. 5.10, Two Sonatas for Violin and Pianoforte (Dvorak). 5.55, Talk on Housing. 6.0, See Prague. 6.10, Technical Talk. 6.25, See Brno. 7.40, Concerto in D Minor, Op. 69, for Flute and Pianoforte (Mouline). 8.0, A Play (Roberto Bracco), translated by J. Borecky. 9.0, See Prague. 9.5 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU
923 kc/s, 325 metres; 60 kW.; and **Gleiwitz**, 1,184 kc/s, 253 metres.—12.10 p.m., Gramophone Concert of Variety Music. 12.45, Time, Weather, News, Exchange and Shipping Report. 1.5, Gramophone Concert of New Records: Selection from Frühlingsstürme (Weinberger); Tango, Nostalgia del deserto (Billi); Foxtrot from the Sound Film, End es leuchtet die Puszta (Büdy); Song from Gasparone (Müllbacher); Tambourin chinois (Kreisler); Overture, Donna Diana (Reznick); Military Marches. 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Market Prices. 2.40, Book Review. 3.0, See Berlin (Königs Wusterhausen). 3.25, Concert by the Silesian Symphony Orchestra, conducted by Gerhard Ewald Rischka. Soloists: Peter Hoeselers (Baritone); Suite (Schumann); Veil Intermezzo, from Mona Lisa (Max von Schillings); Five Songs, (a) Am Brunnen vor dem Tore (Schubert), (b) Wohlauf noch getrunken den funkelnden Wein (Schumann), (c) In einem kühlen Grunde (Glück), (d) Morgen muss ich fort von hier (Silcher), (e) Folk Song, Ach wie ist's möglich dann; Serenade from Don Juan's Last Adventure (Grauer); Waltz from Faust (Gounod); Four Songs, (a) Roseweis, Roserot (Jöde), (b) Folk Song,

Steh ich in finst'rer Mitternacht, (c) Folk Song, Ich hab' mich ergeben, (d) Was ist des Deutschen Vaterland (Reichardt); Homage March (Liszt). 4.30, Market Prices. 4.35, Talk: The Heavens in April. 4.55, Talk: Changes in Musical Taste during the Last Decade. 5.15, English Lesson. 5.40, Topical Programme. 6.0, Talk: The Western Hemisphere and the Atlantic before the Days of Columbus. 6.30, Weather and Market Prices. 6.35, Concert by a Women's Choir. 7.30, Mandoline and Guitar Concert: Rairarris March (Charoila); Minuet (Wölki); Intermezzo (Oscheit); Concert Caprice (Arienzo); Barcarolle (A. Wagner); Suite, Ländliche Hochzeit (Ritter). 8.20, News Bulletin. 8.30, German Composers of the Baroque Period. Concert by the Station Orchestra, conducted by Ernst Prade. Soloists: Ludwig Hess (Baritone) and Eurt Hattwig (Harpischor); Intrada (M. Franck); Schäfers Totentied (Dedekind); Wandel der Zeit (Dedekind); Musette from Aleina (Händel); Love Songs (A. Krieger); (a) Ihr schönen Augen, (b) Schönste, wo denkst du hin; (c) Mein Leib ist weiss, (d) Soll denn mein junges Leben, (e) Weicht, ihr Gedanken, (f) Abendlied; Drinking Songs (A. Krieger); (a) Mir kann nichts, (b) Junggesell'nfrenden; (c), Ihr Freunde! (d) Seht nur, wie der Rheinwein tanzt. 9.10, Time, Weather, News, Sports Notes, Market Prices and Programme Announcements. 9.35, Answers to Correspondents on Technical Questions. 9.50, Reading: April, April (Kurt Scheerschmidt). 10.5 (approx.), Close Down.

BRNO
878 kc/s, 342 metres; 35 kW.—3.10 p.m., See Bratislava. 4.10, Talk for Young People. 4.20, Talk on American Authors. 4.40, Chess Lesson. 5.0, Review of Gymnastics and Sport. 5.15, See Prague. 5.25, German Transmission: News, Elementary French Lesson, and Reading. 6.0, See Prague. 6.25, Cabaret Programme. 7.25, Scientific Talk. 7.40, A Radio Play, with Music founded on the Life of Beethoven (Firkusny). 9.0, See Prague. 9.15 (approx.), Close Down.

BRUSSELS (No. 1)
I.N.R.; 590 kc/s, 509 metres; 15 kW.—11.0 a.m., Light Music on Gramophone Records. 12 Noon, Le Journal Parlé. 12.10 p.m., Concert by the Little Station Orchestra, conducted by P. Leemans: March of the Dwarfs (Grieg); Valse scherzo (Tchaikovsky); Romance, Lune sur la mer (Douliez); Selection from The Merry Widow (Lehár); Castilla (Albeniz); Waltz, Poème (Fibich); Royal Serenade (Van Herek); Fantasia (Cavillier). 1.0, Educational Programme. 4.0, Dance Music from the St. Sauveur Palais de Danse. 5.0, Talk: The Care of Teeth. 5.15, 'Cello Recital by M. Gaillard: Second Suite from Pieces for 'Cello and

Pianoforte in A (Conperin); Sonata in D for 'Cello and Pianoforte (Locatelli-Platti). 5.45, Monsieur Dupont's Funeral—Sketch (Lauville). 6.0, Gramophone Records: Nocthi ecclesi (Dr. Crescenzo), by Caruso; Nocturne No. 3 (Liszt); Fairer than the Lily from Dvorak (Meyerbeer), by Caruso; Entr'acte, The Hobby Horse (Pugni). 6.15, Talk: Painting. 6.30, Le Journal Parlé. 7.0, Lara—Opera (Marsick), by the Grand Station Orchestra, conducted by Jean Kumps, and Soloists. In the interval at 7.15, Reading of Poetry by Joachim du Bellay, Bandelaire, Comtesse de Noailles and Paul Géraudy. 9.0, Le Journal Parlé. 9.10, Gramophone Concert: Overture, La Princesse jaune (Saint-Saëns); Selection from The Arabian Nights (Joh. Strauss); Selection from Piccolino (Ghiraud); Variations on 's kommt ein Vogel geflogen (Oels); Romance, Op. 26 (Svendens); Slav Rhapsody (Friedemann); Chorus from Mirella (Gounod); Entry March of the Boyards (Halvorsen). 10. (approx.), Close Down.

BRUSSELS (No. 2)
N.I.R.; 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—11.0 a.m., Concert by the Small Orchestra, conducted by P. Leemans: Overture, The Merry Wives of Windsor (Nicolai); Scènes gitanes (Manuel Infante); Dolce memetto (Drda); Selection from Samson and Delilah (Saint-Saëns); Violin Solo: Jo ta Navarra (Sarante); Waltz, Sunshine of the Heart (Whidden-May); It is a Spanish Tango (Rottet-Yurman); Speakeasy (Gensler). 12 Noon, Le Journal Parlé. 12.10 p.m., Russian Music on Gramophone Records: Prelude to Khovanstchina (Mussorgsky); Hindu Song from Sadko (Rimsky-Korsakov); Mushrooming (Mussorgsky); Melody from Prince Igor (Borodin); Song of the Volga Boatmen (arr. Chaliapine); Gopak from The Fair at Sorochinsk (Mussorgsky); Gavotte in D (Glazounov); Waltz from The Sleeping Beauty (Tchaikovsky); Polovitsian Dances (Borodin); Scherzo (Borodin); A Wedding Procession (Rimsky-Korsakov). 1.0, Educational Programme. 4.0, Concert by the Radio Orchestra, conducted by Charles Walpot: March; Overture, The Nuremberg Doll (Adam); Tales from the Vienna Woods (Joh. Strauss); Selection from Cocorico (Ganne); Romance for Violin (De Teye); In a Chinese Temple Garden (Ketelbey); Suite (Ackermans). 4.45, Programme for Children. 5.30, Concert by the Small Orchestra, conducted by P. Leemans: Dance (Leblanc); Cortège (Leblanc); Dans le parc un crépuscule (Laisné); Ombres sur le Nil (Schellini); Violin Solo: Contemplation (Saves); Selection from La Périole (Offenbach); Pour endormir Pierrot (Canét); Poursuite amoureuse (Kalkman); Tarantelle, Capodumonte (Solazzi). 6.15, Talk. 6.30, Variety Item. 7.0, Les Préludes (Liszt) on Gramophone Records. 7.15, Talk: Youth and Politics. 7.30, André Follmann Concert, relayed from the Salle Patria, Antwerp. The Composer ('Cello), Walter Weyler (Violin), and Jef Alpaerts (Pianoforte). Trio, Op. 1, No. 3 (Beethoven); Trio in E Flat (Schoonaker); Trio, Op. 66, No. 2 (Mendelssohn), followed by Le Journal Parlé. 9.15, Gramophone Concert: Overture, Chal Romano (Ketelbey); Waiting at the End of the Road (Berlin); Cockney Suite (Ketelbey); The Kentucky Babe (Geibel); Jumbo Drums (Ketelbey); Sing, you Sinners (Goslow-Harding). 10.0 (approx.), Close Down.

BUCHAREST
761 kc/s, 394 metres; 12 kW.—3.0 p.m., Dance Music. In the interval at 4.0, Radio Journal. 5.0, Talk: Mathematical Science in Romania. 5.20, Talk. 6.0, Time Signal. 6.2, Trio for Pianoforte, Violin and 'Cello, Op. 87 (Brahms). 6.20 to 6.45, Song Recital by L. Schmidt's: Popular Italian Songs; Corsican Funeral Songs—Vocero; Funeral Song—Lamento; Gouloua Songs; Popular French Songs of the Sixteenth and Seventeenth Centuries; (a) Pavane, (b) Sarabande, (c) Le Roi a fait battre tambour. 7.5, Quintet in E Flat Minor, Op. 26, No. 2 (Dolmazy), by the Metzner Quartet and M. Filioneseo (Pianoforte). 7.35, Concert relayed from the Enecco Restaurant. 8.0, Radio Journal.

BUDAPEST
545 kc/s, 550 metres; 18.5 kW. Also relayed on 840 metres from 5.40 to 11.0 p.m.—4.30 p.m., Pianoforte Recital by Lili Widner. 5.10, German Lesson. 5.40, Szekler Song Recital by Imre Molnár. 6.25, Talk. 7.10, Stravinsky Concert by the Philharmonic Orchestra, relayed from the Redoute, the Composer conducting. Soloist: Rosalinda Kaplan. 9.30, Cikány Concert from the Café Patria, with Gyula Szántó (Hungarian Folk Songs). 10.20, Jazz Music from the Café Patria.

CASSEL.—See Frankfurt.

COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW. Relayed by Kalundborg, 260 kc/s, 1,153 metres.—11.0 a.m., Town Hall Chimes. 11.1 to 1.0 p.m., Concert from the Hotel d'Angleterre. 2.20, Talk for the Housewife. 2.30, Orchestral Concert, conducted by Fritz Mahler. 4.40, Exchange and Market Prices. 4.50, Talk. 5.20, English Lesson. 5.50, Weather

APRIL 3rd MONDAY continued

and News. 6.30, Concert of Sacred Songs for Choir and Organ, with Introductory Talk. 7.20, Pictures of Daily Life—The Production of a Sound Film. 7.50, Operetta Concert by the Radio Orchestra, conducted by Emil Reeson; Soloist, Julie Winding (Songs); Overture, The Mikado (Sullivan); Selection from The Drum-Major's Daughter (Offenbach); Overture, Les Brigands (Offenbach); Songs: (a) Yum-Yum's Song from The Mikado (Sullivan); (b) The Amorous Goldfish from The Geisha (Jones); Selection from The Dubarry (Müllacker-Mackeben); Prelude to Eva (Lohár); Songs: (a) Vilja Song from The Merry Widow (Lohár); (b) Ich bin verliebt, from Schön ist die Welt (Lohár); Waltz from Die Faschingsfee (Kálmán); March from Sunny (Kern). 9.5, News Bulletin. 9.20, Old Danish Music by the Brünning-Bach Quartet; String Quartet in A Minor, Op. 23 (Louis Glass). 9.50, Dance Music from the Nimb Restaurant. In the interval at 11.0, Town Hall Chimes. 11.30 (approx.), Close Down.

CRACOW 950 kc/s, 312.8 metres; 1.5 kW.—6.0 p.m., Talk on the National Physique. 6.15, Miscellaneous Items and Announcements. 6.30 to 10.0, See Warsaw. 10.0, Popular Music on Gramophone Records. 11.0, Fanfare from Notre Dame.

DANZIG—See Heilsberg.

DRESDEN—See Leipzig.

FECAMP 1,328 kc/s, 225.9 metres; 10 kW.—11 a.m., Variety Music on Gramophone Records. 11.30, News Bulletin. 11.45, Radio Concert. 6.0 to 6.0, Programme in English by the I.B.C., C. Danvers Walker, B. McNabb and P. Lamping announcing. 5.0, Concert for Bognor Listeners; Waltz, The Blue Danube (Joh. Strauss); Song, Shepherd's Serenade; Waltz, Tales from the Vienna Woods (Joh. Strauss); Song, Charming; Londonderry Air; Air de Ballet (Herbert). 5.20, Concert for Hastings Listeners. Special Request Programme. Selection from The Maid of the Mountains (Fraser-Simson); With me Goggles in me and; He's dead but he won't lie down; Yodelling Mad; Trees. 5.40, Trio Concert for Eastbourne Listeners; Un peu d'amour (Silesu); Friend of mine (Sander-son); Chanson triste (Tchaikovsky); Love's Old Sweet Song (Molloy); Narcissus (Nevin); Cavatina (Raff). 6.0, Radio Gazette. 6.20, Local News and Popular Music on Gramophone Records. 6.45, News Bulletin. 7.30, Concert relayed from Caen. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0, Dance Music; Love is the Sweetest Thing; Good Morning, Mr. Sun; I'll do my best to make you happy; The Voice in the Old Village Choir; Smile and Sing your Cares away; The Turning of the Tide; An Evening in Caroline; Day by Day; Where the Blue of the Night Meets the Gold of the Day; By the Sycamore Tree; Now that you're gone; Only me knows why; Blues in my Heart; Now's the Time to fall in Love. 11.0, Concert of Waltzes; Frühlingsstimmen (Strauss); Acclamations (Waldteufel); Morgenblätter (Strauss); Donauwellen (Ivanovici); O. Frühling wie bist du so schön (Lincke); Künstlerleben (Strauss); First Waltz Potpourri (Robrecht). 11.30, Sea Shanties; At Santa Barbara; Chorus; Blow the Man Down; Four Jolly Sailors; The Drunken Sailor; Chorus; One More Day; Rio Grande; Chorus; A Dollar and a Half a Day; Quartet; Oh, Shenandoah. 12 Midnight, Club Concert for Billingham Listeners. Part I: Variety Music; With me Goggles in me and; Happy Days; A Music Hall Show in Grandpa's Day; Hawaiian Twilight; Three Blind Mice; Yodelling Sam; Will they love me up in Heaven. Part II: Songs; I wasn't ashamed of you, Mother; Take away the Moon; Honest, really, truly; Orchestra; On with the Show; Will they love me up in Heaven? You used to belong to me; Cuban Love Song. 1.0 a.m. (Tuesday), Accordion Solos; Selection from Carmen; C'est un petit nid; J'aime la Musique; Potpourri of Welsh Airs; La Javanette; Les Bas à pointes. 1.30, Vocal Duets; A Dicky Bird told me so; I must be dreaming; Let's dream a little longer; Accordion Solo; Loretina; In the Lane of Sweet Dreams; Sally of my Dreams; Why; Accordion Solo; Festival March. 2.0, Dance Music; Them there Eyes; There's something about an Old-fashioned Girl; Swinging in a Hammock; Okay Baby; Beware of Love; What a perfect Night for Love; My Future just passed; Moonlight on the Colorado; Sons les foits de Paris; You are the Melody; Harmonica Harry; A little Love Song; Soldier on the Shelf; The Kiss Waltz. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLensburg—See Hamburg.

Florence—See Turin.

FRANKFURT 1,157 kc/s, 259.3 metres; 17 kW.: CASSEL, 1,220 kc/s, 245.9 metres; and TRIER, 1,157 kc/s, 259.3 metres.—5.10 p.m., Talk: Oliver Cromwell, Revolutionary and Parliamentarian. 5.35, English Lesson. 6.0, Time, Programme Announcements, Weather, and Exchange. 6.15, A German Almanac. 6.30, Radio Report from Frankfurt's Riverside

Docks. 7.5, Tenth Monday Concert of the Frankfurt Orchestra Society by the Station Symphony Orchestra, conducted by Hans Rosband; Soloist, Edwin Fischer (Pianoforte); Beethoven Programme; Overture in C, Op. 124, Die Weihe des Hauses; Concerto in E Flat, Op. 73; Fifth Symphony in C Minor, Op. 67. 9.0, Time, News, Weather, and Sports Notes. 9.55, See Stuttgart. 11.0 (approx.), Close Down.

FREDRIKSSTAD—See Oslo.

FREIBURG—See Stuttgart.

GENOVA—See Radio-Suisse Romande.

GENOA—See Turin.

GLEIWITZ—See Breslau.

GOTEBORG—See Stockholm.

GRAZ—See Vienna.

HAMAR—See Oslo.

HAMBURG Call ha (in Morse). 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Talk: The Commercial Traveller. 6.25, Weather Report. 6.30, Brahms Concert, relayed from the Municipal Opera House, Hanover; The Opera House Orchestra, conducted by Prof. Rudolf Krasselt; Soloists: Ely Ney (Pianoforte), Elise Schürhoff (Viola); Concerto in B Flat, Op. 83, No. 2, for Pianoforte and Orchestra; Rhapsody for Viola; Symphony in C Minor, Op. 68, No. 1. In the interval, News. 8.30, Bruno Goetz reads from his own works. 9.0, Time and News. 9.10, Topical Talk. 9.20, Concert relayed from the Café Wallhof. 10.25, Concert relayed from the Atlantik, Bremen.

HEILSBURG 1,085 kc/s, 276.5 metres; 60 kW.: and Danzig, 662 kc/s, 453.2 metres.—12.5 p.m., Gramophone Concert. In the interval at 12.20, News. 2.0, Agricultural Prices and Exchange Rates. 2.30, An Easter Programme for Children. 3.0, Talk on the Centenary of Auerwald. 3.30, See Breslau. 4.30, Talk: The German Language. 4.45, Review of Children's Books. 5.15, Agricultural Prices. 5.25 (from Danzig), Talk by the Danzig Aviator, Gerhard Zirwas: A Flight over Germany. 5.50, Talk: Memorable Days of the Week. 6.0 (from Danzig), Brahms' Pianoforte Duets by Ella Mertins and Ingo Senick; Variations on a Theme by Schumann, Op. 23; Four Hungarian Dances: (a) No. 2 in D Minor, (b) No. 3 in F, (c) No. 5 in C Sharp Minor, (d) No. 6 in D flat. 6.30, English Lesson for Beginners. 7.0, News and Sports Notes. 7.10 (from Danzig), Bunter Abend, with Hans Lorenz, Mizzi Dressel, Kitty Aschenbach, and Paul Heidemann. 9.10, Weather, News, and Sports Notes.

HILVERSUM 1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—Programme of the Workers' Radio Society (V.A.R.A.). 11.40 a.m., Concert by the Small V.A.R.A. Orchestra, conducted by P. Duchant. 1.40 to 2.10 p.m., Interval. 2.10, Light Music on Gramophone Records. 2.25, Recitations. 2.55, Popular Music on Gramophone Records. 3.25, Organ Recital by J. Jong: Eine kleine Nachtmusik (Mozart); Melody from Fra Diavolo (Auber); Spanish Dances (Moszkovsky); Potpourri (de Groot). 4.25, Programme for Children. 4.55, Variety Concert: M. Brantenaar (Violin); Mlle. Riek Hardonk (Songs); F. Peis (Oboe); B. Renden (Pianoforte); M. Vogel (Celeste) and Mlle. Greta van der Wal (Viola da Gamba). Sonata No. 1, for Oboe and Pianoforte (Händel). Three Songs (Alexis): (a) Légende bretonne; (b) Ma douce Annette; (c) Le semeur. Viola Solos (Schenk): (a) Prelude; (b) Minuet; (c) Rondo. Pianoforte Solo: Arioso with Variations (Bach). Violin Solos: (a) Sketches, Op. 59 No. 1 (Jongen); (b) Meditation, Op. 32 (Glazunov). Songs: (a) Sara-bande (Stockhausen); (b) Bourrée (Villlenoz); (c) L'Amour de moi (Tiersot). Celeste Solos: (a) Caprice de Bouclotte (Thone); (b) Cuban Serenade (Aletter); (c) Minuet, Grossmütterchen (Grieg). Oboe Solo: Fantasia (Spindler). Viola da Gamba Solos: (a) Arioso (Hollendaal); (b) Rondo (Hollendaal); (c) Andante (Hollendaal); (d) Minuet (Marais). Songs: Four Dutch Songs (Küntgen). Violin Solo: Romance in F (Beethoven). Pianoforte Solo: Moment musical (Schubert). Songs (Hirschberg): (a) Rätselbild; (b) Der Spielmann. Celeste Solo: Waltz (Vogel). Viola da Gamba Solo: Waltz (Craer). 6.40, Talk on Music, with Gramophone Illustrations. 7.40: Talk. 7.55, Ten Maids and no Man (Operetta) (Stappé). 8.55, News Bulletin. 9.10, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot. 9.40, Dramatic Programme by the V.A.R.A. Orchestra. (cont'd). 10.50, Light Music on Gramophone Records. 10.55, Organ Recital by C. Steyn. 11.25, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

HORBY—See Stockholm.

HUIZEN 60 kc/s, 1,875 metres; 8.5 kW.—11.10 a.m. till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 11.10, Sacred Music on Gramophone Records. 11.40, Political Review. 11.55, Light Music on Gramophone Records. 12.10 p.m., Time Signal. 12.11, Organ Recital by Jan Zwart, relayed from a Church in Amsterdam; Concerto in G (Vivaldi-Bach); Psalm (Zwart); Concerto in D (Händel); Psalm (Zwart); Sonata in D (Mozart); Preyer and Berceuse (Guilmant); Grand Choral (Guilmant); Finale (Zwart). 1.40, Time Signal. 1.41, Concert by a School Choir at Rotterdam. 2.15, Gardening Talk. 2.55, Time Signal. 2.16, Dressmaking Lesson. 3.25, Programme to be announced. 3.40, Chimes. 3.41, Bible Reading and Sacred Music. 4.40, Chimes. 4.41, Concert by the Piet van den Hurk Quintet; Quartet in A (Mozart); Geisterreigen (Glück); Variations on Reich mit der Hand (Beethoven); Gramophone Records (Beethoven): (a) Die Ehre Gottes in der Natur, (b) Die Himmel rühmen; Overture, Fra Diavolo (Auber); Waltz, España (Waldteufel); March (Cipri); Selection from Martha (Flotow); Schmetterlingsjagd (Köler-Bela). 6.10, Answers to Correspondence. In the interval at 6.55, Time Signal. 7.10, Political Review. 7.25, Press Review. 7.40, Time Signal. 7.41, Concert by the Little N.C.R.V. Orchestra, conducted by Piet van den Hurk; Soloists: Katrine Maria Kwant (Soprano) and Bram Hennek (Cello); Chorus from the St. John Passion (Bach); Cantata for Soprano, Two Violins and Pianoforte (Buxtehude); Concerto grosso, Op. 3, No. 5 (Guilmant); Symphony for Orchestra (de Groot); Three Chorals from the St. John Passion (Bach): Aria for Soprano and Flute, Ich folge dir gleichfalls mit freudigen Schritten (Bach); Prelude for Six Voices (M. Franck). 8.30, Talk. 9.10, Concert (cont'd.): Divertimento in D (Haydn); Cello Concerto (Moum); Overture, Semiramis (Rossini); Serenade (Widor); Berceuse de Jocelein (Godard); Andade Printanière (Lacombe); Scenes alsaciennes (Massenet). In the interval at 9.40, Press Review. 10.25, Light Music on Gramophone Records. 11.10 (approx.), Close Down.

INNBRUCK—See Vienna.

JUAN-LES-PINS 1,202 kc/s, 249.6 metres; 0.8 kW.—7.30 p.m., Radio Concert. 8.0, Weather and News. 8.15, Dramatic Programme. 11.0 to 12 Midnight, Programme in English by the I.B.C. 12 Midnight (approx.), Close Down.

KALUNDBORG—See Copenhagen.

KATOWICE 734 kc/s, 408 metres; 16 kW.—6.0 p.m., Talk: Amateur Photography. 6.15, Announcements and Gramophone Records. 6.25, Announcements. 6.30, See Warsaw. 7.0, Light Music. 7.15, See Warsaw. 10.0, Talk in Esperanto: Polish Pomerania and the Port of Gdynia. 10.15, Dance Music.

KAUNAS 155 kc/s, 1,935 metres; 7 kW.—7.30 p.m., Chamber Music Concert. 8.0, Talk: Auto Suggestion. 8.20, Popular Programme. 8.40, Sports Notes. 8.50, Concert. 9.30 (approx.), Close Down.

KIEL—See Hamburg.

KLAGENFURT—See Vienna.

KOSICE—See Prague.

LAHTI 167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.30 p.m., Concert by the Radio Orchestra. 7.0, Play (Bernard Shaw) Translation by Topo Leistiili. 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG 635 kc/s, 473 metres; 60 kW.—12 Noon, Concert conducted by Eysoldt; Overture, Ika (Doppler); Selection from Das Nachtlager in Granada (Kreutzer); Suite, Auf der Wanderschaft (Klinghardt); Wiegeliend (Mannfred); Mazurka, Frauenherz (Strauss); Selection from Die Puppentheater (Bayer); Gavotte (Popper); Waltz, Zwei Herzen und doch nur eins (Richter); March, Jung Deutschland (Mannfred). In the interval at 1.0 p.m., News. 1.30, Market Prices. 2.30, Exchange and Time Signal. 3.20, Programme for Young People. 3.0, See Berlin (Königs Wusterhausen). 4.0, See Munich. 5.10, Talk: Let us be natural. 5.30, Reading: An Experience in the Tropics. 6.45, Weather, Time, Exchange, and Sports Notes. 6.0, Talk: Women's Cultural Work in the Saar District. 6.20, Topical Talk. 6.30, Talk: Air Traffic between Europe and South America. 6.55, First General News. 7.0, Programme to be announced. 7.15, The Queen's kerchief-Operetta in Three Acts (Joh. Strauss). 9.0, News and Sports Notes. 9.30, Serenade by the Little Münster Orchestra. 11.0 (approx.), Close Down.

LAUBANNE—See Radio-Suisse Romande,

LEIPZIG 769.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12.15 p.m., Richard Strauss Concert on Gramophone Records; Selection from Der Rosenkavalier; Three Songs: (a) Cäcilie, (b) Zueignung, (c) Ich liebe dich; Suite from Le Bourgeois Gentilhomme. Exchange Quotations after the Concert. 1.0, Art and Film Report. 1.30, Talk for the Unemployed. 1.45, The hard König reads from his Novel, Thier von Wallmoden. 2.5, Agricultural Note. 2.35, Exchange Rates. 3.0, Concert by the Dresden Philharmonic Orchestra, conducted by Hilmar Weher; Soloist, Adria Rappold (Violin); Three Baguettes for String Orchestra, Op. 88 (Hugo Kain); (a) Liebeslied, (b) Mondnacht, (c) Minnet; Concert in D Minor for Violin and Orchestra (C. W. Gade); Overture, Claudine von Villa Bella (Schubert); Contredances (Beethoven); Orchestral Suite from Nussknacker und Mausekönig (Hans F. Schubert); Humoresque, Gaudeamus igitur (Liszt). 4.30 to 4.45, Weather and Time Signal. 4.50, Exchange Quotations. 5.0, Educational Talk: Too much Mathematics? 5.30, Talk: A Thousand Years of German Literature. The Counter-Reformation. 5.50, Programme to be announced. 6.0, Spring Pianoforte Recital by Erich Finsler; Frühlingslied (Schubert-Liszt); Two Pieces from the Album for the Young, Op. 68 (Schumann); Spring Song from Songs without Words (Mendelssohn); Vortrilling, Op. 33, No. 1 (Ludwig Thuille); An den Frühling (Grieg); Waltz, Frühlingsstimmen (Joh. Strauss). 6.3, Dialogue: The Flying Season begins. 7, Symphony Concert by the Leipzig Symphony Orchestra, conducted by Carl Schuricht; Concerto grosso in D for String Orchestra, Kettle drums, Trumpeets, Wood Wind Instruments and Harpsichord (Stölzel); Symphony in D Minor, No. 9 (Anton Bruckner). 8.30, News Bulletin. 8.40, Reading from the works of Johann Peter Hebel. 9.15, News Bulletin. 9.30 (approx.), Concert by the Altenburg Theatre Orchestra, conducted by Heinz Drewes; Overture, The Merry Wives of Windsor (Nichola); Aus alten Märcen (W. Helm-Kienzl); Waltz, Deutsche Herzen (J. Strauss); Selection from Madame Butterfly (Puccini); Suite after Watter's Picture (Carl Zimmer); Two Marches; Two Alsatian Peasant Dances (Merkling); Waltz, Traumbelouen (Sigfrid Translatour); Selection from The Maid of the Black Forest (Jessel). 11.0 (approx.), Close Down.

LINZ—See Vienna.

LJUBLJANA 522 kc/s, 574.7 metres; 7 kW. 6.0 p.m., Serbo-Croatian Lesson. 6.30, Talk on H. G. Wells. 7.0, An Opera, relayed from Belgrad. 6.97 kc/s, 430.4 metres. 9.0, Time, News, and Light Music on Gramophone Records.

LWOW 788 kc/s, 381 metres; 16 kW. 6.30 p.m., See Warsaw. 7.0, Theatre Review. 7.1, See Warsaw. 9.45, Variety Music on Gramophone Records. 9.55, See Warsaw. 10.0, (approx.), Close Down.

LYONS LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW. 6.30 p.m., Radio Gazette for Lyons and the South-East. 7.30, Instrumental Concert in Music by Faure, Mozart, St. Saëns and Liszt; Soloist: Mlle. Madeleine de la Vallée (Pianoforte). After the Concert News Bulletin.

MADRID ARANJUEZ, EAQ, 30.43 metres, 9.860 kc/s 20 kW.—10.30 p.m., Concert of Light Music. 10.45, Radio Chronicle. 11.0, Concert (cont'd). 11.35, Sports and Bull-fighting Notes. 11.40, Light Music. 12 Midnight (approx.), Close Down.

MADRID UNION RADIO, Call EAJ7, 707 kc/s, 424 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Sports Notes, and Request Gramophone Records. 8.15, News Bulletin. 8.30 (approx.), Close Down.

MALMO—See Stockholm.

MILAN—See Turin.

MORAVSKA-OSTRAVA 1,137 kc/s, 263.8 metres; 11 kW.—3.10 p.m., See Bratislava. 4.10, Talk on Czech Schools in Austria. 4.20, See Prague. 4.50, Educational Talk. 5.0, Talk. 5.15, See Prague. 5.50, German Transmission: Two Talks. 6.0, See Prague. 6.25, See Brno. 9.0, See Prague. 9.15 (approx.), Close Down.

MOTALA—See Stockholm.

MUHLACKER—See Stuttgart.

MUNICH 563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 563 metres; and Nürnberg, 1,256 kc/s, 242 metres.—11.0 a.m., Orchestral Concert, conducted by Erich Kloss. 12.15 p.m., Concert of Folk Music on Gramophone Records. 1, Time, Weather, News, Announcements and Exchange. 1.20, Programme arranged by the Post Office, with Gramophone Record. 2.25, Andreas Weinberger reads from his Novel, Bergwerk. 2.50, Weather and Agr

APRIL 3rd

MONDAY

continued

cultural Notes. 3.0, Baritone and Soprano Song Recital. Pianoforte Solos in the interval. 3.40, April Hints for Nature Lovers. 4.0, Concert by the Station Orchestra, conducted by Karl List; Overture, Eva (Lehár); Selection from Manon Lescaut (Puccini); Idyll for Small Orchestra, Biene Maja (Schröder); Emperor Waltz (Joh. Strauss); Intermozzo (Jinnou); Overture, Susanna's Secret (Wolf-Ferrari); Selection from Boccaccio (Suppé); Peer Gynt's Homecoming (Grieg). 5.10, Talk: Social Problems. 5.30, Boys of the School-leaving Age. 5.55, Time, Weather and Agricultural Notes. 6.0, Talk: The Life of a German Settler in Canada. 6.20, Introductory Talk to the following Transmission. 6.35 (from Augsburg). Simone Boccanegra—Opera (Verdi), relayed from the Municipal Theatre. 9.20, Time, Weather, News and Sports Notes. 9.55, Serenade from Stuttgart. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.0 p.m., Concert by the Radio Ensemble: Overture (Fr. Rust); Waltz, Autumn Song (Joyce); Potpourri, bei Nacht (Lincke); Two Czech Polkas (Rudky); American Intermozzo (Recktenwald); Serenade No. 2 (Heykens); Japanese and Chinese Reveille (Durra); Liebesromanz (Schmalstich); Selection from Das Nachtlager in Granada (Kreutzer); March (Prekker). 5.0, German Lesson. 5.30, Viola and Pianoforte Recital by Hugo Kramm and Ivar Johnsen; Sonata in C Minor (Bülow); Sonata in C (Honegger). 6.0, Announcements, Weather, and News. 6.30, Talk: Medicinal Plants and Superstition, relayed from Bergen, 824 kc/s, 364 metres. 7.0, Time Signal. 7.2, Light—Cantata (Winter Hielm), relayed from Trondheim, 605 kc/s, 495.8 metres. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Light Music.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—7.0 p.m., Dopplavoro Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 7.20, Light Music on Gramophone Records. 7.30, Time Signal and Announcements. 8.0 (approx.), See Turin. After the Programme, Light Music on Gramophone Records. 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres), at 9.26 a.m. and 10.26 p.m. (Primary and 6-dot Signals).—5.45 p.m., Talk on the Theatre. 6.0, Le Journal Parlé, 7.20, Weather Forecast. 7.30, Messager Opératta Concert. The Orchestra conducted by E. Flament. Soloists: Henri Fabert, Reda Caire, Mlle. Nadia Danty, Victoria and Simone Jodie. Selection from (a) Passionnement, (b) L'Amour masqué, (c) Le Comp de rouffis, (d) La Benaïse, (e) Monsieur Beaucaire, (f) La Basoch, (g) La petite fontaine. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW. Transmits at intervals from 5.45 p.m. Journal Parlé. 6.0, Hot Jazz on Gramophone Records. 6.30, Popular Music on Gramophone Records. 7.0, Medical Talk. 7.5, Talk on Aviation. 7.15, Interval. 7.30, Sponsored Concert. 8.40, Sponsored Concert. 9.40, News.

PARIS

RADIO PARIS, CFR, 174 kc/s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 6.30, Weather and Physical Culture (contd.). 6.45, Selection from Les Erynnies (Massenet) on Gramophone Records. 11.0, Concert by the Radio Paris Orchestra. Overture, Waverley (Berlioz); Sextet from Lucia di Lammermoor (Donizetti); Siegmund's Love Song from The Valkyries (Wagner); Selection from A Life for the Tsar (Glinka); Piece (Wrlanger). 12 Noon, Exchange, News, and Weather. 12.5 p.m., Violin Recital by Mlle. Zadzyska-Grabowska; Romance in G (Bert-lhoven); Berceuse (Faure); Mazurka (Zarzycki); Hungarian Dance (Brahms). 12.30, Exchange. 12.35, Orchestral Concert (contd.). Ballet Music from The Nutcracker Suite (Tchaikovsky). 1.0, Exchange. 2.45, Exchange and Market Prices. 5.10, Agricultural Talk. 5.30, Elementary English Lesson. 5.50, Film Review. 6.0, Review of New Books. 6.20, Concert by the Radio Paris Orchestra: Overture, Mammelle Trompette (Hirshman); Aubade (Mouquet); A la française, à l'allemande, à la viennoise (Gedalde); Overture, Les deux vieilles gardes (Delibes). 6.45, Commercial Prices and News. 6.50, Gardening Talk. 7.0, The Barber of Seville—Opera (Rossini). In the intervals at 7.30, News, Weather, and Sports Notes, at 7.40, Review by Paul Reboux, and at 8.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 980 kc/s, 306 metres; 25 kW. Relayed by W8XK

on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Ballroom Promenade. 9.30, Weather Report. 9.32, Market Report. 9.45, Blue Ridge Buddies. 9.57, David Lawrence's Dispatch. 10.0, Programme to be Announced. 10.15, Dick Darling, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Booth Tarkington's Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News. Reeler. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45 to 1.45 a.m. (Tuesday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Pop-sodent Amos n' Andy. 12.15 a.m., Tasty-east Jesters. 12.30, Five Star Theatre—Mark Brothers. 1.0, Cluquot Club Eskimos. 1.30, Time Signal and Don Carney—a Talk for Dog Lovers. 1.45, Programme to be Announced. 2.0 to 3.30, New York Relay. 2.0, Sinclair Minstrals. 2.30, Jack Frost Melody Moments. 3.0, Three Keys. 3.15, Vic and Sade. 3.30, Bridge School of the Air by E. Hall Downes. 3.45, Samuel di Primio (Tenor). 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News. 4.20, Smith Baller and his Orchestra. 4.50, KDKA Artist Bulletin. 5.0, Hotel Bismarck Orchestra, from New York. 5.30, Time Signal and Good-night.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—3.10 p.m., See Bratislava. 4.10, Talk: Passion Plays in Bohemia. 4.20, Educational Talk. 4.30, Programme for Children. 4.50, Variety Music on Gramophone Records. 5.5, Agricultural Report. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission. Talk: Economic Crises in the Roman Empire. 6.0, Chimes. 6.2, News. 6.10, English Lesson. 6.25, See Brno. In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.1, News Bulletin. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; Lausanne, 442 kc/s, 680 metres; and Geneva, 395 kc/s, 760 metres.—5.0 p.m. (from Lausanne), Programme for Children. 5.30 (from Lausanne), German Lesson. 6.0 (from Geneva), Weather, News and Announcements. 6.30 (from Lausanne), Talk on Dentistry. 7.0 (from Lausanne), Musical and Dramatic Programme. The Lausanne Wireless Orchestra, conducted by Ed. Moser, the Lausanne Male Voice Choir, Mne. Pastori (Songs) and Members of the Radio Theatre. 9.0, News and Weather. 9.15 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.5 p.m., Concert by a Wind Instrument Orchestra. 7.0, News Bulletin. 7.15, Janis Suchovs Song Recital, by Milda Brechman-Stengels (Soprano) and Adolfs Kaktins (Baritone). 8.0, Weather and News. 8.20, Concert of Russian Music: Finnish Sketches (Glazunov); Caucasian Sketches (Ippolitov-Ivanov); Tareh Dance of the Brides of Kashmir (Rubin-tein); Reverie (Scriabin); Andante cantabile (Tchaikovsky); Scene de danse (Glazunov). 9.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres; and 2RO, 11,810 kc/s, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.5 to 1.15 p.m., Popular Music on Gramophone Records. In the interval at 12.30, Giornale Radio and Exchange Quotations. 3.0, See Turin. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale Radio. 4.30, Quarterly Concert, relayed from the Royal Philharmonic Academy. 6.0 (from Naples), Shipping and Sports Notes. 6.10, Agricultural Report and Dopplavoro Notes. 6.20, Giornale Radio. 7.0, Time, Announcements and Variety Music on Gramophone Records. 7.15, Soprano Song Recital, by Margherita Cossa: Three Songs (Pasquinelli); (a) Con tranquillo riposo, (b) Filli, Filli (c) Giran pure in ciel le sfere. 7.30, Sports Notes and Tourist Report. 8.0, Orchestral Concert, conducted by Igo Tansini. 9.0, Talk. 9.10 (approx.), Police Band Concert, conducted by Andrea Marchesini; Selection from Arolio (Verdi); Santo Stefano (Panna); Three Dances from Nell Gwynne (E. German); Melody (Mossolov); Slav March (Tchaikovsky). 9.55, News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres; and by W2XAD on 19.56 metres.—7.30 p.m., The Revolving Stage, from New York. 8.0, Talk from New York. 9.15, Soloist from New

York. 12 Midnight, Boy Scouts' Programme. 12.15 a.m. (Tuesday), Stock Reports. 12.30, Gold Medal Band. 12.35, Herbert Haight (Baritone). 12.45, The Goldbeys, from New York. 1.0, Seconyland Sketches, from New York. 1.30, Voice of Firestone, from New York. 2.0, A. and P. Gipsies, from New York. 2.30, Buick Programme followed by Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.36, Weather and News. 11.40 (from Basle), French Variety Music on Gramophone Records. 12.35 p.m., Weather and Exchange. 12.45 to 2.30, Interval. 2.30 (from Basle), Variety Music on Gramophone Records. 3.30 (from Basle), Light Music on Gramophone Records. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from Berne), Dr. Schuchmeister von Schwarzbürg—a Sequence of Stories (Fritz Bürki). 6.0, Time and Weather. 6.5 (from Berne), Gramophone Records (R. Strauss): (a) Till Eulenspiegel, (b) Till Eulenspiegel's Merry Pranks. 6.30 (from Berne), Talk on Eastern Music, illustrated with Gramophone Records. 7.15 (from Berne), Atlantid—Radio Play, after Benoit's L'Atlantide (arranged by Friedrich Bwand). 8.15, Weather and News. 8.30 (from Berne), Variety Programme: The Singing Babies, Hans Kollschers, the Miquette Orchestra, and Soloists. 9.35 (approx.) Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.5 p.m., Translation of a Student's Latin Exercise, relayed from Malmö (1,301 kc/s, 231 metres). 4.15, Accordion Music. 4.40, Dialogue in Danish. 5.0, Popular Music on Gramophone Records. 5.55, Parliamentary Report. 6.15, Weather and News. 6.30, Talk: The Development of Religion. 7.0 (from Göteborg), Finnish Folk Song Recital by Ulla Niska. 7.15, Microphone Report. 8.0, Concerto No. 2 in B Flat for Piano and Orchestra (Brahms). 8.45, Weather and News. 9.0, Orchestral Concert: Overture, Il Guarany (Gomez); Potpourri of American Negro Spirituals (Fouls); Spanish Waltz, Estudiantina (Waldteufel); Blues (d'Albert); Melody (Niemann); Selection from Eugene Onegin (Tchaikovsky); Festival March, Knights of the King (Ketelbey). 10.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.30 a.m., Brahms Memorial Concert on Gramophone Records. 11.45, News. 12 Noon, Time and Exchange. 12.5 p.m., Light Music on Gramophone Records. 1.0 to 3.45, Interval. 3.45, Talk in German on Electricity. 4.0, Orchestral Concert, conducted by Roskam: March Intermozzo (Rust); Waltz, Over the Waves (Rosas-Pachernegg); Liebesromantze (Schmalstich); Overture, Si j'étais roi (Adam); Extase (Ganne); Selection from Madame Chrysanthème (Messager); Serenade (Moszkovsky); Oriental Suite (Popy); March (Souza). 5.0, Literary Talk in French. 5.30, Orchestral Concert, conducted by Maurice de Villers: Marche de l'Emir (Luigini); Waltz, Flattergeister (Jos. Strauss); Overture, Medea (Cherubini); Selection from Madame Butterfly (Puccini); Orchestral Suite, Calirhoe (Chaminade); Humoresque (Dvorak); Selection from Passionnement (Messager); March, Le coq gaulois (Popy). 6.30, Time and News. 6.45, Light Music on Gramophone Records. 7.20, Lottery Results. 7.30, Concert by the Municipal Theatre Orchestra, relayed from Metz: Overture, The Barber of Seville (Rossini); Selection from Faust (Gounod); Clair de l'Amour (Martini); Selection from Martha (Flotow); Italian Ballet (de Bozi); Selection from Les vingt-huit jours de Clairette (Roger-Varney); Barcarolle from The Tales of Hoffmann (Offenbach); Selection from Tosca (Puccini); Royale valse (Paquot); Greek March (Ganne). 9.30 (approx.), Close Down.

STUTTART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and FREIBURG, 527 kc/s, 570 metres.—12.30 p.m., Concert from Langenberg. 1.0 to 1.15, Programme arranged by the Post Office, with Gramophone Records. 1.15 (from Karlsruhe), Programme arranged by the Post Office, with Gramophone Records. 1.30, Spanish Lesson. 2.0 to 2.30, Elementary English Lesson. 4.0, See Munich. 5.0, Time, Weather, and Market Prices. 5.10 (from Freiburg), Talk. 5.50 (approx.). See Frankfurt. 6.15 (approx.), Time, News, and Gramophone Records of Light Music. 6.30, The Special Constabulary—a Radio Report. 7.10, See Heilsberg. 9.10, Time, News, Weather and Programme Announcements.

9.30, Chess Lesson. 9.55, Programme by the Dance Ensemble of the Stuttgart Philharmonic Orchestra. Pfitzner Songs by Margarete Welter (Soprano). 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.30 p.m., Argentine Music. 6.45, Songs. 7.0, Viennese Music. 7.30, Arias from Operas: My Beloved Swau from Lohengrin (Wagner); Serenade from The Damnation of Faust (Berlioz); O Star of Eve from Tannhäuser (Wagner). 7.45, Violin Solos: Slav Dances (Kreisler); Tango (Albeniz); Chanson triste (Duparc). 7.45, Extracts from Tosca (Puccini). 8.15, Accordion Solos. 8.30, Orchestral Concert: Danza (Granados); Waltz, Pas de fleurs from Naïfa (Delibes); Selection from Das Nachtlager in Granada (Kreutzer); Overture, Die schöne Galathée (Suppé); Piece (Osheit). 9.0, Songs from Operettas. 9.15, North African News. 9.30, Concert for Listeners in Morocco. 10.0, Popular Concert. 10.30 to 11.0, Programme in English by the I.B.C., W. Brown-Constable, announcing. 10.30, Dance Music: I'll never be the same again; I'm playing with Fire; As long as Love lives out; Here it is Monday; When anybody plays or sings; We'll always be sweethearts; Every Woman thinks she wants to wander; One Hour with you. 10.57, I.B.C. Goodnight Melody. 11.0, Weather and Announcements. 11.5, Dance Music. 11.15, Songs from Sound Films. 11.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—6.50 p.m., Concert by the Caffè Dante Orchestra, followed by Programme from Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—4.30 p.m., See Rome. 6.0, Time Signal. 6.1, Gramophone Records. 6.20, Giornale Radio. 6.45, Gramophone Records and Tourist Talk. 7.0, Time, Announcements, Giornale Radio, Weather and Gramophone Records. 7.45, Talk. 8.0, Sponsored Concert. 9.0, One-Act Comedy, followed by Variety Music on Gramophone Records. 10.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in Italian. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—4.15 p.m., Orchestral Concert; Moller Turndanz (Eber); Overture, Norma (Bellini); Waltz, Königskinder (Löhner); Intermozzo, The Wedding of the Dragonflies (Barrow); Indigo (Stefanides); Selection from Der Teufelsreiter (Kálmán); Slow Foxtrot, Nur die älteren Herrn (Loewen-Jascha); Slow Foxtrot, Kleine Mary, komm auf ein Glas Sherry! (Weiner-Dillmann); Potpodole, Schöne Elena aus Cartagena (Hraband). 5.20, Talk: Modern Italian Art. 5.40, Talk: Books and Works of Reference in Connection with the Week's Talks. 6.45, Talk: The Individual and Society among Primitive Races. 6.10, English Lesson. 6.35, Time, Weather, and Programme Announcements. 6.45, Dr. Anton Eisselberg talks about his Surgical Experiences. 7.10, See Heilsberg. 9.10, News and Weather, relayed from the Café Westminster.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—10.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Road Report. 2.35, Answers to Correspondence. 2.50, Popular Music on Gramophone Records. 3.25, Elementary French Lesson. 3.40, Talk: World Economy. 4.0, Concert of Hungarian Music by Mme. Clara Dullien (Violin) and Tibor Beger (Pianoforte); Three Pieces for the Violin and Pianoforte (Beger), with the Composer at the Pianoforte: (a) Rhapsody No. 1, (b) Rhapsody No. 5, (c) Rakoczy No. 1; Pianoforte Solos: Music from a Hungarian Opera (Poldini); Violin Solos: (a) Adagio (Kodaly), (b) Ruralla (Hungarian (Dobnanyi), (c) Dragonfly (Zsolli). 4.0, Zephyr (Hubay). In the interval, Announcements. 4.55, Programme Announcements. 5.0, Talk on History. 5.20, Talk on Current Events. 5.25, Light Orchestral Concert, relayed from the Cristal Restaurant. 6.0, Miscellaneous Items. 6.20, Agricultural Talk. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Technical Correspondence. 7.15, Night of Love—Operetta (Valentinov). 9.45, Dance Music. 9.55, Weather Forecast and Police Notes. 10.0, Dance Music.

ZURICH.—See Schweizerischer Landesender.

TUESDAY

APRIL THE FOURTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL LONDON Programme of Sir Landon Ronald's compositions. "Ellan Vannin through the Ages," a Manx national programme, by M. Frost. Symphony concert.

REGIONAL MIDLAND Orchestral programme of old-time dances.

NORTH REGIONAL Programme by old musical students of University College, Cardiff.

WEST REGIONAL Entertainment presented by Jewish players. Hunting songs of the Gael.

SCOTTISH REGIONAL Military Band concert.

BELFAST

ABROAD

BRUSSELS (No. 2) 7 p.m. The De Toekomst Orchestra, from Borgerhout.

BUDAPEST 6.30 p.m. Comic opera: "Le Chemineau" (Offenbach).

COPENHAGEN 7 p.m. Austrian concert, conducted by Fritz Mahler.

EIFFEL TOWER 7.30 p.m. Concert from the Conservatoire.

HAMBURG KONIGS'WUS-TERHAUSEN 9.30 p.m. Orchestral concert from Fleusburg.

PARISIEN 7 p.m. Opera: "Elektra" (Richard Strauss), from Unter den Linden.

PRAGUE 7.30 p.m. Extract from operetta: "Ciboulette" (Hahn).

STOCKHOLM 6 p.m. Opera: "Tannhäuser," by Wagner.

STRASBOURG 9 p.m. Johann Strauss concert.

TOULOUSE 5.30 p.m. Pianoforte recital by Jeanne Wolfstädter.

8 p.m. Delmas concert.

ALGIERS
824 kc/s, 364 metres; 13 kW.—7.0 p.m., Financial News, 7.10, Shipping Notes, 7.15, Weather Forecast and Agricultural Report, 7.20, Songs from Brummel (Hahn), 7.35, Musical Hall Sketch by Grock, 7.55, News Bulletin, 8.0, Time Signal, 8.2, Talk: Motoring in the Sahara, 8.15, Chamber Music: Concert Piece for Cello and Piano-forte (de la Presle); Soprano Solos: (a) Pourquoi rester seulette (Saint-Saëns), (b) Vieille Chanson (Bizet); Harp Solos: (a) Le Cygne (Saint-Saëns), (b) First Arabesque (Debussy); Duet from Mlle. Nitouche (Hervey), 8.40, News, 8.45, Talk on Algiers, 9.0, Concert of Oriental Music, 9.30, News Bulletin, 9.35, Concert (cont'd.), 9.55, News, 10.0 (approx.), Close Down.

ATHLONE
725 kc/s, 413 metres; 1.2 kW.; and **CORK**, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records, 6.0, Popular Music on Gramophone Records, 6.15, Programme for Children, 7.0, Popular Music on Gramophone Records, 7.10, British Market Report, 7.20, News Bulletin, 7.30, Time Signal, 7.31, Gaelic Talk, 7.45, Talk on the Aran Islands, 8.0, Italian and French Opera Music by the Station Orchestra, 8.30, Songs from Italian Opera by John Lynskey (Baritone), 8.40, French Opera Music by the Station Orchestra, 9.0, Songs from French Opera by J. Lynskey, 9.10, Pianoforte and Violin Recital by Miss McKenna and M. Malcolm, 9.40, The Station Orchestra, 9.55, Contralto Solos by Mabel Home, 10.10, The Station Orchestra, 10.30, Time Signal, News, Weather Report and Close Down.

BARCELONA
RADIO BARCELONA; Call EAJ1; 860 kc/s, 348.8 metres; 5 kW.—6.0 p.m., Trio Concert, 7.0, Request Gramophone Concert, 7.30, Exchange Quotations and Art Notes, 8.0, Popular Music on Gramophone Records, and News Bulletin, 9.0, Chimes from the Cathedral, Weather Forecast, Messages to Seamen, Exchange Quotations, and Market Prices, 9.10, Sponsored Programme, 9.30, Jugos Malabres—Musical Comedy (Vives), followed by Las Bravias—Lyric Farce in One Act, after Shakespeare's Taming of the Shrew (Silva and Shaw), with Music by R. Chapi, 11.0 (in an interval), News, 12 Mid-night (approx.), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Report and Dopplavoro Notes, 7.20, Giornale Radio and Weather, 7.30, Time and Announcements, 7.35 (approx.), Orchestral and Choral Concert relayed from the Teatro Comunale Piccini, Conductor: Biagio Grimaldi, Soloist: Donato Marone (Pianoforte). The Transfiguration—Oratorio in Two Parts (Perosi) for Soloists, Choir, Orchestra and Organ; Fantasia, Op. 80, for Pianoforte, Choir and Orchestra. After the Concert, Light Music from the Grand Hotel Moderno. In the intervals, Literary Notes, 9.55, News.

BASLE—See Schweizerischer Landessender.

BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—6.0 p.m., Light Music on Gramophone Records, 6.30, Song Recital by Mme. Sophie Drausali, 7.0, Concert by the Station Orchestra, relayed from Zagreb, 977 kc/s (207 metres), 9.0, News Bulletin, followed by Light Music, relayed from the Ratnicki Dom Restaurant.

BERLIN
KONIGS WUSTERHAUSEN, 183.5 kc/s, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin, 1.0, Gramophone Concert from Berlin (Witzleben), 2.0, Nature Study for Young People, 2.30, Weather and Exchange, 2.45, Reading: Der alte Turmbau (Eduard Mörike), 3.0, Talks for the Country Woman, 3.30, See Leipzig, 4.10, Talk: Village Culture in the Middle Ages, 4.30, Flute Recital: Sonata in D, Op. 6 (Beethoven, arr. Burchard); Duet for Pianoforte and Flute, Op. 10, No. 3 (Kuhlau), 5.0, Talk: Individualism or Collectivism in Industry? 5.30, Concert of Old Music by the Freiburg Chamber Trio; Pavane and Gaillardie; Die präunlein, die da bliesen (Isaak); Pavane and Basse dansé; Et, du feiner Reiter (Scheidt); Selt doch, wie der Rheinwein lautz (Krieger); Minnet (Telemann); Musette (Eighteenth Century); Aria, Der rechten Stimmung (Telemann); Quodlibet, 6.0, Talk: The Military Training of Young People in France, 6.25, A Poem, 6.30, Talk on the 7.0 p.m. Transmission, 6.40, Shortland Test, 7.0, Elektra—Opera in One Act (Richard Strauss), relayed from the State Opera House, Unter den Linden, 9.0, Weather, News and Sports Notes, 9.45, Weather Report for Shipping, 10.0, Concert from Hamburg, 11.0 (approx.), Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.0 p.m., Topical Talk, 6.10, Concert of Seldom-Hard Music, by the Berlin Wireless Choir and Walter Praetorius (Tenor). Commentary by Heinrich Burkard, 6.40, See Berlin (Königs Wusterhausen), 6.58, Announcements, 7.0, Concert by the Berlin

Wireless Orchestra, conducted by Bruno Seidler-Winkler, Overture, Jessonda (Spohr); Concertante Fugue for two Piano-fortes and Orchestra; Variations on the Gipsy March from Weber's Preciosa (Mendelssohn); Italian Serenade (Hugo Wolf); Musik am Abend, Op. 41 (Paul Graener); Two Movements from the Fantasia; Aus Italien, Op. 16 (R. Strauss), 8.20, Concert of Music from Unfinished Works, by the Berlin Wireless Orchestra, the Berlin Wireless Choir, Herbert Winkler-Lindberg (Baritone), Franz von Sapanowski (Violin), and Adolf Fritz (Clarinet). Commentary by Heinrich Burkard, Aria and Chorus from the Oratorio Die Anrufung Neptuns (Haydn); Adagio for Clarinet and Strings (Mozart); Rondo de Chasse (Mozart); Concerto in C for Violin and Orchestra (Beethoven); Songs for Baritone (Schumann): (a) Die nützliche Heereszeit, (b) Der Reiter und der Bodensee; Das Leben des heiligen Stanislaus Oratorio (List); De profundis—Psalm for Baritone, Male Voice Choir and Organ; Interlude for Orchestra, 9.5 (approx.), Weather, News and Sports Notes, 9.30, See Hamburg, 11.0 (approx.), Close Down.

BERNE—See Schweizerischer Landessender.
BEROMUNSTER—See Schweizerischer Landessender.
BODEN—See Stockholm.
BODO—See Oslo.

BRATISLAVA
1,076 kc/s, 279 metres; 14 kW.—3.10 p.m., See Moravská-Ostrava, 4.10, See Prague, 4.20, Russian Song Recital by Alzhbeta Kramerova, 4.50, Talk on Politics, 5.5, Concert of Light Music by the Station Band, conducted by K. Nagl, 5.35, Slovak Lesson for Czechs, 5.50 till Close Down, See Prague, 9.40 (approx.), Close Down.

BREMEN—See Hamburg.
BRESLAU
923 kc/s, 325 metres; 60 kW.; and **Gleitwitz**, 1,184 kc/s, 253 metres.—12.5 p.m., Weather Forecast, 12.10, Marches from Sound Films on Gramophone Records, 12.45, Time, Weather, News, and Exchange, 1.0, Gramophone Concert, Overture, Der Opernball (Heiberg); Aria from The Merry Wives of Windsor (Nicola); Caprice viennois (Kreisler); Overture, Orpheus in the Underworld (Offenbach); Ballet Music from The Battered Bride (Smetana), 1.45, Programme arranged by the Post Office, with Gramophone Records, 2.10, Market Prices, 2.40, Programme for Children, 3.10, Recital of Brahms Duets by Ella-Lenz Pfeiffer (Contralto) and Gerhard Artl (Baritone); Two Songs, Op. 91, for Contralto with Viola and

Pianoforte Accompaniment: (a) Gestülte Sehnsucht, (b) Geistliches Wiegenlied; Four Duets for Contralto and Baritone, Op. 28; (a) Die Nonne und der Ritter, (b) Vor der Tür, (c) Es rauscht das Wasser, (d) Dorfjäger und sein Liebling; Four Songs for Baritone: (a) O wüsst ich doch den Weg zurück, (b) Die Maibaht, (c) Sonntag, (d) Sandmännlein; Two Songs for Contralto: (a) Feldinsamkeit, (b) Botschaft, 4.10, Book Review, 4.30, Agricultural Prices, 4.35, Paul Abert's reads from his own Works, 5.5, Topical Programme, 5.40, Wireless Hints, 5.50, Talk: The Atlantic and its Geopolitical Problems, 6.20, Weather and Market Prices, 6.25, Variety Music on Gramophone Records, 6.40, See Berlin (Königs Wusterhausen), 7.0, Concert of Ballads of Many Lands, 7.50, News, 8.0, Dances from Many Lands, Concert by the Station Orchestra, conducted by Franz Marszałek, German Dances (Schubert); Hungarian Dances, Nos. 5 and 6 (Brahms); Slav Dances (Dvořák); Styrian Dances (Lanner); Polonaise in A (Chopin); Espana (Chabrier); Scottish Dances (Beethoven); Bohemian Polka from Schwanda the Piper (Weinberger); Emperor Waltz (Joh. Strauss), 9.0, Time, Weather, News, Sports Notes, and Programme Announcements, 9.25, Political Newspaper Review, 9.50, Theatre Talk, 10.0, Talk: From New York to San Francisco, 10.15, See Hamburg, 11.0 (approx.), Close Down.

BRNO
878 kc/s, 342 metres; 35 kW.—3.10 p.m., See Moravská-Ostrava, 4.10, Tabs of our Grandmother, 4.20, See Prague, 4.50, Light Music on Gramophone Records, 5.0, Music Review, 5.15, Talk for Workers, 5.25, German Transmission: News and Two Talks, 5.50 till Close Down, See Prague, 9.40 (approx.), Close Down.

BRUSSELS (No. 1)
1.1 N.R.; 590 kc/s, 509 metres; 15 kW.—11.0 a.m., Massenet Concert, by the Little Station Orchestra, conducted by P. Leemans; Gavotte and Minnet from Manon; Si tu veux Mignonne; Ouvre tes yeux bleus; Selection from Ondrillon; Elegy for Cello; Angelus from Scènes alsaciennes; Selection from La Cigale; Clair de lune, from Werther; Finale from Les Erynnies, 12 Noon, Le Journal Parlé, 12.10 p.m., Spanish Music on Gramophone Records; Iberia (Albeniz), 12.45, Song Recital by Mme. Hendrick; D'une Prison (Hahn); Si mes vœux avaient des ailes (Hahn); Vous aimez beau dire et beau faire (Fontenailles); Si l'amour est un songe (Lebern), 12.45, Spanish Music (cont'd.); Selection from Goyescas (Granados); Ronda aragonesa (Granados); Dances from La vida breve (Falbo), 4.0, Concert by the Radio Orchestra, conducted by Franz André; Suite, Joyous Youth (Coates); Rondo (Foot); Third Suite (de Micheli), 4.30, Programme for

Children, arranged by the Belgian Catholic Radio Society, 5.5, Literary Programme, 5.15, Readings (Claude), 5.30, Concert of Sacred Music in Preparation for Easter, by the Chorists of the Monast Abbaye du mont César at Louvain, conducted by the Reverend Father Kieps, 6.15, Catholic Report and Film Review, 6.30, Le Journal Parlé, 7.0, Concert by the Symphony Orchestra, conducted by Arthur Meulemans, Soloists: Marguerite Thys, Oscar Jouan (Tenor), and M. Lits (Baritone), Part I: L'Enfant Prodigue—Cantata (Debussy), 7.45, Talk on the Crisis, 8.0, Concert (cont'd.), Part II: French Opera Music: Prelude and Ballet Music from Carmen (Bizet); Flower Song from Carmen (Bizet); Suite from Phlémon et Baucis (Gounod), 8.35, Widor Concert; Selection from Conte d'Avril; Ballet Music from La Korrigan, 9.0, Le Journal Parlé, 9.10, Request Gramophone Records; Selection from Si j'étais roi (Adam); Selection from The Czardasch (Lohé); Tout va bien (Bach and Laveigne); Marche du docteur rigoureux de ligne (Daudenard); Rode des lutins (Bazzini); Burlesque (Poulé), 9.40, Sonata No. 6 in G for Violin and Piano-forte, 9.55, Christus Vincit (Liszt), 10.0 (approx.), Close Down.

BRUSSELS (No. 2)
N.I.R.; 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish, 11.0 a.m., Variety Music on Gramophone Records, 12 Noon, Journal Parlé, 12.10 p.m., Concert by the Small Station Orchestra, conducted by P. Leemans; Overture, Jean de Paris (Boieldieu); Small Concert Suite (Coleridge-Taylor); Chanson italienne (De Tacey); Air from Louise (Charpentier); Gramophone Record, Serenade Schumann (R. Strauss), sung by Elizabeth Schumann; Selection from Wonder Bar (Katscher); Foxtrot for Violin, Ragin' the Fiddle (Gerrebois), 4.0, Concert by the Symphony Orchestra, Conductor, M. Meulemans, Commemorative March (Gilson); Symphonie du printemps (Alpaert); Spanish Fantasia (Goyard); Heide Suite (Meulemans), 4.45, Programme for Children, 4.30 Concert by the Small Station Orchestra, conducted by P. Leemans, Soloists: M. Adm (Clarinet) and M. Doulez (Pianoforte), Oriental March (Granados); Canzonetta for Clarinet (Pierne); Légende No. 8 (Dvorak); Gramophone Records by Lotte Lehmann: (a) Air (Gussens), (b) Berceuse from Jocelyn (Godard); Romantic Dances for Pianoforte (Bredesen); Polpourri, Zoo singt Holland (Shyster-Hoogenboom), 6.15, Talk on how to observe Animals, 6.30, Journal Parlé, 6.40, Concert by the De Toekomst Orchestra, conducted by M. Itahuisen, relayed from **Borgerhout**; Marche de courtège (Wilson); Selection from The Merry Wives of Windsor (Nicola); Ballet Music from Faust (Gounod); Selection from The Master-singers (Wagner), 8.0, Talk, 9.0, Journal Parlé, 9.10, Die Fledermaus—Operetta (Joh. Strauss), Concert Version, on Gramophone Records, 10.0 (approx.), Close Down.

BUCHAREST
761 kc/s, 294 metres; 12 kW.—3.0 p.m., Light Music and Romanian Music by the Muzic Orchestra. In the interval at 4.0, Radio Journal, 5.0, Talk: Romanian Engineers, 5.20, Talks on Literature, 6.0, Song Recital by Lydia Lipovska, 6.20, Concert by the Station Orchestra, Soloist, Pupa Popovici (Pianoforte); Romanian Suite (L. Mendelssohn); Concerto for Pianoforte and Orchestra (Beethoven); Serenade for Strings (Wolff-Ferrari); Leonora Overture No. 3 (Beethoven). In the interval at 7.0, Talk, 7.45, Radio Journal, 8.0, Talk in French: Artur Romania.

BUDAPEST
545 kc/s, 550 metres; 18.5 kW. Also relayed on 840 metres from 6.25 to 11.0 p.m.—4.30 p.m., Reading, 5.0, Concert by the Guttenberg Jazz Band from the Café Ostende, 6.0, French Lesson, 6.30, Le Chemineau—Comic Opera in Three Acts (Offenbach), relayed from The Opera House, After the Opera, Gaiety Music relayed from the Hotel Danapalota.

CASSEL—See Frankfurt.
COPENHAGEN
1,067 kc/s, 281 metres; 0.75 kW.; and **KALUNDBORG**, 260 kc/s, 1,153 metres; 1.5 kW.—11.0 a.m., Town Hall Chimes, 11.2 to 1.0 p.m., Concert from the Bellevue Strandhotel, 2.0, Recital of Scandinavian Songs by Georg Leicht, 2.20, Concert from the Ritz Restaurant, 4.0 to 4.30, Programme for Children; Gramophone Records of Operatic Music, with Talk, 4.40, Exchange and Market Prices, 4.50, Talk: Honey, 5.20, German Lesson, 5.40, Weather and News, 6.15, Time Signal, 6.20, Talk: Everyday Intellectual Problems—Personality, 7.0, Town Hall Chimes, 7.1, Austrian Evening—Concert by the Radio Orchestra, conducted by Fritz Mahler; Austrian, Figaro (Mozart); Address by the Austrian Consul F. Böhm; Symphony No. 5 in B flat (Schubert); Talk by Valeur Haue-Fauchsbiell; Austria as a Country for Tourists; Suite from the Music to Goethe's Triumph der Empfindsamkeit (Ernst Krenek), 8.30, Poet and Shopkeeper—Comedy in One Act (Carl Ganderup), 9.10, Jazz Songs on Gramophone Records, 9.25, News Bulletin, 9.40, Pianoforte Sonata in A Minor, Op. 8, No. 2 (J. P. E. Hartmann).

CORK—See Athlone.
DANZIG—See Heilsberg.
DRESDEN—See Leipzig.

FECAMP

1,328 kc/s, 226.9 metres; 10 kW.—11.0 a.m., Military Music. 11.30, News. 11.45, Botrel Concert. 5.0 to 6.0 p.m., Programme in English by the I.B.C. C. Danvers Walker, B. McNabb, and F. Lampung announcing. 5.0, Song Recital for Torquay Listeners: The Lass with the Delicate Air; When the House is asleep; Gavotte for Octet, from Mignon (Thomas); Little Brown Owl; One Morning very early. 5.20, Octet Concert for Plymouth Listeners: Ballet Music from Rosamund (Schubert); La filleuse (Raff); Londonderry Air; Waltz from Der Rosenkavalier (R. Strauss); Serenade; Valse caprice. 5.40, Concert for Devonport Listeners. Military Band Music: The Middy March (Alford); A Merry Hunting Day; A Life on the Ocean (Binding); En Promenade; Colonel Bogey (Alford). 6.0, Radio Gazette. 6.20, News and Gramophone Records. 6.40, Answers to Correspondence, and News. 7.15, Talk. 8.0, Concert relayed from Le Havre. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0, Light Music: Back again to Happy-go-Lucky Days; Was that the Human Thing to Do?; Hot Coffee; She didn't say "Yes"; Good-night Vienna; Snap your Fingers; Five Minutes to Twelve; Stungled on your Shoulder; Somebody Loves You; Masquerade; Majah General Thing-a-me-Bo; Auf Wiederseh'n my Dear; Ooh! that Kiss; Good Evening. 11.0, Hungarian Gipsy Music. Hungarian Medley (arr. Leggatt); Hungarian Dance No. 2 (Brahms); Violin Solo: Hejre Kati, from Scenes from the Czardas (Hubay); Hungarian Dances Nos. 6, 1 and 5 (Brahms); Hungarian Rhapsody No. 2 (Liszt). 11.30, Vocal and Orchestral Concert. Songs: (a) To Mary, (b) Maire my Girl, (c) Passing By; Wedgwood Blue. Songs: (a) Down Vanxhall Way, (b) Beauty's Eyes, (c) Green Hills of Somerset. Orchestra: Sari Waltz. 12 Midnight, Club Concert for Darlington Listeners. Part I: Variety Music: Would you like to take a Walk?; Corporal Hoskins; Don't send my boy to Prison; Oh! Zuyder Zee; Pianoforte Selection of Popular Times; Morocco; Good-night Sweetheart. 12.30 a.m. (Wednesday), Concert. Part II: Songs: A Little Kiss each Morning (Woods); The Night was made for Love (Kern); I am the Winds (de Sylva); Orchestral Interlude: Selection from White Horse Inn (Benatzky); Now I'm in Love (Yellen); A new Love is Old (Harbach); Little White Lies (Donaldson). 1.0, Banjo Solos; Medley of Popular Airs: Heather Bloom; The Buffoon; The Wedding of the Painted Doll; Duets: (a) Adeline, (b) Sweeping the Clouds Away; Riverside; Faust Medley. 1.30, Vocal Duets and Saxophone Solos: Duets: (a) Old New England Moon, (b) Songs I heard at Mother's Knee, (c) Sing you Sinners; Saxophone Solos: (a) I need you more each Day, (b) Valse Marguerite; Duets: (a) Dancing with Tears in my Eyes, (b) Happy Feet, (c) If I had a Girl like you. 2.0, Light Music: by the Fireside; Oh! Monah; The longer that you linger in Virginia; To-day I feel so Happy; Sunshine and Roses; Consolation; Oh what a Night; The Penguins' Patrol; Anchor's a-weigh; I still get a Thrill; I'd like to find the Guy that wrote the Stein song; That's where the South Begins; Hunting Tigers out in India; If I could be with You. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel. 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—5.25 p.m., Talk: The American Bank Crisis. 5.50, Talk: Oliver Cromwell, Dictator and Protector. 6.15, Time, Programme Announcements, Weather and Exchange. 6.20, Sports Report. 6.40, See Berlin (Königs Wusterhausen). 7.0 till Close Down, See Stuttgart. In the interval at 9.0, Time, News, Weather and Sports Notes.

FREDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—5.20 p.m., Johann Christoph Bach Concert, by the Hanover Station Orchestra. Dorothea Grelle (Contralto) and Otto Ebel von Sosen (Harpischord). Allegro from a Septet; Minuet from the Sonata for Flute and Pianoforte. Contralto Solo: Schlummere sanft, from Die Kindheit Jesu; Rondou from Septet. 6.5, Frankfurt Exchange and Hamburg Egg Market Prices. 6.10, Talk: Germany's Foreign Loans. 6.35, Weather. 6.40, See Berlin (Königs Wusterhausen). 7.0, Bunter Abend. The Station

Choir and Orchestra, conducted by Fritz Gartz, and Soloists. Overture, Preciosa (Weber); Song from The Merry Wives of Windsor (Nicolai); Clog Dance from Czar and Carpenter (Lortzing); O schöne Jugendentage, from Der Evangelinam (Kienzl); Overture, Der lustige Krieg (Joh. Strauss); An des Rheines grünen Ufern (Gumbert); Waltz from Der Schatzmeister (Zielner); Melody from The Chocolate Soldier (O. Strauss); Selection from The Bayadere (Kalmán); Liebeslieder-Walzer (Strauss-Gross); Overture, Der Bettelstudent (Müllbächer); Part of the First Finale from The Gipsy Baron (Joh. Strauss); Stretta from Il Trovatore (Verdi). 8.30, News. 8.40, Katharina—Comedy in One Act (Fodor). 9.10, Time and News. 9.20, Topical Talk. 9.30 from Flensburg, Orchestral Concert: Overture, Prometheus (Beethoven); Nocturne No. 5 (Haydn-Geiringer); Symphony in B Flat No. 33 (Mozart); Violin Concerto (Mendelssohn); Haydn Variations (Brahms); Overture, Alfonso and Estrella (Schubert).

HANOVER.—See Hamburg.

APRIL 4th TUESDAY continued

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.; and DANZIG, 662 kc/s, 453.2 metres; 12.5 p.m., Gramophone Concert: Minuet and Allegretto from the Quintet in E (Boccherini-Luigini); Rondo from the Quartet in G Minor, Op. 25 (Brahms); Two Songs from The Merry Wives of Windsor (Nicolai); Song from Il Trovatore (Verdi); Song from Czar and Carpenter (Lortzing); Overture, Banditenstreich (Suppé); Walzer aus Wien (Bittner); Sons les ponts de Paris (Scott); Waltz (Berger); Selection from Liselotte (Künneke); Heut hab ich Glück (Knepler); Arme kleine Jeanne (Knepler); Selection from The Student Prince (Krausz); Vineta-Glocken (Lindsay-Thiemer); The Skaters' Waltz (Waldteufel); Die ersten Blumen in Mai (Grothe). 12.20 p.m. (in the interval), News. 1.30, Programme arranged by the Post Office, with Gramophone Records. 2.0, Agricultural Prices and Exchange Rates. 3.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Polonaise No. 2 (Liszt); Overture, Anne Boleyn (Donizetti); Serenade (Lalo); Barcarole (Chelivkovsky); Selection from Der Freischütz (Weber); Galanterie-Walzer (Leopold); Suite der Freude (Sehnepfing); Selection from Casanova (Strauss-Benatzky); Waltz (Waldteufel); Overture, Paragraph 3 (Suppé). 4.50, Review of Periodicals. 5.15, Agricultural Prices. 5.30, Talk for Workers. 6.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken; Overture, Prinzessin Goldranch (Rust); Liebesständchen (Wilcken); Liebeszauber (Zimmermann); Selection from Boccacio (Suppé); Waltz, Deutsche Grüsse (Jos. Strauss). 6.40, See Berlin (Königs Wusterhausen). 7.0, Weather, News, and Sports Notes. 7.10, Chamber Music. 8.10, Friedrich Ludwig Zacharias-Werner—Incidents in the Life of a Genius (Martin Bormann). 9.10, Weather, News, and Sports Notes.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.41 a.m., Concert by the Wireless Orchestra, conducted by Nico Treep. In the intervals, Light Music on Gramophone Records. 1.55 to 2.10 p.m., Interval. 2.10, Variety Music on Gramophone Records. 2.40, Dressmaking Lesson. 3.40, Song Recital by Mlle. Strouk. 4.10, Concert by a Children's Choir. 4.40, Programme for Children. 5.10, Talk arranged by the Liberal Protestant Radio Society (V.P.R.O.). 5.40, Concert by the Wireless Orchestra, conducted by Nico Treep; Overture, Tancred (Rossini); Viennese Melody (Schrammel); Selection from The Bartered Bride (Smetana); A Fête in Aranjuez (Demersseman); Norwegian Dances, Nos. 1 and 2 (Grieg); Elegy (Ketebeby); Pagoda (Drdla); Le défilé de la garde (Gillet). 6.40, An Electrical Address. 7.10, English Lesson. 7.40, Time Signal. 7.41, News Bulletin. 7.45, Light Music on Gramophone Records. 9.10, Act III of Justice—Play (John Galsworthy). Translation by J. van de Horst. 9.55, Concert of Light Music by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte. 10.40, News Bulletin. 10.50, Popular Music on Gramophone Records. 10.55, Light Orchestral Concert (contd.). 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.55, Concert of Light Music by the K.R.O. Boys, conducted by P. Lustenhouwer. Soloist, J. Mossel (Songs). 1.25 to 1.40, Interval. 1.40, Programme for Women. 2.40, Song and Pianoforte Recital by Mme. van Eyndhoven-Bollen (Soprano), M. A. Smit (Baritone), and M. A. Ponten (Pianoforte). Arias from: (a) The Seasons (Haydn), (b) The Creation (Haydn); Pianoforte Solo, Fantasia in D Minor (Mozart); Arioso (Händel); Duet

from Theodora (Händel); Pianoforte Solo, Minuet (Debussy); Duet from Don Giovanni (Mozart); Duet from The Magic Flute (Mozart); Aria from Madame Butterfly (Puccini); Duet, Feinsliebchen, du sollst nicht barfuß gehn (Brahms). 3.40, Concert by the K.R.O. Orchestra, conducted by J. Gerritsen; March, Fest und tren (Fucik); Overture, Hans Heiling (Marschner); Waltz, Over the Waves (Rosa-Pachernegg); Potpourri, Aus der Woche (Thiele); Gramophone Records: Overture, The Merry-makers (Coates); The Blue Pavilion (Armandola); Bülw March (Blon). 4.40, Talk. 5.0, Concert (contd.). Overture, The Crown Diamonds (Auber); Pestherwalzer (Lanner); An Evening in St. Petersburg (Meyer-Helmund); Sonnettes (de Tave); Venitienne (de Tave); March, Folies Bergère (Lincke). 5.40, Concert by the K.R.O. Sextet Concert (contd.). 6.50, Talk. 7.10, Police Notes. 7.25, Talk. 7.40, Concert of Sacred Music, relayed from the cathedral at Roermond. 9.10, News. 9.15, Concert by a Vocal Ensemble. 10.10, Light Music on Gramophone Records. 10.40, News. 10.45, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,202 kc/s, 249.6 metres; 0.8 kW.—7.35 p.m., Radio Concert. 8.0, Weather and News. 8.15, Radio Concert. 8.45, Dance Music from the Palais de la Méditerranée. 11.0 to 12 Midnight, Programme in English by the I.B.C. H. K. Hitchcock announcing. 12 Midnight (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—6.0 p.m., Literary Talk. 6.15, Announcements and Popular Music on Gramophone Records. 6.25, Sports Notes. 6.30, See Warsaw. 10.0, Dance Music from the Astoria Café.

KIEL.—See Hamburg. KLAGENFURT.—See Vienna. KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.30 p.m., Concert by the Radio Orchestra, conducted by Toivo Jaapanen. Soloist: Sylvi Nikula (Songs); Overture, Leonora No. 3 (Beethoven); Adagio from the Symphony in G (Haydn); Aria from Il re pastore (Mozart); Aria from Il Seraglio (Mozart); Ballet Music from Die Flöz von Sans-Souci (Graener); Coronation March from The Prophet (Meyerbeer). 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Orchestral Concert: Hoch-und Deutschmeister-Marsch (Ertl); Pesther-Walzer (Lanner); Overture, Raymond (Thomas); Leiz (Hildach); Rustle of Spring (Sinding); Selection from Tiefand (d'Albert); Chinese Rhapsody (Gabriel-Marie); Piedmontese Dance (Sinigaglia); Selection from The Geisha (Jones). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Economic Notes and Time. 2.50, Programme for Children. 3.20, Reading in Westphalian Dialect. 3.40, Talk on Monte Carlo. 4.0, Kurt Thomas Concert. The Composer (Pianoforte), Rudolf Metz-macher (Cello) and Reinhard Fritzsche (Flute). Pianoforte Sonata in C, Op. 13; Cello Sonata in D Minor, Op. 7; Flute Sonata in A Minor, Op. 11; Six Two-part Inventions for Pianoforte, Op. 16a. 5.15, Italian Lesson. 5.45, Weather, Time, Economic Notes and Sports Results. 5.55, Agricultural Talk. 6.15, Book Review. 6.40, See Berlin (Königs Wusterhausen). 7.0, News Bulletin. 7.5, Concert by the Small Station Orchestra, conducted by Eysoldt. In the interval, German Folk Songs by the Station Chamber Choir, conducted by Zimmermann. 9.0, News, Sports Notes and Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

796.9 kc/s, 389.6 metres; 120 kW.; and Dresden, 941 kc/s, 319 metres.—12 Noon, News, Weather and Time Signal. 12.5 (approx.), Famous Conductors—Gramophone Concert. Exchange Quotations after the Concert. 1.0 to 1.15, Talk for the Unemployed. 2.0, Review of Books for Young People. 2.35, Exchange Rates. 3.0, Talk: What the Meadows tell us. 3.30, Concert by the Wireless Orchestra, conducted by Willy Steffen; Overture and March from Tarandot (Weber); Traumspiel-Suite (E. N. von Reznick); Waltz, Trifolien (Joh. Jos. and E. Strauss); Variations for Orchestra, Op. 42 (Rudolf Moser); Overture, Dame Kobold (Carl Reinecke). 4.30 to 4.35, Weather and Time. 4.50, Exchange. 5.5, Talk for Women. 5.30, French Lesson. 5.50, Programme to be announced. 6.0, Talk: Obedience or Self-determination. Concert of Schrammel Music by a Zither Trio: March, Drunter

und Drüber; Ländler, Schwanthalhäh'ler; Waltz, Der Weg zum Herzen; Berggrübling; Potpourri, Ein Abend im Müncher Hofbräu; Intermezzo, Kirchweihläute; Ländler, G'scherte; Waltz, An der schönen grünen Isar; Ländler, Aus geht's Baum; March, Die singende Zither. 6.40, See Berlin (Königs Wusterhausen). 7.0, Variety Programme: Three Plays: (a) Roast Goose (Jo Hains Röser), (b) Herr Pirwitz buys a Violin (Albert Engelskamp), (c) The Wager (Georg Muehlen-Schulte). In the interval: Music by the Endle Orchestra. In an interval at 8.30, Economic Notes. 9.15, News Bulletin. 9.30 (approx.), Seventh Century Music: Sequence (Walter Bergmann); Soloists: Hans Kunz (Baritone); Christian Klug (Gamba), and Friedbert Sammler (Harpischord). 11.0 (approx.), Close Down.

LINZ.—See Vienna.

LWOW

788 kc/s, 381 metres; 16 kW.—6.30 p.m., See Warsaw. 9.30, Popular Songs by Wilhelm Hilsenrath (Tenor). 9.45, Light Music on Gramophone Records. 9.55, See Warsaw. 10.30 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., Radio Gazette for Lyons and the South-East. 7.30, Symphony Concert, relayed from Paris. After the Concert, News Bulletin.

MADRID

ARANJUEZ, EAQ, 9,860 kc/s, 30.43 metres; 20 kW.—10.30 p.m., Concert of Modern Music.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations and Request Gramophone Concert. 7.30 (in an interval), Talk by Joaquin España Cantos. 8.15, News Bulletin and Political Review. 8.30 to 9.0, Interval. 9.0, Linguaphone English Lesson. 9.30, Chimes, Time Signal, Political Review and Tosca—Opera (Puccini) on Gramophone Records. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm. MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by J. Plichta. 4.10, See Prague. 4.50, Light Music on Gramophone Records. 5.0, Talk on Gardening. 5.15, See Brno. 5.50, See Prague. 9.40 (approx.), Close Down.

MOTALA.—See Stockholm. MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres.—11.0 a.m., Concert of German Opera Music, by the Munich Chamber Orchestra, conducted by Fr. Rein. 12 Noon, Violin and Pianoforte Recital by Marietta von Hann-Reiss and Karl Bergner. 12.15 p.m., Concert by Theo Eitel and his Schrammel Trio. 1.0, Time, Weather, Announcements and Exchange. 1.20, Programme arranged by the Post Office, with Gramophone Records. 2.0, Gardening and Cookery Talks for Women. 2.50, Weather and Agricultural Notes. 3.5, Talk on Flanders. 3.25, Liszt Pianoforte Recital by Gisela Göllerich. 3.45, Programme for Children. 4.0, Orchestral Concert, conducted by Erich Kloss. Festival Overture (Leitner); Concertante for Violin and Chamber Orchestra (Kusche); Selection from The Jewels of the Madonna (Wolf-Ferrari); Serenade and Slav Waltz (Schütt); suite, Dances of the Nations (Manfred); Strauss Operetta Potpourri (Schlögel). 5.15, Talk on Stenography. 5.35, Talk: Intellectual Currents in History. 5.55, Time, Weather and Agricultural Notes. 6.5, Extracts from Frederica—Opera (Lehár), by the Small Station Orchestra and Choir. Soloists: Lisl Pohnard (Soprano) and Gerd Nienar (Tenor). 6.40, See Berlin (Witzleben). 7.0, Kurfürst—a Musical Radio Sequence (Zibulka), with Music by the Station Orchestra and Choir. 8.5, Astronomical Talk. 8.20, Concert by the Station Chamber Orchestra and Choir, conducted by Karl List. Soloists: Margot Leander (Soprano) and Georg Grauert (Baritone). Radio Suite for Chamber Orchestra, Op. 48 (Cropp), conducted by the Composer; Folk Song; Suite on Old Palatine Airs, for Choir, Soloists and Orchestra (Kroiss); Sinfonietta in D (Fetsch). 9.20, Time, Weather, News and Sports Notes.

NAPLES.—See Rome. NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 320 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.15 p.m., Soprano Song and Pianoforte Recital: Wienzenlied (Keger); Aria from Manon (Massenet); Song from Armide

APRIL 4th

TUESDAY

continued

(Gluck): Mit einer Primula Veris (Grieg); Aria from Lakmé (Delibes); Extracts from the Northern Suite (Johansen); Rigolotto Paraphrase (Liszt). 5.0, Talk on the Teeth. 5.45, Saxophone Recital by Jules de Vries; La Cinquantaine (Gabriel-Marie); At Dawning (Cadenman); Habanera (Ravel); A Southern Sketch (Robinson). 6.0, Announcements, Weather and News. 6.30, English Lesson. 7.0, Time Signal. 7.2, Talk. 7.30, Concert of Marches and Waltzes by the Station Orchestra, conducted by Hugo Kraum; Turkish March (Mozart); Waltz from Faust (Gounod); Entry March and Chorus from Tannhäuser (Wagner); Le Pas des fleurs from Nalla (Delibes); Triumphant March from Aida (Verdi); Waltz (Sinding); Egyptian March (Joh. Strauss); Valse des fleurs (Waldteufel); March (Günstörner); Destiny Waltz (Baynes); March Potpourri (Recktenwald). 8.40, Weather and News. 9.0, Topical Talk. 9.15, Recitation. 9.45 (approx.), Close Down. DTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW. 7.0 p.m., Dopplavono Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 7.20, Popular Music on Gramophone Records. 7.30, Time Signal and Announcements. 7.45, An Opera, relayed from a Theatre. In the intervals: Talk and Art Notes. 9.0, Light Music on Gramophone Records. 9.55, News Bulletin.

PARIS

207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals). 5.45 p.m., Talk on the Theatre. 6.0, Le Journal Paris. 7.20, Weather Forecast. 7.30, Concert, relayed from the Conservatoire. Soloists: Mlle. Jeanne-Marie Barré (Pianoforte), M. Singier (Songs), Mme. Marthe Coiffier (Songs), Mlle. Henriette Rogel and Simone Petit (Pianoforte); Overture, Gretia Green (Girard); Concerto No. 5 for Pianoforte and Orchestra (Saint-Saëns); Three Songs (Gounod); (a) Le Soir, (b) Venise, (c) Chanson de printemps; Ballet venitien (Delvincourt), the Composer conducting; Songs (Busser); (a) La Colombe, (b) Les Nymphes de la Source; La Valse (Ravel), the Composer conducting; Symphonic Poem for Orchestra and Two Pianofortes, Printemps (Debussy).

PARIS

914 kc/s, 328.2 metres; 40 kW.—5.45 p.m., Journal Paris. 6.0, Sponsored Concert with Gramophone Records. 7.0, Film Review. 7.5, Legal Talk. 7.15, Interval. 7.30, Extracts from Ciboulette—Opérette (Reynaldo Hahn). 9.30, News.

PARIS

174 kc/s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 6.30, Weather and Physical Culture (contd.). 6.45, Gramophone Records: Invitation to the Waltz (Weber); Romance (Schumann-Kreiser); Spring Song (Mendelssohn). 7.0, Press Review and Weather. 11.0, Concert by the Kretzky Orchestra: Selection from Le Roi d'Yvetot (Adam); Selection from Mignon (Thomas); Overture, Light Cavalry (Suppé); Selection from Sappho (Massenet); Selection from La Princesse jaune (Saint-Saëns); First Suite from La Habanera (Laparra); Andante cantabile (Tchaikovsky); Solvieg's Song (Grieg); Spanish Dance (Sarasate); Piece (Coates). In the intervals at 12 Noon, Exchange, News, and Weather, and at 12.30 p.m., Exchange. 1.0, Exchange and News. 2.45, Exchange and Market Prices. 3.30, Elementary English Lesson. 5.10, Agricultural Talk. 5.30, Advanced English Lesson. 5.50, Theatre Review. 6.5, Talk on Art: Fakes. 6.20, Concert by the Kretzky Orchestra: Divertissement chez Madame Cadou (Suite, Ysaÿ (Pierné)); Prelude in G (Bibot); Quatre Pièces Berriehomes (Steek). 6.45, English Press Review. 7.0, Variety Programme. 7.30, News and Weather. 7.40, Review by Pierre Seize. 7.45, Chamber Music, Sonata (Steinert) by the Composer and Mme. de Casa Encelá. Songs by Jullie Nussy of Prague. 8.30, Monsieur Bretonnau—Comedy (de Flers and Caillavet). In the interval at 8.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 980 kc/s, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres. 9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Selma Brandt (Piano). 9.50, Weather Report. 9.31, Market Reports. 9.45, Johnny Miskrat. 9.50, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Programme to be announced. 10.15, Dick Darling, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Booth Tarkington's Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaherry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45 to 1.45 a.m. (Wednesday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Peisodent Amos 'n' Andy. 12.15 a.m. National Advisory Council on Radio in Education—

The Lobby. 12.45, The Townsend Murder Mystery. 1.0, Egg Crime Club. 1.30, Time Signal and Adventures in Health. 1.45, Programme to be announced. 2.0 to 4.0, New York Relay. 2.0, Household Musical Memories. 2.30, Willard Robinson's Deep River Orchestra. 3.0, The Tune Detective. 3.15, Vic and Sade. 3.30, Donny Bailey and Orchestra. 3.45, Prof. Jack McCallan, Sara and Sassafra. 4.0, Time Signal. 4.1, Teaherry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Smith Ballou and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, Cotton Club Orchestra, from New York. 5.20, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

POZNAN

697 kc/s, 335 metres; 1.9 kW.—6.10 a.m., Book Review. 6.28, Time Signal. 6.30, See Warsaw. 7.0, Military Band Concert. Soloists: Mme Zesowska-Krzyzowska (Soprano) and M. Zesowski (Mouth Organ). 8.30, Musical Programme. In the intervals, Theatre Guide and Press Review from Warsaw. 9.0, See Warsaw. 9.15, Time, Sports and Police Notes. 9.30, Dance Music from the Café Espagnole. 10.50 (approx.), Close Down.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—3.10 p.m., See Moravsko-Ostrava. 4.10, Talk on Economics. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Variety Music on Gramophone Records. 5.5, Agricultural Report. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Modern Song Recital by Wally Horner. 5.50, Talk on the following Transmission. 6.0, Tannhäuser Opera in Three Acts (Wagner). In the intervals, News, and at 8.0 and 9.0, Time Signals. 9.40 (approx.), Close Down.

RADIO-SUISSE ROMANDE

743 kc/s, 403 metres; 25 kW.; LAUSANNE, 442 kc/s, 680 metres; and GENEVA, 395 kc/s, 760 metres.—5.0 p.m., (from Lausanne), Medical Talk. 5.30 (from Geneva), English Lesson. 6.0 (from Lausanne), Weather, News and Announcements. 6.20 (from Geneva), Answers to Correspondence. 6.30 (from Geneva), Concert of New Gramophone Records. 7.0 (from Geneva), Literary Programme. 7.15 (from Geneva), Concert by the Geneva String Quartet. Assez vite et bien rythmé (Debussy); Allegro molto (Bela Bartok); Romance and Finale (Dvorak); Piece (Templeton Strong); Three Pieces for Quartet (Sufvinsky). 8.0, Concert by the Station Orchestra. 9.0, News and Weather. 9.15 (approx.), Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Cello Solos by Thorhallur Arnason. 10.15, Recitations. 10.35, Passacaglia in C Minor (Bach) on Gramophone Records.

RJKAN.—See Oslo.

ROME

680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and 2R0, 11,810 kc/s, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30, Giornale radio and Announcements. 11.30, Weather and Light Music on Gramophone Records. 12 Noon, Time and Announcements. 12.5 to 1.15 p.m., Orchestral Concert. In the interval at 12.30, Giornale radio and Exchange. 3.45, Programme for Children. 4.10, Announcements. 4.15, Exchange and Giornale radio. 4.30, Orchestral Concert. 5.15 to 6.0, Interval. 6.0 (from Naples), Shipping and Sports Notes. 6.10, Atmospheric Signals. 6.20, Giornale radio, Agricultural Report, and Dopplavono Notes. 7.0, Time and Announcements. 7.2, Talk on the Comet. 7.15, Soprano Song Recital by Maria Teresa Borioni. 7.30, Sports Notes and Tourist Report. 7.45, Relay from a Theatre or Concert from the Studio. In the interval, News. After the Programme, News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres; and by W2XAD on 19.56 metres.—12 Midnight, General Electric Programme. 12.15 a.m. (Wednesday), Stock Reports. 12.30, Gold Medal Band. 12.35, Johnny Albright (Crooner). 12.45 to 4.0, New York Relay. 12.45, The Goldbergs. 4.0, Blackstone Plantation. 1.30, Walter King's Orchestra. 2.0, Ben Bernie's Blue Ribbon Orchestra. 2.30, Ed Wynne and the Fire Chief Band. 3.0, Lucky Strike Hour, followed by Programme Résumé.

SCHWEIZERISCHER LANDESSENDER

BEROMUNSTER, 653 kc/s, 459 metres, 40 kW.; BASLE, 1,229 kc/s, 234.1 metres; and BERNE, 1,220 kc/s, 245.9 metres.—11.28 a.m., Time Signal from Nelenclat Observatory. 11.30, Weather and News. 11.40 (from Basle), Popular Music on Gramophone Records. 12.35 p.m., Weather and Exchange. 12.45 to 2.30, Interval. 2.30 (from Basle), Schubert and Schumann Song Recital on Gramophone Records. 3.0 (from Basle), Radio Quintet Concert of Russian Music. 4.0 (from Basle), Marches on Gramophone Records. 4.30 to 5.30, Interval. 5.20 (from Berne), Programme for Young People. 6.0, Time and Weather. 6.2 (from Berne), Notes on the Broadcasts for schools. 6.15 (from Berne), Talk: International Law and the Vatican State. 6.45 (from Berne), A Florentine Tragedy Opera (R. Flury), after the Story by Oscar Wilde. 7.25 (from Berne), Talk by Josef Reinhard. 7.30 (from Berne), Recital by a Male Voice Choir of the Songs of Karl Munzinger and Edmund Wyss. 7.40 (from Berne), Josef Reinhard reads from his own Works (in Dialect). 8.0 (from Berne), Gastini Meister Songs by a Male Voice Choir. 8.10 (from Berne), Pianoforte Duets by Helene Meister and Verena Gloor; Five Ländler from Lake Lucerne, Op. 47, Nos. 1, 2, 3, 9 and 10 (Huber). 8.20 (from Berne), Hans Huber Songs by the Solothurn Male Voice Choir. 8.30, Weather and News. 8.40 (from Berne), Concert by the Solothurn Municipal Band, conducted by Stephan Jaggi. 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 551 kc/s, 542 metres.—4.5 p.m., Programme for Children. 4.45, Popular Music on Gramophone Records. 5.45, French Lesson, relayed from Malmö, 1,301 kc/s, 231 metres. 6.15, Weather and News. 6.30, Provincial Programme from Gästrikland, relayed from Gävle, 1,470 kc/s, 204 metres. 7.15, Talk: The Religious Development of the Jews. 7.45, Sonata No. 9 in A for Harpsichord (Mozart), by Ingrid Kjellström-Stenbeck. 8.10, Song and Duet Recital by Karin and Nils-Juel. 8.45, Weather and News. 9.0, Johann Strauss, Concert: Overture, The Gipsy Baron; Waltz, Künstlerleben; Wenn im Frühjahrs blüht; Pizzicato Polka; Melody; Selection from Die Fledermaus. 10.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW. -10.30 a.m., Light Music on Gramophone Records. 11.0, Orchestral Concert, conducted by H. de Villers; Soloists, M. Grégoire (Violin) and M. Poyet (Horn); Part I: Overture, King Stephen (Beethoven); Ballet Music from Rosamunde (Schubert); Violin Solos: Prelude and Allegro (Pugnani-Kreiser); Orchestral Suite, Jeux d'enfants (Bizet); Torch March (Meyerbeer). 11.45, News. 12 Noon, Time and Exchange. 12.5 p.m., Orchestral Concert (contd.). Part II: Chamber Music: Overture, Une éducation manquée; Concert Waltz, Scherzo, Larghetto, for Horn and Orchestra; Habanera; Bourée fantasque; Fête Polonoise. 1.0 to 3.45, Interval. 3.45, Talk in French: The Sahara. 4.0, Orchestral Concert of Jazz Music, conducted by M. Roskam. 5.0, History Talk in French. 5.15, Talk in French on Modern Poetry. 5.30, Pianoforte Recital by Jeanne Wolferständer; Sonata in G (Mozart); Polonoise, Op. No. 1 (Chopin); Dresden China (Niemann); Suite Bergamasque (Debussy). 6.30, Time and News. 6.45, Gramophone Concert: Danse macabre (Saint-Saëns); Air from Parysatis (Saint-Saëns); Le Carnaval des Animaux (Saint-Saëns); Overture, The Flying Dutchman (Wagner). 7.20, Lottery Results. 7.30, Choral Concert, relayed from Paris. 9.30 (approx.), Close Down.

STUTT GART

MUHLACKER, 832 kc/s, 360.5 metres; 40 kW.; and Freiburger, 527 kc/s, 570 metres. 12.30 p.m., Concert from Langenberg. 1.0, Programme arranged by the Post Office, with Gramophone Records. 1.30 to 2.0, Advanced English Lesson. 3.0, Talk on Flowers. 3.30, Talk for Women: Easter Preparations in the Family. 4.0, See Munich. 5.0, Time, Weather and Agricultural Notes. 5.10 (from Freiburger), Talk: swindlers. 5.35, Talk: Defensive Goods. 6.0, Time and News. 6.15 (from Karlsruhe), Zither Recital: March, Ein Hoch dem Jubilar (Vries); Ein Tag am Tegenersee (Hünemann); Song, Frühlingsschauer (Hünemann); Concert Waltz, Lindner, Mad'ra (Stritzinger). 6.40, See Berlin (Königs Wusterhausen). 7.0, Variety Programme on Gramophone Records. 7.45, Concert of German Music by the Philharmonic Orchestra, conducted by Hans von Bendt; Symphony in D Minor (Haydn); Bendts Klagen Cantata for Soprano, and Orchestra (Georg Bendt); Medea Melodrama (Georg Bendt). 9.0,

Time, News, Weather and Programme Announcements. 9.20, Programme by the Dance Ensemble of the Philharmonic Orchestra. Soloist: Walter Maurer (Tenor). 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 779 kc/s, 385 metres; 8 kW.—6.30 p.m., Songs from Opéra-Comique. 6.45, Accordian Solos. 7.0, Popular Songs. 7.15, Viennese Music. 7.40, Songs from Sound Films. 7.45, Military Music. 8.0, Dumas Concert by the Toulouse Symphony Orchestra, conducted by M. Tartatue, Poem, Au Pays Wallon; Prelude to Act II of La Gloire; Orchestral Suite, Orient Symphonie; Overture, Penthesilée; Light Music in the interval. 9.15, North African News. 9.30, Concert for Listeners in Morocco. 10.0, Viennese Music. 10.30 to 11.0, Programme in English by the I.B.C. W. Brown-Constantia announcing. 10.30, Choruses: Old Vienna Moon; The Desert Song; The Blue Danube; Bitter Sweet; Voices of Spring; You will remember Vienna. 10.57, I.B.C. Goodnight Melody. 11.0, Weather and Announcements. 11.5, Popular Songs. 11.15, Orchestral Music. Selection from Stradella (Flotow); Pavane pour une infante défunte (Ravel). 11.50 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—4.30 p.m., (Ill) Close Down.—See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 909 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—4.30 p.m., Dance Music from the Select Savoia Dancing. 5.15 to 5.35, Interval. 5.35, Giornale radio, Agricultural Report, and Dopplavono Announcements. 6.0, Time Signal. 6.1, Gramophone Records. 6.20, Giornale radio. 6.45, Report of the Royal Geographical Society, and Gramophone Records. 7.0, Time, Announcements, Giornale radio, Weather, and Gramophone Records. 8.0, Variety Programme. 9.0, Talk. 9.15, Dance Music. 10.0, Giornale radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.25 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in English. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—4.50 p.m., Orchestral Concert: Overture, A Waltz Dream (O. Straus); Waltz, Ans alter Zeit (Ledebur); Selection from Die Landtreter (Ziehrer); Autumn Leaves (Saksala); Intermezzo d'Arlequin (Hastin); March, Farewell to the Gladiators (Blaukburg). 4.45, Agricultural Talk. 5.10, French Lesson. 5.35, A Visit to the Experimental Department of the Technical Museum. 6.0, Time, Weather and Programme Announcements. 6.25, Relay from the Opera House. In the interval at 8.30 (approx.), News. 9.5, Announcements. 9.10, Concert of Songs and Instrumental Music, relayed from the Hotel Krantz Ambassador.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—10.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Popular Music on Gramophone Records. 12.20, Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Aviation Report and Anti-Gas Drill. 2.30, Announcements. 2.35, Book Review. 2.50, Popular Music on Gramophone Records. 3.20, Talk: Italian Politics. 3.40, Talk: The Beauty of the Romanian Race. 4.0, Symphony Concert by the Warsaw Philharmonic Orchestra, conducted by Leony Grudniak. In the interval, Announcements. 4.55, Programme Announcements. 5.0, Literary Talk on Wyspianowski. 5.20, Talk on Current Events. 5.25, Light Music, relayed from the Café Gastronomica. 6.0, Miscellaneous Items. 6.20, Agriculture Talk. 6.30, Talk on Music. 6.45, Radio Journal. 7.0, Concert by the Station Orchestra, conducted by F. Ozefinski, with Pianoforte Duets by G. Lofel and I. Urstein. Overture, Halka (Moniuszko) Ballet Music (Moniuszko); Clarinet Solo, Waltz in C Sharp Minor (Chopin-Cielwicz); Pianoforte Duets (Zarebski): (a) Reverie (O. Cracovienne), (b) Dance; Selection from Die toten Augen d'Alberic; Andante from the Quartet in E Flat Minor (Tchaikovsky); Valse triste (Nothak); Pianoforte Duets: (a) Legend (Dvorak), (b) Two Slav Dances (Dvorak), (c) Cortège (Moszkowsky); Ballet Music from Hamlet (Thomas). In the interval, Sports Notes and Radio Journal. 8.4, Recitations. 9.0, Song Recital by Mme. Elis Brens. 9.30, Dance Music. 9.55, Aviation Weather Forecast and Police Notes. 10.0, Dance Music.

ZURICH.—See Schweizerischer Landessender



“YES, THE
SAME OLD
PERTRIX—

GOOD FOR MONTHS YET!

The countless thousands of users of Pertrix Batteries are delighted with their wonderful return for money spent. Month after month Pertrix H.T. Batteries continue to give that generous output of steady current so vital to the true tonal rendering of speech and music. The results are certainly amazing—yet the reasons are not far to seek. Pertrix Batteries are constructed of entirely different materials from those used for all other batteries. Pertrix zincs do not corrode, because there is no sal-ammoniac; this means no deterioration when the battery is out of use. Pertrix have immense recuperative powers—steadily and constantly through the hours when they are inactive they build up their power for the next day's radio. Fit Pertrix next time—they give service until the last ounce of power is out!

fit
PERTRIX
NON SAL-AMMONIAC

H.T. BATTERIES

BRITANNIA BATTERIES LTD.

233, Shaftesbury Avenue, LONDON, W.C.2.
WORKS - - - - - REDDITCH (WORCS.).

There are no other Batteries like them!

Mains volume from Battery Sets

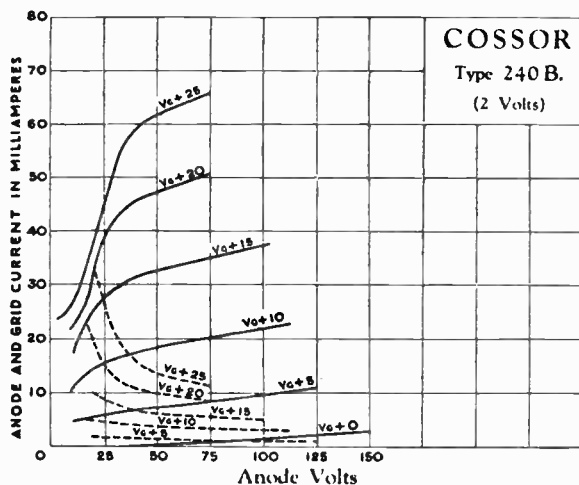
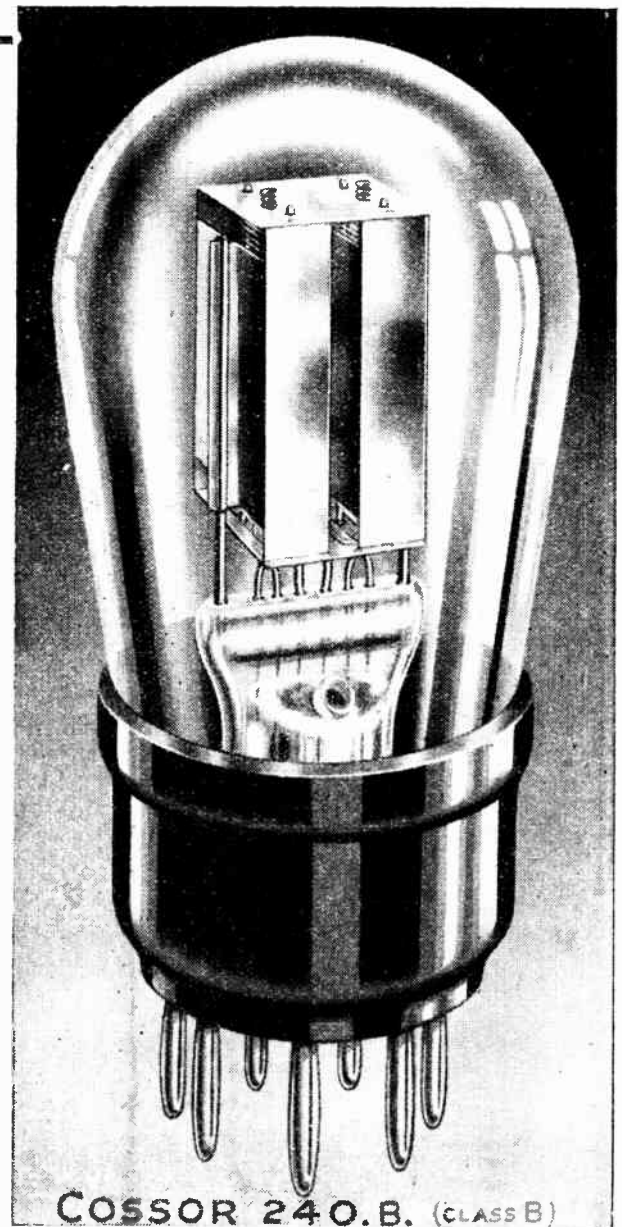
COSSOR 240B

—the new valve for CLASS "B" AMPLIFICATION

An output Valve of remarkably increased efficiency is now introduced by A. C. Cossor Ltd., under the type number 240 B.

The Cossor 240 B is actually a dual valve having two complete sets of valve elements embodied in one bulb, the connections being brought out to a 7-pin base.

Full instructions for the use of this remarkable new valve, including circuit diagrams will be supplied on application to our Technical Service Department.



Anode and Grid Current/
Anode volts curves of
Cossor Class "B" Valve
Type 240 B.

Filament volts 2.0; Filament amps. 0.4;
Anode volts 150 max.; Max. Anode
Current Swing 50 mA.; Max. Peak
Applied Signal (Grid to Grid) 40 volts;
Static Anode Current at
Va=100, Vg=0 (each half) 1.5 mA.
Price **14/-**

The Wireless World

THE
PRACTICAL RADIO
JOURNAL
22nd Year of Publication

No. 709.

FRIDAY, MARCH 31ST, 1933.

VOL. XXXII. No. 13.

Proprietors: ILIFFE & SONS LTD.

Editor:

HUGH S. POCOCK.

Editorial Offices:

116-117, FLEET STREET, LONDON, E.C.4
Editorial Telephone: City 9472 (5 lines).

Advertising and Publishing Offices:
DORSET HOUSE, TUDOR STREET,
LONDON, E.C.4.

Telephone: City 2846 (17 lines).
Telegrams: "Ethaworld, Fleet, London."

COVENTRY: Hertford Street.

Telegrams: "Cyclist, Coventry."
Telephone: 5210 Coventry.

BIRMINGHAM:

Guildhall Buildings, Navigation Street, 2.

Telegrams: "Autopress, Birmingham."
Telephone: 2970 Midland (3 lines).

MANCHESTER: 260, Deansgate, 3.

Telegrams: "Iliffe, Manchester."
Telephone: Blackfriars 4112 (1 line).

GLASGOW: 26B, Renfield Street, C.2.

Telegrams: "Iliffe, Glasgow."
Telephone: Central 4857.

PUBLISHED WEEKLY. ENTERED AS SECOND
CLASS MATTER AT NEW YORK, N.Y.

Subscription Rates:

Home, £1 1s. 8d.; Canada, £1 1s. 8d.; other
countries abroad, £1 3s. 10d. per annum.

As many of the circuits and apparatus described in these
pages are covered by patents, readers are advised, before
making use of them, to satisfy themselves that they would
not be infringing patents.

CONTENTS

	Page
PROGRAMMES FROM	
<i>ABROAD, pp. I—XXIV</i>	
<i>Editorial Comment</i>	233
<i>Fit A.V.C. to Your Receiver</i>	234
<i>The History of A.V.C.</i>	236
<i>Unbiased</i>	238
<i>Practical Class "B" Amplifica- tion</i>	239
<i>Practical Hints and Tips</i>	241
<i>News of the Week</i>	242
<i>The Magnetic Circuit</i>	243
<i>Broadcast Brevities</i>	245
<i>Bush Q.P.P. Battery Receiver</i>	246
<i>Laboratory Tests</i>	248

EDITORIAL COMMENT

A Unit for A.V.C.

A Simple Addition to Your Set

WE have from time to time during recent months stressed the importance of automatic volume control, and have expressed the view that next season any receiver for which the claim is made that it is suitable for the reception of foreign stations, will find a poor market if automatic volume control is not incorporated; but we need not wait for next season to try out automatic volume control, even if we are not ready to make a new set at the moment, for in this issue we give the first design for a practical A.V.C. unit, which can be added externally to practically any type of receiver suitable for distant reception.

When new valves suitable for incorporating in new receiver designs where A.V.C. becomes an integral part of the set are available, we hope to be able to show their application in complete constructional receivers, but until this unit was produced there was nothing available with which to demonstrate automatic volume control without making some drastic alterations to an existing set.

The information given in the article makes it abundantly clear how effective this little unit is in performing the job of overcoming fading of distant stations, and, in addition, preventing the burst of strength from local stations as we tune through them.

Whilst the popularity of foreign listening has steadily increased with improvements in the selectivity and sensitivity of sets, coupled with the progress made in the foreign transmitting stations themselves, A.V.C. goes one better and lifts foreign reception on to practically the same plane as local-station listening, and

all that is required is that the distant stations should not be so extremely weak as to result in distortion during the worst periods of fading. We particularly commend to our readers the A.V.C. unit described in this issue; it costs very little to construct and probably, in many cases, most of the essential components will already be available in the "spare parts" box.

Wireless and the Car

Will Built-in Sets be Popular?

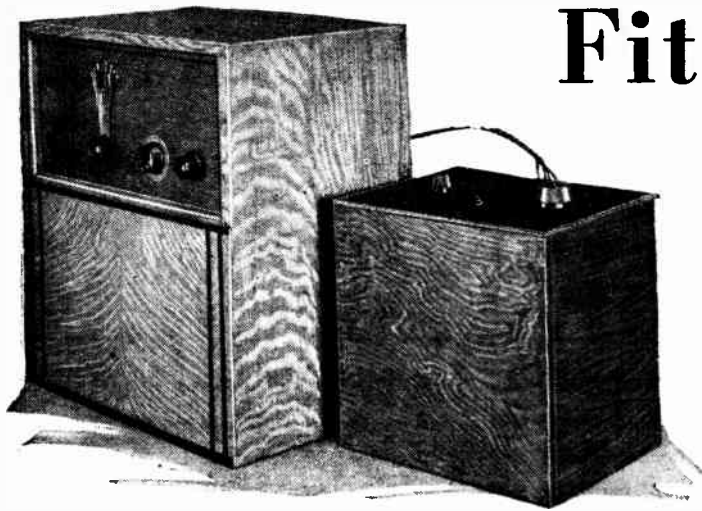
A VERY interesting article appeared in *The Autocar* of March 17th, discussing the advent of wireless in cars, particularly in cases where the set is a built-in accessory. *The Autocar* emphasises the fact that although in America and Canada built-in wireless sets fitted to cars have achieved great popularity, no British manufacturer has, as yet, produced any evidence of interest in meeting the possible demand for such sets here. It is pertinent to enquire whether British manufacturers ought not to have got down to this question themselves, rather than permit whatever market there may be for this apparatus to be met from abroad.

Our own view on the design of a receiver for car use would be that the car should be fitted with the necessary apparatus to provide the electric supply at standard voltages for a transportable set, which could then be used either in the car or in the home. To fit up a set so that it is not capable of being detached from the car for use elsewhere makes car wireless a luxury which is out of the reach of the majority of motorists. Incidentally, permanent fixing makes it necessary to have a broadcast licence specially for the set, whereas a separate licence is not necessary for a portable set used with a car.

Fit A.V.C. to your Receiver

A Simple Additional Unit

AN effective "monitoring" device which, without any attention, will automatically maintain the receiver in whatever state of sensitivity is necessary for dealing with signals of widely varying strength.



By H. F. SMITH

ALTHOUGH automatic volume control is thought to be mainly applicable to super-sensitive sets, and especially to superheterodynes, much less ambitious receivers stand to derive benefit from its use. Sets which depend largely on reaction for their sensitivity are notoriously susceptible to the ill effects of fading; with the help of A.V.C. they may be operated with reaction fully advanced, and with the assurance that distressing overloading will not take place when signal strength rises to maximum. Distant transmissions may then be enjoyed without constant readjustment.

The present unit is intended to work with almost any set of the "straight" or superhet type having one or more stages of H.F. or I.F. amplification. It is also necessary that a resistance of 10,000 ohms or more should be included in the detector anode circuit. This means that the unit is suitable if the existing detector is coupled to the L.F. amplifier by a resistance, a resistance-fed transformer, or where there is an anode decoupling resistance of fairly high value.

The problem of designing a unit for use with a variety of existing sets is vastly different from that of evolving a control to be included as an integral part of one particular receiver. Methods which need a connection to the grid of one of the receiver valves are to be avoided for various reasons, and so the system in which D.C. voltage changes on the anode of the detector are made to operate the control valve has been chosen.

This system is by no means new; in fact, it was one of the first to be devised; rearranged to suit modern conditions, it has proved to be entirely satisfactory.

Referring to Fig. 1, it will be appreciated that when a carrier wave is rectified detector anode current falls, and so the point marked X becomes more positive with respect to the earth line, due to the reduced voltage drop in R1.

Now consider the action of the A.V.C. valve. The bias battery GB, of which the voltage may be adjusted roughly by tap-

turely the flow of anode current in the valve under "no-signal" conditions. When a carrier is tuned in, the A.V.C. grid becomes less negative, and so anode current flows through the resistance R4, across which a controlling bias voltage, dependent on signal strength, is developed. Thus, until equilibrium is reached, we have a state of "push-pull." Detector anode current is tending to fall, but the signal voltage which gives rise to this fall is prevented from rising by the desensitising effect of the A.V.C. The resistance R2 is a

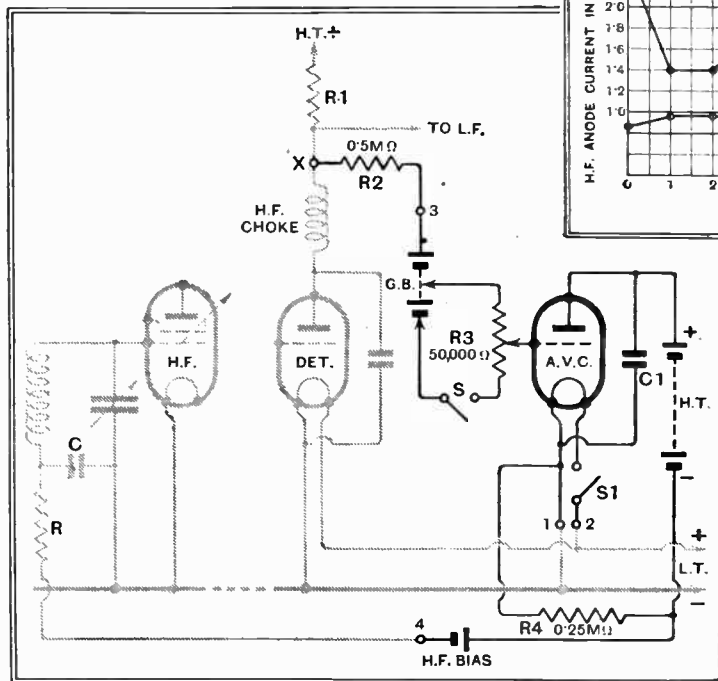


Fig. 1.—Circuit diagram of the unit (in full lines). Connections to a typical receiver are shown. Numbered points refer to the terminal block through which connections between receiver and unit are made. Switches S and S1 are linked.

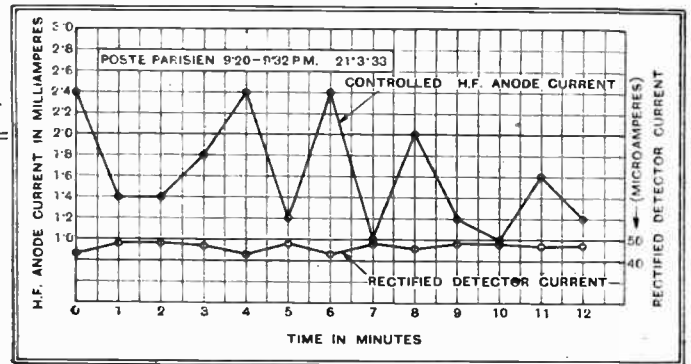


Fig. 2.—How the A.V.C. unit compensates for minute-to-minute fluctuations in signal strength. This graph, taken under practical conditions with a simple I-v-I receiver, shows that detector output was maintained at a sensibly constant level except when signals faded below threshold strength.

safety device, and prevents instability.

The unit, complete with its batteries, may be mounted in a simple wooden box (that illustrated measures 9in. wide, 7½in. deep and 9in. high). Having assembled the parts, it must be decided which valves are to be controlled. In a 1-H.F. set there is no choice, but with two H.F. stages one may control either the first valve or both. In a superheterodyne the H.F. valve, the I.F. amplifier, and sometimes the first detector, may be controlled.

Hardly any alteration need be made to the receiver. The resistance R2, though a part of the control, is mounted in the set, and joined to terminal No. 3 of the unit by a flexible lead.

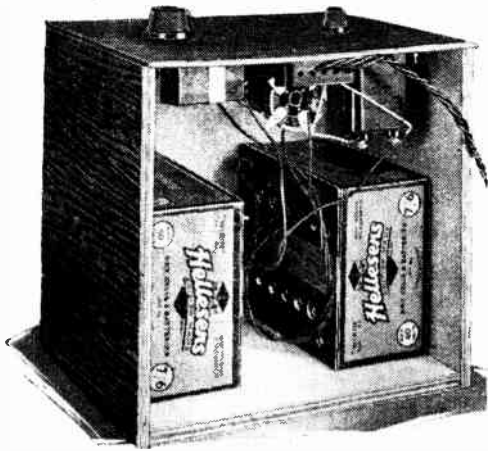
The grid return leads of the controlled valve, or valves, are merely joined to terminal No. 4 instead of to their normal source of bias voltage (see Fig. 1). Unless the decoupling components C and R are

pings and critically by the potentiometer R3, is interposed in order to balance out the positive voltage which would otherwise be applied from the source of H.T. to the A.V.C. grid. In addition, a little extra negative voltage is needed in order to stop en-

¹ See "The History of A.V.C." in this issue.—Ed.

Fit A.V.C. to Your Receiver —

already fitted in the set, it will generally be necessary to add them; values of 0.1 mfd.



Rear view of the unit, with batteries in position.

and 0.5 to 1 megohm will be about right. In a battery set all that one usually has to do is to remove the H.F. bias leads from the G.B. battery and connect them to the unit.

It is desirable that the controlled valves should be of the variable- μ type, although the unit will work, but not at its best, with ordinary S.G. valves. With a battery set, the A.V.C. valve will be fed with L.T. current by connecting its terminals Nos. 1 and 2 across the L.T. battery or the L.T. bus-bars of the receiver. The extra valve, which may be of the "H.L." or general-purpose type, must of course operate at the same filament voltage as the receiver

plug marked -GB1 in Fig. 3 is joined to a negative socket, the remaining GB plug being left temporarily free. Bias should now be roughly adjusted by moving the -GB1 plug progressively from socket to socket until a point is reached where signal strength is restored to approximately its original value.

Having found this rough adjustment, the potentiometer should be put into operation by joining -GB1 to a point 6 or 10 volts more negative than the original adjustment, the other plug (-GB) being then joined to a slightly less negative point than that of the original rough adjustment. With the potentiometer slider at one end of its travel, the receiver

produced; very often it will replace a manual control entirely.

An H.T. battery of 60 volts will be satis-

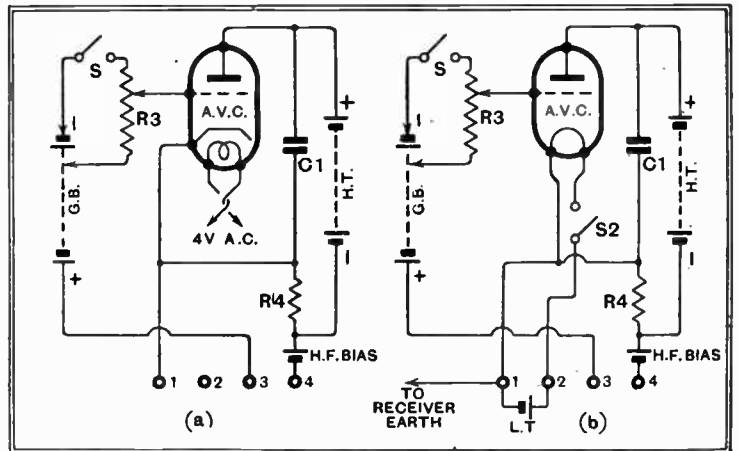


Fig. 4.—Practically no alterations are necessary when the unit is operated with an A.C. mains set, although an indirectly-heated valve may be used.

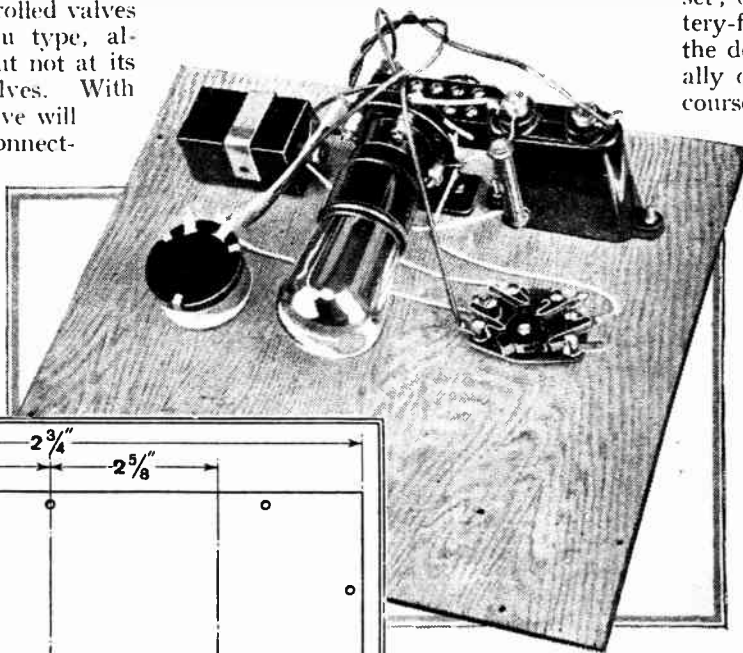
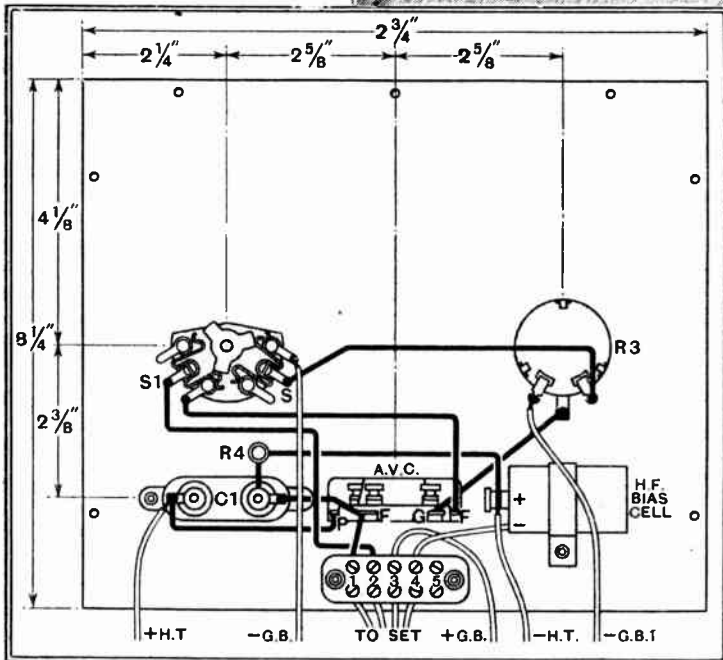


Fig. 3.—Mounting of components on the underside of the top panel, and (below) practical wiring plan.



will be insensitive; the knob should now be rotated slowly from that point until full sensitivity is just restored. For complete control this will be the correct operating point, but if a little delay

is to be introduced, the knob should be rotated a shade further to give excess negative bias. The potentiometer adjustment is easily mastered, and it should be realised that it determines to a large extent the average level at which signals will be re-

factory in many cases, but often a rather higher voltage is desirable. The grid bias battery needed depends entirely on the set; 60 volts will be ample for most battery-fed receivers, but in some mains sets the detector works at over 100 volts actually on its anode; this pressure must, of course, be balanced out, and a few extra negative volts must be available. If the exact voltage is not known, it can easily be determined by trial; until sufficient negative bias is applied, the set will be completely lacking in sensitivity.

For use with A.C. mains receivers, an indirectly-heated valve may be fitted to the unit as shown in Fig. 4 (a); if it is preferred to use an L.T. battery connections will be as in Fig. 4 (b). The H.F. bias limiting cell should be omitted when the controlled valve or valves normally obtain a minimum bias from a resistance in their cathode leads.

Those who are unfamiliar with A.V.C. may be reminded that no system can compensate in any way for a fading signal when it falls below the threshold value at which the control becomes operative. This point is shown graphically in Fig. 2; when readings were taken at 0, 4 and 6 minutes, this limit was reached, and it was only then that any appreciable changes in detector output occurred.

A specimen unit is available for inspection at 116-117, Fleet Street, London, E.C.1.

LIST OF PARTS

- 1 Valve-holder, horizontal type **W.B. "Universal"**
- 1 Potentiometer, 50,000 ohms, R3 **Rotor-Ohm**
- (Belgim, Lewcos, Claude Lyons, Radiophone, Watmel, Wearite)
- 1 Resistance, fixed, 0.5 megohm, R2 **Erie**
- 1 Resistance, fixed, 0.25 megohm, R4 **Erie**
- (Dubilier, Graham Farish, Loewe, Claude Lyons)
- 1 Fixed condenser, 0.5 mfd., C1 **Dubilier**
- (Formo, Hellesens, Peak, Radiophone, T.C.C., Telsen)
- 1 Dry cell, 1.5 volt **Ever Ready Size "0"**
- (Lissen, Siemens)
- 1 Connector, 5-way **Wilburn**
- 5 Wander plugs, H.T.-, H.T.+, G.B.+, G.B.-, G.B.-1, **Clix Type "B"**
- (Belling-Lee, Belgim, Elex, Goltone, Lissen)
- 2 H.T. batteries (see text).
- Wire, sleeving, flexible wire, screws, wood, etc.

valves, or a resistance will be necessary. To make initial adjustments, a weak signal should be tuned in with the A.V.C. switch at "off." Then, having switched on, the grid bias positive plug is inserted in the most positive socket, and the bias

The History of A.V.C.

An Old Idea Harnessed to Modern Needs

ALTHOUGH automatic volume control is comparatively new as applied to broadcast receiving sets, it ranks as a more or less time-worn expedient in the older arts of line telegraphy and telephony. That is to say, so far as its application to the problem of "fading" is concerned.

The conductivity of a line-wire changes considerably under different climatic conditions. Extremes of temperature and of moisture produce different attenuation losses, which must be compensated if a reasonable level of speech or signal strength is to be maintained.

Perhaps the first solution was to provide a separate pilot line, through which control signals were sent from time to time, in order to allow the amplification

balances the bridge and brings a small motor into operation to shift the potentiometer tapping until the new conditions have been met.

A system of this sort is not, of course, suitable for broadcasting where one is dealing with a modulated carrier wave instead of ordinary L.F. signals. Also, it must be borne in mind that alterations in the ether channel, such as those which give rise to ordinary fading, occur much more rapidly, and erratically, than the slow climatic variations which are the chief concern of the line engineer.

In broadcast reception the common practice is to utilise the rectified carrier-wave as the source of a special biasing-voltage, which is led back to control the

AUTOMATIC volume control, in its popular application to broadcast receivers, is of comparatively recent date. Naturally the first applications were to receivers for telegraphy reception, and here it did not matter if the control was effected on the modulated signal after detection. For the reception of music, however, it is desirable, in order to avoid a flattening out of the reproduction, that the automatic volume control should operate on the strength of the carrier wave and be unaffected by the degree of modulation.

volume control as utilised to-day in broadcast sets.

As shown in Fig. 1, the voltage developed across a resistance R in the output of a leaky-grid detector valve is led back to bias a pair of valves V_1 , V_2 connected in shunt to the aerial and tuned input circuits. The result is to apply a variable damping to these circuits as the anode-cathode resistance of the auxiliary valves V_1 , V_2 is altered by the change in the grid bias.

Principle of Operation

Heavy atmospherics—or a strong interfering signal—which tend to throw the grids positive, will reduce the internal

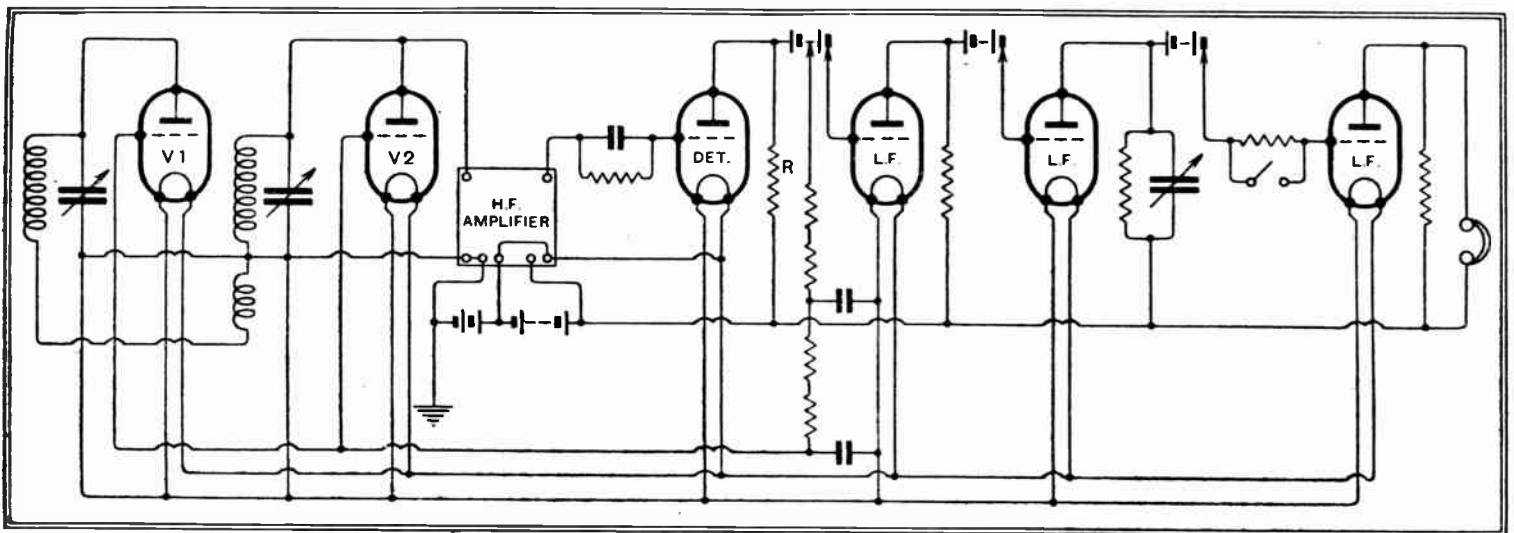


Fig. 1.—A circuit dating from 1923, where the output from the detector is made to control the performance of H.F. valves.

at repeater stations to be supervised manually and readjusted as and when required.

Some fifteen years ago a system was developed in which this operation was performed automatically by means of a variable potentiometer arranged in the input circuit of the amplifier valves. As telephone lines are usually grouped together, it is a simple matter to set aside one circuit for control purposes.

An Early Scheme of A.V.C.

The pilot line forms one arm of a Wheatstone bridge, which is provided with a polarised relay across one diagonal and a source of E.M.F. across the other. Any abnormal change in attenuation un-

sensitivity of the H.F. stages. The signal or modulation components are, in general, not suitable for this purpose, because they tend to flatten out the pianissimo and fortissimo passages to the same dead level of sound. Of course, if a sufficient time delay is included, the modulation components may help to cope satisfactorily with slow fading, such as is met with on some of the longer wave stations.

A noteworthy attempt to utilise the detector output to control the performance of preceding H.F. valves dates from 1923, and although originally devised as a means for reducing "static" and other interference in a commercial wireless telegraph system, it appears to disclose the fundamental principle of automatic "gain" or

resistance of the valves V_1 , V_2 , and so diminish the efficiency of the input circuits. In effect, the arrangement gives a certain degree of automatic volume control, though not specifically designed for this purpose.

Perhaps the first definite attempt to tackle the problem of fading along modern lines is that shown in Fig. 2, which dates a couple of years later, in 1925. The circuit is a superhet, and energy is taken from the second detector stage D_2 by a series circuit L, C tuned to the intermediate frequency, and fed to an amplifier V_1 .

The amplified output is first rectified by a valve V and then applied through a resistance R to control the grid bias of the high-frequency stages H.F. and

The History of A.V.C.—

H.F.I. Here the rectified carrier-wave is definitely used to effect automatic control, and may in fact be used to suppress any signals below a predetermined value—which is, of course, the principle of the modern system of Q.A.V.C.

From this point progress becomes more rapid, and in 1926 we find a system in which the control voltage is used to bias a valve—functioning as a variable impedance—in one arm of a Wheatstone bridge. The input is applied to one diagonal, and the output is taken from one of the arms of the bridge through a transformer. Here, again, the primary application is to line telephony, but the object of attaining a uniform high-quality transmission over a wide frequency band is deliberately kept in view.

A few months later—early in 1927—we find the circuit shown in Fig. 3, which includes the modern principle of amplified A.V.C. The output from a leaky-grid detector V is fed to a resistance R, and the voltage produced, after amplification in a direct-current amplifier V_I, reappears in the resistance R₁, from which it is applied to bias the high-frequency stages H.F. and H.F.I. A variable tapping affords an additional “manual” control of volume.

In the same year we discover an appreciation of the desirability of combining “visual” tuning means with sets fitted for A.V.C., and also a disclosure of the use of a “diode” rectifier for obtaining both signal and A.V.C. voltage from the

same valve. Further, it is shown how the principle of A.V.C. may be applied to eliminate the effect of fluctuations in the main supply voltage.

Since 1927 the number of circuit arrangements designed to provide A.V.C.

condenser. This, on the face of it, is more ingenious than practical.

The electrical systems are almost entirely based on the principle of varying the grid bias on the H.F. valves, using the rectified carrier-wave for the purpose. Here

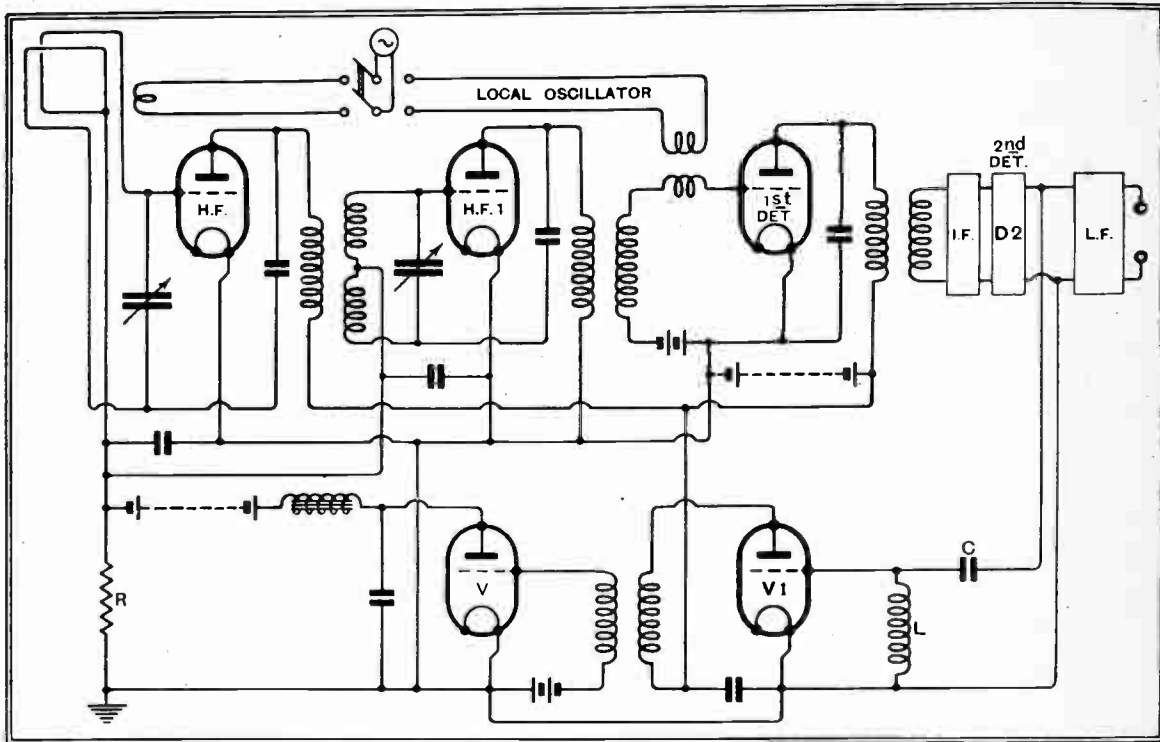


Fig. 2.—A circuit of 1925 where the amplified output, after rectification by the valve V, is applied to control the grid bias of H.F. stages.

have been legion. In some cases “mechanical” control is utilised, but mostly the control is wholly electrical. The former type is hardly suitable for ordinary broadcast reception, since the small power available demands the use of very delicate instruments.

One illustration may perhaps be given, in which a milliammeter is inserted in the output circuit of the detector valve and is fitted with a moving vane, which also forms one of the vanes of the aerial tuning-

the depth of modulation affects the output to some extent, i.e., a station with 80 per cent. modulation gives a signal twice as loud as one with only 40 per cent. modulation.

In some cases the output from the L.F. amplifiers has also been utilised, although, as previously stated, this tends to soften loud passages and strengthen weak ones unless the control is deliberately “delayed,” in which case it is ineffective for “rapid” fading or when the set is tuned through a strong station. The period of “delay” is fixed by applying the control voltage to a series resistance, so that the time taken by the condenser to charge comes into account.

Owing to the tendency to produce cross-modulation, the use of a variable grid-bias did not in practice prove very satisfactory prior to the introduction of the variable-mu valve. Even with the variable-mu valve, A.V.C.—to be a really practical proposition—demands a generous range of control voltage, of the order of 40 or 50 volts, as compared with the 5-10 volts originally used with the ordinary screen-grid type of valve.

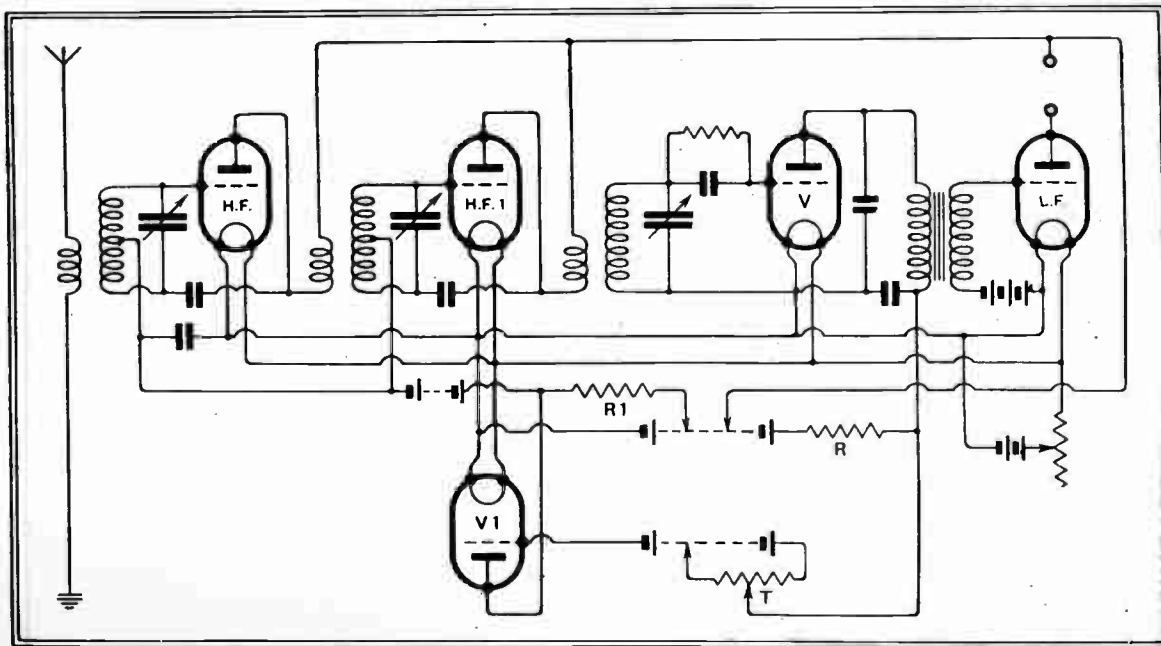


Fig. 3.—The A.V.C. valve V₁ is operated by voltage changes on the detector anode.

UNBIASED

A Cabinet Question

HOW gratifying it is to see that at least one or two set manufacturers have had the courage and foresight to break away from the conventional style of "table-top" receiver! I refer, of course, to the type in which the loud speaker is housed over the tuning controls. Sets of this shape have always annoyed me, personally, for the simple reason that I consider them ugly, unwieldy and topheavy; thousands may think otherwise.

It will be remembered that this sort of set first appeared at the 1931 exhibition, as the result of the incorporation of the loud speaker into the receiver. What really set me against them was not the shape, but the fact that cabinet makers were permitted to dictate to British set manufacturers what shape the new type of set should take; in fact, they openly boasted about it.

The result was, of course, that all set manufacturers were compelled to follow each other like sheep in the matter of design. It is just as though brewers allowed bottle manufacturers to compel them to market good, honest beer in medicine bottles.

The new oblong shape with the loud speaker at one end is, to my mind, far more pleasing to the eye, and its shape far less difficult to fit into an odd corner of the average house. I do hope, how-



Good, honest beer in medicine bottles.

ever, that the change in shape is the result of initiative shown by a few set makers, and that the real explanation is not that they are being led by the nose once more by the cabinet makers. If this is so, my present mellow feelings toward the new shape will turn malignant. I suppose we must wait until this year's exhibition opens, and then, if there is a plethora of oblong sets, we shall know that once more the cabinet makers are calling the tune.



Experiments highly successful.

I Am Warmly Thanked

THIS new screened aerial wire about which everybody is talking is going to be a boon and a blessing to a very large number of people affected by interference of the type re-radiated by their own mains. It will confer no benefit, however, if the noise emanating from the loud speaker is not due to this particular cause.

A case in point came to my attention the other day; fortunately, the householder had not yet spent his money, and happily I was able to prevent him doing so by a simple test which showed that a screened down-lead would not solve his particular problem. Luckily, he possessed a garden hose of the first quality, and, cutting off a suitable length, I threaded through it the down-lead of the lowered aerial. The next requirement was foil from cigarette packets, but, as he was a non-smoker, we were delayed for a time until the maid ran round to purchase a few dozen "tens."

It was a simple matter to wrap the hose in tinfoil and hoist the whole contraption aloft. Our experiments were highly successful; the disturbance still persisted, thus proving that the interference was not coming in *via* the down-lead. The owner of the installation warmly thanked me for saving him the expense of buying a length of the special down-lead for his experiments. Incidentally, he has enough coupons from the cigarette packets completely to reclothe his wife and family. All he must buy is a new hose.

In the Surgery

A WELL-KNOWN radio scribe has been telling his readers that when undergoing a minor surgical operation under a local anæsthetic in New York some time ago he insisted on having with him a radio set to distract his attention while in the shambles.

Having first-hand knowledge of American programmes as dished up to New Yorkers I can only suppose that he got the idea from those Chinese dentists who apply thumbscrews to their patients as a counter-irritant.

Why Not Folding Radio-grams?

BUILDERS in this country seem to be vying with each other in the production of smaller and yet smaller houses, so that there is no room to swing even a kitten, and a Manx one at that.

By FREE GRID

This state of affairs is seriously affecting the popularity of radio-gramophones, according to a radio dealer to whom I have been talking. Being in a district where these new houses are going up overnight, he used vigorous language in denouncing radio manufacturers who have so far failed to cater for this large potential market for smaller and more adaptable radio-gramophones and console receivers. He got me so interested that I gladly accepted his invitation to visit a neighbouring new estate.



Space was obviously lacking.

After wandering through oceans of mud and using our umbrellas to beat off the hordes of estate agents and others who buzzed around us, we inspected several houses. Although space was obviously lacking for the ordinary type of radio-gramophone and console receiver, there seemed plenty of scope for any intelligent designer to produce suitable instruments.

Can you think of anything more appropriate than to build a radio-gramophone into one of those delightful "compactum" wash-hand stands which one encounters on board ship? The moving-coil loud speaker would take the place of the customary mirror, while the turntable would occupy the place of the basin, and would conveniently fold up when not in use. As for the tuning controls, there would be ample space at the bottom of the mirror, while the heavy mains gear or the batteries would go nicely into the space usually occupied by the waste water receptacle. The dealer who was accompanying me was quite enthusiastic about the idea.

Practical Class "B" Amplification

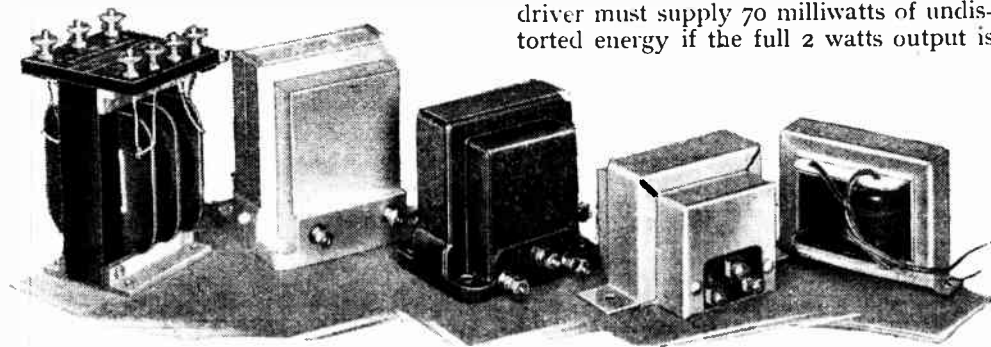
Choosing the Right Components for the Driver Stage

By W. I. G. PAGE, B.Sc.

IN view of the remarkable performance of the new Class "B" battery valve, both as regards quality of reproduction and power output, it can safely be predicted that this type of output will be included in the majority of future battery sets. The choice of the correct driver valve and the calculation of the driver transformer ratio, among other points, are dealt with in detail in the accompanying article.

SO many technical developments have occurred within the last few months that the most earnest student can be forgiven if he has difficulty in keeping abreast of each one. Take the case of Class "B" amplification, first described in *The Wireless World* but two weeks ago. Although the reader has been given a theoretical explanation of the new system, there are some practical aspects which need consideration. For instance, there are on the market numerous driver transformers necessary for feeding the Class "B" valve, some of which are shown in the illustration. In a number of cases the overall ratio (total turns on primary to total turns on secondary) is 1 to 1, while in others the step-down ratio is 2 to 1, or even 3 to 1, which is equivalent to 4 to 1 or 6 to 1 when we refer the primary to half the secondary, and the question arises as to which is the best type to choose for any given set of conditions.

Before a decision can be made it will be as well to remind ourselves of the



Five driver transformers with ratios from 2 to 1 up to 5 to 1 per half-secondary. From left to right, R.I., Lotus, Sound Sales, Benjamin and Trix.

somewhat strange conditions obtaining in an output stage where grid current is purposely made to flow. The two valves forming the dual Class "B" valve are each of the comparatively high-impedance detector type, and pass little anode current at zero bias, but, of course, run into grid current as soon as a signal is received. As each grid in turn becomes positive, electrons from the filament are collected by it, thus completing a current path

across half the transformer secondary, making a partial short-current across it. Naturally, a complete short-circuit of the secondary would put the two ends at the same potential, destroying the signals entirely. A partial short circuit, on the other hand, merely reduces the signal volts available.

Now to maintain full volts in face of the current drain through the valve, a source of power must be provided. This is effected by a transformer deriving its power from a small output valve—the two together being known as the "driver" stage. From this it will be clear that output valve technique must be applied to the intermediate L.F. stage which precedes the output stage proper. How much power is required from the driver to make up for the losses incurred when grid current flows round the grid circuit of the Class "B" valve? It is not easy to work this out for ourselves, but the makers of Class "B" valves will always have to supply the figure, taking into account the D.C. resistance of the secondary of the driver transformer, the copper losses, etc. In the case of the Cossor 240B valve, the driver must supply 70 milliwatts of undistorted energy if the full 2 watts output is

with which this is possible nearly always has a gradual bend in the characteristic curve, and so the process of slight over-biasing does not introduce noticeable curvature distortion, especially when the input is small. Where rather more than the optimum bias is applied, the required anode load will, of course, be a little higher than the normal, because the valve's A.C. resistance will be increased.

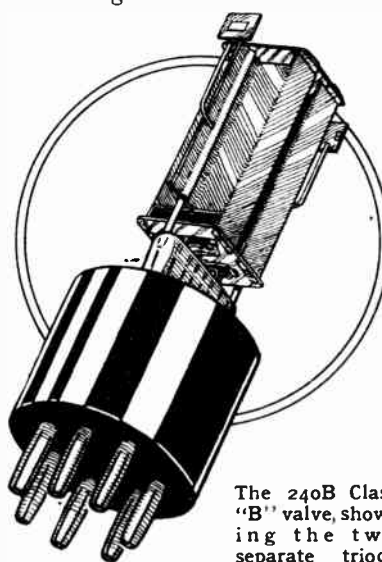
This will explain why a suitable driver

for the 240B is to be found in the Cossor 215P, which *The Wireless World* Valve Data Supplement tells us will deliver 150 milliwatts at 150 volts H.T., 7.5 volts bias (10 mA. anode current) when working into a load of 9,000 ohms. At 120 volts it will deliver 70 milliwatts when biased to 9 volts, and the anode current will be 2.5 mA., while the load will have to be a little more than 9,000 ohms, say, 10,000 ohms. The most sensitive valve for the driver stage would undoubtedly be one of the high-efficiency pentodes

(220 HPT, PT2, Pen.220, or PM22A), but as the cost is just twice that of a small power valve, it is unlikely that it will find wide application.

The next problem is the choice of the correct ratio of driver transformer. Before we can tackle this we must know the minimum impedance of the grid-filament circuit of one of the members of the dual Class "B" valve. Obviously when grid current to the tune of many milliamperes is flowing the internal grid-filament path is highly conductive, and is equivalent to a resistance of quite a low value. Actually the figure for the 240B is 2,500 ohms, and as only one half of the valve is in operation at any moment we are at liberty to ignore the other half. The secondary of the driver transformer being centre-tapped acts as a 2 to 1 auto-transformer, so the load across the whole winding is $2^2 \times 2,500 = 10,000$ ohms. But this is the load we require for the anode of the 215P valve. We are thus left with the simple problem of transferring 10,000 ohms from secondary to primary, necessitating, of course, a 1 to 1 ratio (or as some of the manufacturers put it—a 2 to 1 step-down ratio per half-secondary).

Had the driver valve required a load of 20,000 ohms to give the necessary 70 milli-



The 240B Class "B" valve, showing the two separate triode assemblies.

Practical Class "B" Amplification—

watts the driver transformer step-down ratio would have to be $\sqrt{2}=1.4$ (or 2.8 to 1 if referred to half the secondary). Again, a driver valve load of 40,000 would be given by an overall step-down ratio of $\sqrt{4}$ to 1 = 2 to 1 (or 4 to 1 per half-secondary), and so on. This explains why there are transformers on the market with overall ratios other than 1 to 1.

There are probably a number of readers who will find one watt output sufficient for their needs, in which case the grid swing of the Class "B" valve can be restricted, and a loss of about 35 milliwatts only will have to be compensated. This can easily be handled by a detector-type driver valve consuming about $1\frac{1}{2}$ mA. anode current, which, owing to its high impedance, will require a load of high value—an instance where a 4 to 1 or 6 to 1 step-down ratio (per half-secondary) will be required.

The transformer linking the 240B valve to the speaker must have a ratio such that the load across the primary is 8,000 ohms (or rather more than this if a small driver restricting the output is used).

Take, for example, a speaker with a speech coil impedance of 2 ohms; the output transformer ratio would have to be $\sqrt{8,000 \div 2} = 63$ to 1 step-down, and a speech coil impedance of 10 ohms would require a ratio of 28 to 1. Fortunately the majority of Q.P.P. output components already on the market are suitable.

It is interesting to note that because the grids of the Class "B" valve rob the anodes of current, the characteristic curves are similar in general shape to those of the screen-grid valve or pentode—this in spite of the fact that each half of the dual valve is a triode. The higher audio frequencies are, therefore, inclined to be accentuated, and compensation is desirable. If, however, the usual filter is connected across the output transformer primary, anode current is consumed for the high notes which are slanted away. It is therefore better to control the tone before the driver valve, as this leads to an appreciable economy in anode current.

As regards the sensitivity of the 240B output valve, a little more than 2 watts can be obtained from a signal of 9 volts peak applied to the driver valve—a highly satisfactory performance.

Class "B" amplification combines two virtues of great importance to the battery user: the first, an efficiency which is considerably greater than any other output stage, and the second, low cost, for the price of the dual valve is only 14s.

ULTRA-SHORT WAVES

THE April number of "The Wireless Engineer" contains two important articles on ultra-short waves. One deals with experimental broadcasting on 7.85 metres, carried out by the Philips Laboratory in Holland, describing the transmitting and receiving apparatus. The other contribution gives constructional details of an ultra-short-wave oscillator.

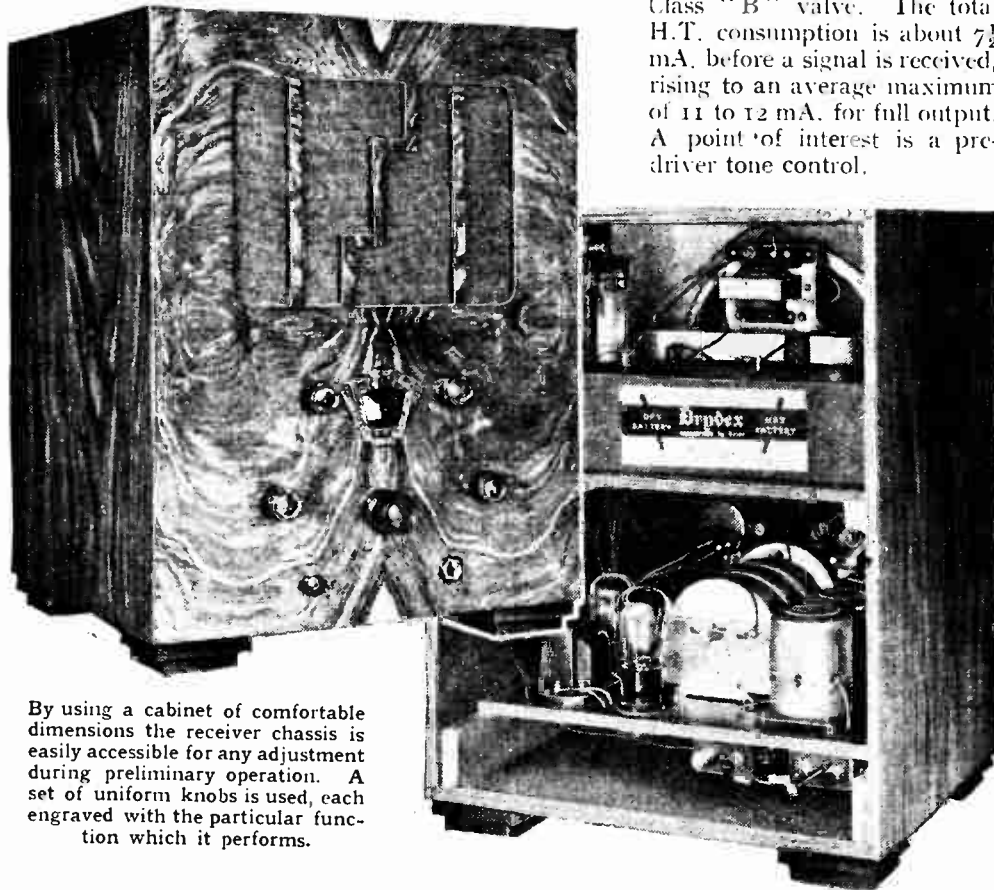
The issue, in addition to other material, contains monthly abstracts of the world's technical wireless articles, an indispensable service to serious experimenters. Copies can be obtained by order at bookstalls, or direct from the publishers of *The Wireless World*.

In Next Week's Issue:—**The Class "B" Ferrocarr Receiver****A Highly Selective 4-valve Battery Set Giving the Remarkable Power Output of 2-watts**

THIS receiver embodies the most advanced technique in battery receiver design. Selectivity approaching that of a superheterodyne is obtained by the use of three Ferrocarr coils arranged as a band-pass filter and tapped tuned anode coupling. This, combined with the extremely high sensitivity of the new Class "B" L.F. amplification ensures an outstanding all-round performance. During initial tests no fewer than seventy-

two stations were identified on the medium waveband alone, making a total of some eighty stations when the long-wave range is included.

The enormous power output of two watts speech can be obtained either from gramophone record or radio with quite a modest H.T. consumption. There are four valves in all, the first a variable-mu H.F. amplifier, the second a grid detector, the third a driver, and the fourth a dual Class "B" valve. The total H.T. consumption is about $7\frac{1}{2}$ mA. before a signal is received, rising to an average maximum of 11 to 12 mA. for full output. A point of interest is a pre-driver tone control.



By using a cabinet of comfortable dimensions the receiver chassis is easily accessible for any adjustment during preliminary operation. A set of uniform knobs is used, each engraved with the particular function which it performs.

LIST OF PARTS

After the particular make of component used in the original model, suitable alternative products are given in some instances.

- | | |
|--|---|
| Set of Three Ferrocarr tuning coils, Colvern type F1, F2, F3 | 1 Condenser, 2 mfd., 250 v. D.C. working |
| 1 3-gang tuning condenser and disc drive Polar "Star" | T.C.C. type 65 |
| 1 Reaction condenser, 0.0002 mfd. Ormond R/504 | 1 Condenser, 0.0001 mfd. T.C.C. type "M" |
| (J.B., Utility) | 1 Condenser, 0.0003 mfd. T.C.C. type "M" |
| 1 H.F. choke (Bolgin) | (Dubilier, Hellesens, Peak) |
| 1 H.F. choke McMichael Binocular Junior | 4 Terminals, aerial, earth, pick-up, pick-up |
| 3 5-pin Valveholders Clix chassis-mounting type | Belling-Lee type "M" |
| 1 7-pin Valveholder Clix chassis-mounting type | 2 Terminal mounts Belling-Lee |
| (Benjamin, Radiophone, W.B.) | Baseboard, Plymax, 16in. x 14in. x 2in. Peto-Scott |
| 1 4-pt. double-throw switch with distant control | With batteries and brass metal strips |
| Radiophone type 450.X. | 6 Wander plugs, G.B.+1, H.T.+1, H.T.+2, G.B.-1, G.B.-2, G.B.-3 |
| 1 On-off switch with distant control | Clix type B |
| Radiophone type 485.Y. | 2 Spade terminals for L.T. Dubilier |
| 1 3-pt. switch with long throat. Radiophone type 630 | 1 Pilot lamp, 2 volt. Bulgin |
| 1 Volume-control potentiometer, 25,000 ohms. Wearite Q.V.C. | 1 Tuning knob pilot lamp switch. Wearite |
| (Bolgin, Radiophone, Watmel) | 1 Set of uniform engraved knobs. Danipad |
| 1 Tone-control potentiometer Multitone | Screened sleeving, 1 yard. Harbros |
| 1 Tone-control Transformer, 4 to 1 Multitone "Toco" | 2 oz. No. 20 tinned copper wire, 4 lengths Systoflex, wood, flex, etc. |
| 1 Driver transformer, 1 to 1 overall Multitone | Wood Screws: 20 3in. No. 4 R hd.; 12 3in. No. 4 R hd.; 4 2in. No. 6 R hd. Metal Screws: 8 4BA.; 12 6BA., with nuts and washers |
| (Benjamin, Ferranti, Lotus, R.L., Sound Sales, Trix, Varley) | 4 Valves: 220VSG, metallised; 210.HF, metallised; 215.P, and 210.B. Cossor |
| 1 Resistance, 100 ohms, 1 watt. Dubilier | |
| 1 Resistance, 250 ohms, 1 watt. Dubilier | |
| 1 Resistance, 5,000 ohms, 1 watt. Dubilier | |
| 1 Resistance, 40,000 ohms, 1 watt. Dubilier | |
| 1 Resistance, 50,000 ohms, 1 watt. Dubilier | |
| 1 Resistance, 500,000 ohms, 1 watt. Dubilier | |
| (Eric, Graham Farish, Claude Lyons) | |
| 3 Non-inductive condensers, 1 mfd., 200 v. D.C. working | T.C.C. type 50 |
| 1 Condenser, 1 mfd., 250 v. D.C. working | T.C.C. type 65 |
| | |
| | 1 Loud speaker with Class "B" transformer. Amplion (British Rola, Colston, Olmond) |
| | 1 H.T. battery, 12 mA. type, including bias battery, measuring 10.9, 16in. x 6.9, 16in. x 3 3/4in. Drydex H.1063 (Ever Ready, W.1210) |
| | 1 L.T. accumulator Cabinet Exide D.F.G. C.A.C. Cabinets, Ltd. |

PRACTICAL HINTS AND TIPS

IN the first decade of the present century the test buzzer was used as an aid to the adjustment of coherer detectors, and with modifications in construction and method of application is still used as a handy and, above all, inexpensive generator of feeble oscillations. It is probably the only device that has survived since the early days of wireless.

**Points
About
Buzzers**

In spite of the cheapness and low current consumption of present-day valves, the buzzer is still of real practical value for use in energising a radiating wave-meter, and its uses in this direction have recently been described in *The Wireless World*. In addition, there are other but less well-known applications.

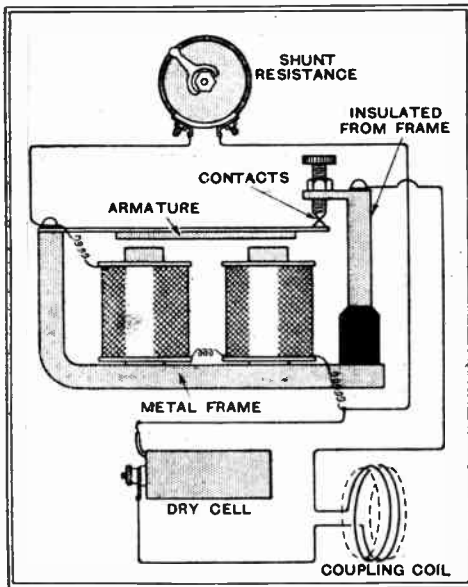


Fig. 1.—Diagrammatic sketch showing the construction and connections of a buzzer. Any tuned circuit in inductive relationship with the coupling coil is "shock-excited" into oscillation at its own natural frequency.

It is rather a pity that "wireless type" buzzers are not more readily available. Still, the ordinary pattern can, with slight alteration, be made to serve, but will generally produce rather too much mechanical noise. To reduce this, a soundproof container can be made, with an absorbent mounting to prevent vibration.

The make-and-break device should operate at a high frequency in order that a distinctive note may be produced. A buzzer that is unsatisfactory in this respect may often be improved by reducing the weight of the armature and at the same time damping its movements by suitably disposed blocks of rubber arranged so

Simplified Aids to Better Reception

that they bear on the armature spring. In order that a buzzer may be made to "kick" a tuned circuit into oscillation it is necessary to prevent the minute spark which normally occurs at the instant when the vibrator contacts open. To this end the coils are shunted with an absorbing resistance, generally of rather lower ohmic value than that of the coils themselves. Up to a point the strength of oscillations is greatest with a low value of shunt resistance, but here we find the need for compromise. The connection of too small a parallel resistance will prevent the buzzer from starting freely when switched on.

It has recently been found that the "buzzer" is by no means a "back number" for testing modern sets. Wired as shown in the accompanying sketch, with a two-turn exciting coil connected with long leads, it may be used to energise circuits in which screened coils are used, and is thus suitable for tracing faults stage-by-stage. The coupling coil may be placed inside the screening cover of a coil forming part of a circuit under suspicion. Tests of the I.F. amplifier of a superhet. may be made in the same way, although a few more turns on the coupling coil will generally be needed.

IT may be pointed out that the quiescent push-pull system of amplification with three-electrode valves, as discussed in *The Wireless World* for February 24th, may be employed in the receiver described constructionally in the issue of January 20th. The sole proviso is that the valves chosen must operate with a grid bias not in excess of about 15 volts, as there is no intermediate L.F. stage. In practice this means that valves of the "low power" class, such as Marconi and Osram LP2, Mullard PM2A, or Cossor 220PA, would generally be most suitable.

Beyond such obvious alterations as the use of four-pin valve-holders, and the fact that provision for close adjustment of auxiliary grid voltage will no longer be necessary, practically no changes need be made. The voltage of the grid-bias battery will depend on the valves chosen, and also on the H.T. voltage to be applied to them; full information on this subject is obtainable from the tables published in the article referred to.

ANY desired proportion of the voltage developed across a smoothing choke inserted in the negative H.T. lead may be applied as grid bias; in this way we can get bias voltage that is really "free." The possibilities of this scheme, as applied to A.C. sets, have already been dealt with in this journal; the system is one that might be more widely adopted in cases where it seems to offer any benefit.

**Really
Free
Bias**

In certain circumstances, the same principle may with advantage be employed in D.C. sets. When the supply voltage is low—say, a bare 200 volts—and when the positive main is earthed, the arrangement shown diagrammatically in Fig. 2 has been found satisfactory, and is well worth a trial. At the worst, practically nothing will be wasted, as, in the unlikely event of failure, the components may be rearranged in the conventional manner.

In the circuit in question the smoothing choke is in the negative H.T. lead, and assuming average values, the voltage developed across it will be more than enough to bias a D.C. pentode output valve. Any proportion of this voltage may be taken off by shunting the choke with a potentiometer, to the slider of which the grid circuit is connected.

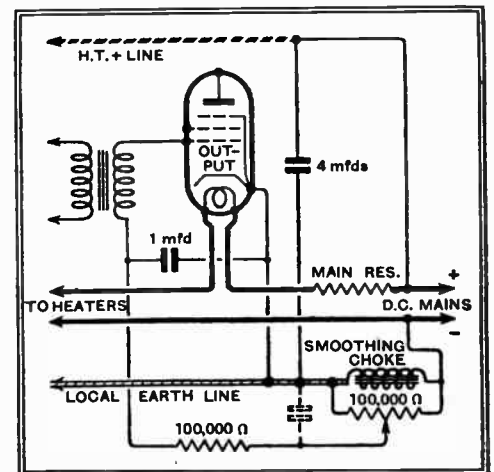


Fig. 2.—Automatic bias without loss of H.T. voltage: an arrangement that is especially applicable with D.C. supplies of 200 volts or less.

To prevent hum, grid decoupling components should have approximately the values indicated, as a certain amount of smoothing will be required here. The extra condenser, shown in dotted lines, will not always be necessary; when it is, a value of 1 mfd. will be suitable.

NEWS of the WEEK

Current Events in Brief Review

Free Programme Journal

RUMOURS are continuing that German listeners are to be provided by the State with a free broadcasting programme journal. It is considered that such a step would seriously affect the independent radio papers, of which there are about sixty.

Fifty-year-old Valve

AN exact replica of an Edison valve first designed in the early 'eighties was used recently in a special programme over the network of the American National Broadcasting Company. Edison's patent revealing his discovery of the electronic flow in the vacuum tube was taken out in November, 1883.

S.B. in Italy

THE Italian Broadcasting authorities are following B.B.C. practice by transmitting two programmes simultaneously from Milan. The "Northern Programme" goes out from the new station at Sizzano, while from the old transmitter at Vigentino, not yet demolished, programmes are transmitted for Rome and the south.

Radio Mass Forbidden

OWING to the shortage of priests in many French country districts requests have been made that masses might be broadcast and relayed through loud speakers in priestless churches. But the Vatican journal, *L'Osservatore Romano*, lays down the Catholic doctrine that "to accomplish their duty the faithful must be present in a church where the mass is celebrated."

A Processional Innovation

A REMARKABLE radio demonstration marked the inauguration of the Lyons Spring Fair. In answer to a broadcast request from the Lyons la Doua station, all listeners along the path of a public torchlight procession placed their receivers on the window sills so that the spectators enjoyed a continuous concert until the procession arrived. Prominent radio traders provided powerful sets with loud speakers for use in the procession.

Seven Thousand Miles Radio Tour

IN the extension of British radio trade abroad a splendid example has been set by Messrs. Partridge, Wilson and Co., makers of the "Davenset" radio apparatus, two of whose representatives are now touring the Near East by air. Croydon aerodrome was left on Saturday, March 18th, and by the time the plane returns on Tuesday, April 4th, some seven thousand miles will have been traversed.

The tour is the outcome of the suggestion of an Egyptian buyer who visited the firm some months ago.

Potsdam, 1933

KONIGSWUSTERHAUSEN'S interval signal was changed last week to commemorate the national holiday on March 21st. The new signal is the first bar of the old German folk song: "Lieb'immer Treu und Redlichkeit," as played by the carillon of the Garrison Church in Potsdam.

The signal is reproduced by means of a simple drum of the "musical box" type.

German Broadcasting Under New Control

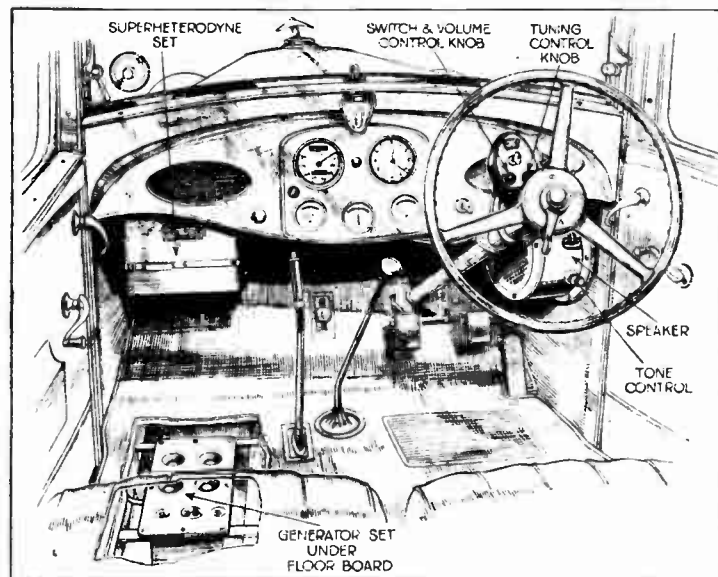
HISTORY was made in German broadcasting last week when the Post Office relinquished control in favour of a new Ministry of Propaganda under the direction of Dr. Goebbels, who has appointed Dr. Kruckenberg as sole radio commissioner. We under-

Errors in D.F.

AT the I.E.E. Wireless Section on Wednesday next, April 5th, Mr. J. F. Coales, B.A., will read a paper entitled "Errors in Direction-Finding Calibrations of Steel Ships due to the Shape and Orientation of the Aerial of the Transmitting Station." The meeting opens at 6 p.m. at the Institution.

Incendiarism by Radio

UNNECESSARY excitement seems to have been caused in Belgium over an "experiment" in which a fire was started at Landerbrugge, 7½ miles away from a short-wave transmitter. The receiver in the infernal machine contains a diaphragm which, on the receipt of the signal, closes a switch and heats a filament, setting fire to a piece of highly inflammable material.



THE BUILT-IN CAR SET. Elsewhere in this issue comment is made on the new trend of car wireless in which the receiver is an integral part of the equipment. Above is an *Autocar* sketch showing the Philco Transitone on a Vauxhall car.

stand that the Post Office continues to collect the licence fees and to operate the transmitters, but the new Ministry of Propaganda takes most of the money derived from licence fees, a small percentage being deducted by the Post Office for expenses.

Broadcasting to Posterity

AMONG the recent acquisitions of the British Museum is a matrix of the King's Empire Speech broadcast on Christmas Day, which has been presented by the directors of the Gramophone Co., Ltd. The matrix is made of nickelled copper, and is placed in a hermetically sealed brass panel. This has been added to the collection of matrices which was begun in 1907, when the H.M.V. presented matrices of speeches by Sir Herbert Tree, Lord Roberts, Sir Ernest Shackleton, and the voices of famous opera stars.

All one has to do, apparently, is to tune in Radio Paris or London National some ten minutes before the opening of the transmission, place the infernal machine on the spot where the fire is needed, and retire immediately.

"Dahir" in Morocco

WIRELESS pirates are now given short shrift in Morocco, where a "dahir" has been promulgated by Mr. Lucien Saint, the French Resident General.

The "dahir" ordains that every wireless manufacturer, merchant, or retailer must henceforth enter in an official stamped and initialed account book the names and occupations of all persons to whom radio sets, components and accessories are sold.

The radio journals in France regard the new move as a direct attempt to "turn traders into informers."

Television Exhibition

THE Fourth Exhibition of Television and Photo-electric Apparatus will take place at the Imperial College of Science, South Kensington, London, S.W.7, on Wednesday next, April 5th, from 6 p.m. to 9 p.m., and Thursday, April 6th, from 3 p.m. to 9 p.m. On the latter date the Exhibition will be opened by Sir Ambrose Fleming, M.A., D.Sc., F.R.S. There will be special short-wave demonstrations of television.

Cards of admission may be obtained from the Hon. Business Secretary, Mr. J. J. Denton, 25, Lisburne Road, Hampstead, London, N.W.3.

Trade Mark: "Bulgin"

OUR congratulations to Messrs. A. F. Bulgin & Co., Ltd., the radio manufacturers, for having secured the registration of their name "Bulgin" as a trade mark. Only on rare occasions does a surname receive this privilege.

In order to substantiate the claim to originality, the company was required to obtain some hundreds of affidavits from wholesalers, dealers and others, stating that the name "Bulgin" had been used exclusively by the firm for the past nine years.

Photo Cells on Show

NO one interested in the many practical applications of photo-electric cells should omit to visit a special display which opened at the Science Museum, South Kensington, on Saturday last.

The cells on view can be roughly classified into those involving only the detection of light and those concerned with its measurement. In the first class the Exhibition offers a number of working models showing the cells used for counting small packages on a conveyor belt, operating burglar alarms and controlling an automatic door-opener. Cells depending upon the intensity of light are seen operating street-lamp switches and measuring the density of factory smoke.

An effective exhibit shows the use of the sound film in the telephone exchange, a recorded voice announcing "Number engaged," and other phrases.

Fighting the Sponsored Programme

OUT of the welter of conjecture about the proposed formation of a new American broadcasting network to compete with the two existing National systems has come a definite announcement by the Atlantic Seaboard Broadcasting Company. According to our Washington correspondent, this company is about to open up a six-station network between New York and Washington. Mr. Israel Leopold, the President, popularly known as Ed Wynn, proposes to add thirty-seven stations south of Washington and forty between Chicago and Seattle.

Interest is centred on Mr. Leopold's declaration that advertising will be confined to not more than thirty words at the beginning and end of each programme. The announcements will refer listeners to newspaper advertising. This is regarded as the first move towards loosening the stranglehold of the sponsored programme.

The Magnetic Circuit

An Important Principle Simply Explained

By S. O. PEARSON, B.Sc., A.M.I.E.E.

IN making calculations on the iron cores of transformers, chokes, and other electromagnetic apparatus, it is necessary to have a working knowledge of the principle of the magnetic circuit, just as in dealing with electric circuits it is essential to know Ohm's law. And it is the fact that a simple magnetic circuit obeys a law very much like Ohm's law of the electric circuit that makes the study and calculation of a magnetic circuit a comparatively simple matter.

Let us first consider the most elementary form of magnetic circuit to illustrate the principle. This consists of an iron ring of uniform section wound with a number of turns of insulated wire, as shown in Fig. 1 (a). When a current is passed through the wire or coil the iron becomes magnetised to an extent depending on (a) the current in the coil and the number of turns—that is, on the product of amperes and turns (called the ampere-turns); and (b) on the properties of the iron ring, or whatever other type of magnetic circuit is involved.

Magnetomotive Force

The magnetic flux, or total number of lines of force, produced round the iron ring bears a definite relationship to the ampere-turns in the same way that a current round an electric circuit bears a definite relationship to the applied electromotive force. The coil carrying the magnetising current constitutes the driving

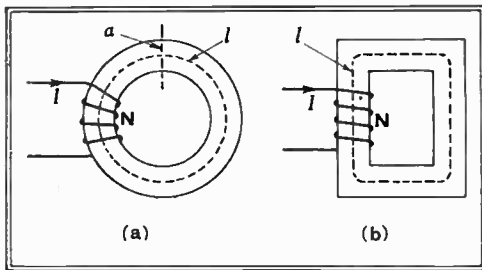


Fig. 1.—(a) Simple ring magnetic circuit, and (b) a common form of rectangular magnetic circuit.

force which sets up and maintains the magnetic flux. This driving force is proportional to the number of ampere-turns, and is called the *magnetomotive force* (M.M.F.) of the coil and current. It corre-

sponds to the electromotive force of the electric circuit.

In the practical system of electromagnetic units the M.M.F. of a coil is not actually equal to the number of ampere-turns of the coil, but to 0.4π times this quantity. The origin of the number 0.4π arises from the numerical definition of magnetomotive force. (It is numerically equal to the work done or energy expended when a unit magnetic pole is moved once round the magnetic circuit. 4π lines of force issue from a unit pole, and one ampere is $1/10$ th of a C.G.S. unit.) So, if the magnetising coil has N turns and carries a current of I amperes, the magnetomotive force is $0.4\pi NI$, and is expressed in *gilberts*.

Turning now to the properties of the magnetic circuit itself, and considering the simple ring of Fig. 1 (a), the total magnetic flux produced will depend, for a given magnetomotive force, on the dimensions of the ring and on the magnetic "conductivity" or the *permeability* of the iron. In the same way as an electric circuit offers resistance to the flow of a current, so a magnetic circuit offers a resistance to the establishment of a magnetic flux within it. This opposition to the magnetic flux is termed *reluctance*, and is usually denoted by R .

Knowing the magnetomotive force (M.M.F.) of the coil and the value R of the reluctance of the magnetic circuit, the total magnetic flux—that is, the total number of lines of force or *maxwells*—is given by the simple expression $\phi = \frac{\text{M.M.F.}}{R}$, where ϕ stands for the total magnetic flux. (Compare this with Ohm's law:— $I = \frac{\text{E.M.F.}}{R}$).

For a given specimen of iron, the reluctance or magnetic resistance R of the

magnetic circuit is directly proportional to the mean length of the circuit, and is inversely proportional to the area of cross-section of the magnetic circuit, taken at right angles to the lines of force. It is assumed that the section is uniform at all points, and in the case of the ring the sectional area is that obtained by cutting radially through one side of the ring. So if l is the mean length in centimetres, as shown in Fig. 1, and a is the cross-sectional area in square centimetres, the reluctance is proportional to $\frac{l}{a}$. The longer the magnetic circuit the greater the reluctance,

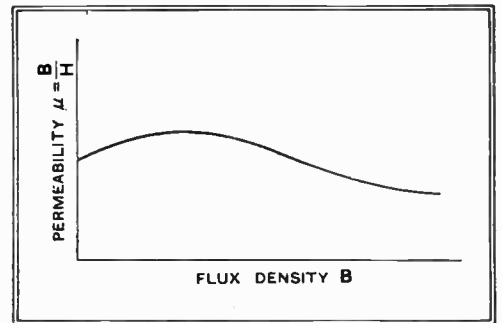


Fig. 3.—General form of the permeability curve of iron and its alloys.

and the larger the section of iron path the lower the reluctance. This, of course, is the same as the relationship between the resistance and dimensions of a conductor.

Permeability

The reluctance depends also on the magnetic properties of the iron itself. Some specimens of iron carry magnetic flux more easily than others, and the degree of "magnetic conductivity," if such a term may be used, is known as the *permeability*, and is unfortunately not constant for even a single specimen of iron; it depends

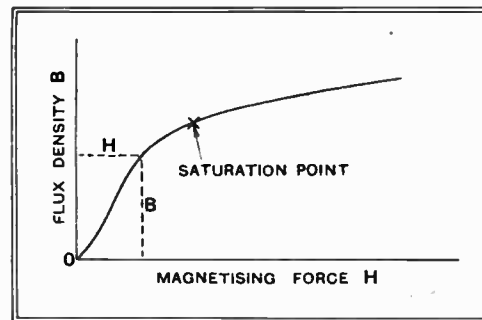


Fig. 2.—Magnetisation curve of iron showing the general shape.

on the degree of magnetisation. To define permeability numerically it is necessary to introduce a new term, namely, *magnetising force*. This is simply the magnetomotive force of the coil divided by the length of the magnetic circuit; in other words, the M.M.F. per cm. being $\frac{0.4\pi NI}{l}$, and denoted by H gilberts per cm.

Now, when the magnetising force H is

The Magnetic Circuit—

gradually increased from zero, the resulting magnetic flux density, or lines per sq. cm. of area of one side of the ring of Fig. 1 rises also, but not in direct proportion. The curve showing the relationship between B and H is usually of the shape shown in Fig. 2. This curve is variously called the "B-H curve," the "magnetisation curve," or the "saturation curve" of the iron. The permeability of the iron, at any particular flux density B, is the ratio B/H at that point, and is usually denoted by the Greek letter μ (mu). Obviously, μ is not a constant ratio, and when plotted against the flux density B gives a curve of the type shown in Fig. 3. It is, however, usually fairly constant over a considerable range of flux densities below the "saturation point." The permeability is really the ratio of the magnetic conductivity of the iron compared with that of air, which is said to have a permeability of unity.

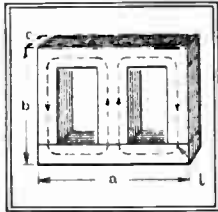


Fig. 4. Shell type of A.C. magnetic circuit. All windings are carried on the central core.

Knowing the permeability μ , the length l , and the cross-sectional area a of a uniform magnetic circuit, the reluctance is given by $R = \frac{l}{\mu a}$. For an air-gap in a magnetic circuit the reluctance is simply equal to the ratio of effective length (or width) to the area of one of the pole faces, since $\mu = 1$.

Example.—An iron ring has a mean diameter of 20 cms. and a cross-section of 10 sq. cms. It has a radial air-gap 0.1 cm. wide cut at one point, and is wound with 100 turns of wire. It is required to find the current necessary to produce a flux density of 10,000 gauss (lines per sq. cm.) in the air-gap (and in the iron) if the permeability of the iron at this density is 2,000.

Total magnetic flux = 10,000 × 10 = 100,000 maxwells or lines. Reluctance of iron portion = $\frac{l}{\mu a} = \frac{20\pi}{2,000 \times 10} = 0.00314$.

Reluctance of air-gap = $\frac{0.1}{10} = 0.01$. Thus total reluctance $R = 0.00314 + 0.01 = 0.01314$. But total flux $\phi = \frac{M.M.F.}{R}$ lines.

whence M.M.F. = 100,000 × 0.01314 = 1,314 gilberts, and this is equal to 0.4πNI, where N is the number of turns and I is the current. Hence the required current is $I = \frac{1,314}{0.4\pi \times 100} = 10.46$ amperes.

In the case of a composite magnetic circuit in which there are portions with different sectional areas and permeabilities, the reluctance of each part is found separately, and the total reluctance found by addition.

The magnetic circuits of low-frequency

chokes and transformers usually take one or other of two forms. The core may be arranged as in Fig. 1 (b), which is known as the core type, or, on the other hand, it may be designed as shown in Fig. 4. This form of magnetic circuit is known as the "shell" type. The magnetic circuit is built up of stampings or laminations of special magnetic steel alloy, such as "Stalloy," the laminations being insulated from each other by means of thin sheets of paper or varnish to prevent, as far as possible, the flow of circulating or eddy currents within the iron itself by the alternating magnetic flux. The flow of eddy currents not only represents energy losses, but results in the lowering of the effective inductance of any winding on the core.

In the case of the shell type all windings are carried on the central core only, and the whole of the magnetic flux passes through this centre limb, dividing into two equal parts, which pass round the two outer limbs, as shown by the dotted lines in Fig. 4. It is common practice for the width of each outer limb, also the upper and lower yokes, to be made half the width of the central limb, so reducing the nett cross-sectional areas of these parts to one-half that of the central core. This arrangement secures the same number of lines of force through each square centimetre of area—that is, the same flux density, in every part of the magnetic circuit. This follows, of course, because the flux in each outer limb is just half that in the central core.

When making calculations on a magnetic circuit of this type, it must be remembered that the two outer limbs are in parallel with each other, and that, therefore, the mean length l of one group only of the lines of force must be taken into account when finding the number of ampere-turns. The length l in Fig. 4 can be found very approximately by drawing to scale and measuring, or it may be roughly calculated.

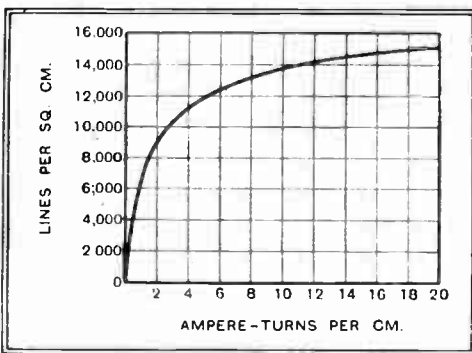


Fig. 5.—Magnetisation curve of silicon-steel alloy stampings.

Now, the makers of transformer stampings usually provide tables or curves showing the number of ampere-turns per centimetre length necessary to produce various flux densities in the particular material, and this greatly simplifies the calculation of the magnetic circuit. Fig. 5 shows a curve for silicon-steel stampings of moderately high permeability; it gives the relationship between ampere-turns per

centimetre length and magnetic flux density in lines per square centimetre of area (gauss).

As an example, suppose that the dimensions of the magnetic circuit of Fig. 4 are known, namely, that $a = 7$ cms., $b = 5.5$ cms., and $c = 1.5$ cms. This last is the gross depth across the laminations. The width of the central limb is 1.5 cms., and the widths of the outer limbs and the end yokes are all 0.75 cm. Suppose, further, that the magnetic circuit is made of stampings whose magnetic properties are given by the curve of Fig. 5, and that it is required to find how many turns will be required on the central core to produce a flux density reaching a maximum value of 10,000 lines per square centimetre when an A.C. of 200 mA. value is passed through the coil.

The mean length l of the magnetic path, taken round one side, is about 16.7 cms. From the curve of Fig 5 the ampere-turns per centimetre necessary to produce 10,000 lines per sq. cm. are seen to be 2.8, and so the maximum ampere-turns required = $2.8 \times 16.7 = 46.7$. To get the number of turns we must divide this by the maximum value reached by the current each half-cycle. Assuming sine waves, the maximum current is $1.414 \times 0.2 = 0.283$ ampere. And so the number of turns required is $46.7 / 0.283 = 165$.

How to Find the Inductance

The self-inductance of a coil on a closed iron core is very easily calculated when the relationship between the total magnetic flux and current is known. If ϕ lines of force are produced through the core when the current is I amperes, the self-

inductance is $L = \frac{\phi N}{I} \times 10^{-8}$ henrys, where N is the number of turns.

In the present case the gross cross-sectional area of the central limb is $1.5 \times 1.5 = 2.25$ sq. cms. This includes the insulation between the laminations. Assuming the iron itself to occupy about 90 per cent. of the space, the nett section of iron in the centre limb is $2.25 \times 0.9 = 2$ sq. cms. approximately. So, with a maximum flux density of 10,000 lines per square centimetre in the iron, the total number of lines is 20,000 at an instant when the current reaches a peak value of 0.283 ampere, the R.M.S. value being 0.2 ampere. The self-inductance with this value of alternating current is therefore $L = \frac{20,000 \times 165}{0.283}$

$\times 10^{-8} = 0.117$ henry.

The inductance is proportional to the square of the number of turns, and so with ten times as many turns, namely, 1,650, and one-tenth of the current (20 milliamps.), the ampere-turns would be the same as before, but the inductance would be 100 times as great—11.7 henrys.

Owing to the fact that the permeability of the iron varies with flux density, the inductance is not a constant, but depends on the R.M.S. value of the current. The presence of a direct-current component modifies the self-inductance value.

BROADCAST BREVITIES

By Our Special Correspondent.

Restlessness at "B.H."

THE power of speech, said the cynic, was given us to conceal thought. Much in the same way the broadcast programmes at the moment are cloaking a restlessness in Broadcasting House which is something more than "that Spring feeling." Inspired hints have reached the daily Press that "certain changes in organisation" are imminent and that these changes "will be obtained by some adjustment of personalities and duties internally."

The Sheep and the Goats

This is certainly a permissible way of describing the separation of the sheep from the goats, but it scarcely tells the whole story. The adjustment consists in dividing the B.B.C. staff into two great divisions, the administrative and the creative. Only now, after many years in setting up the broadcasting machine, is it possible to do this thoroughly.

In the old days the breed was mixed. People were administrative part of the time, when they performed routine duties, and became creative when the programmes demanded it.

One Thing or the Other

It occasioned no surprise that an accountant or librarian should proceed to the studio and sing a song or give a talk. Now we have changed all that and if you serve the B.B.C. to-day you are either a sheep or a goat. You cannot be both administrative and creative. You must be properly labelled.

A Dilemma

The new order is giving rise to some amusing perplexities among the staff. One young lady, whose particular job must go unrecorded, has been described as "administrative" by the Chief of the Section in which she works, while the higher authorities insist that she is creative. This case is typical of many.

What Does it all Mean?

And why the great cleavage? That is the question which causes restlessness. Who would be a sheep, with superior status and hours, if the goat gets better pay?

New Appointments

A "general post" among senior members of the B.B.C. staff seems inevitable. A smaller Control Board is being openly discussed. Sir Charles Carpendale will retire from the Controldership under the age-limit rule in the near future, and his successor must be sought among the "big names" already on the B.B.C. staff.

Despite rumours to the contrary, Mr. Gladstone Murray will probably be back from Canada by the 1st of June.

Down from the North?

The Manchester station has already been a jumping-off ground for promotion to H.Q., so it would not be surprising if Mr.

Edward Liveing, the Northern Regional Director, were to take up an appointment soon in Portland Place.

An Empire Ambassador

Within the next few months the Empire Broadcasting service will conclude its experimental period, and the question will be raised of whether the programmes are really appreciated and whether the Dominions and Colonies intend to offer financial recognition. The time is therefore drawing near for Sir John Reith to redeem his recent promise to Mr. Stanley Bruce, the Australian High Commissioner in London, and to send B.B.C. representatives on an Empire tour to establish goodwill and understanding.

It is quite likely that Sir John will send one of his closest associates.

Broadcasting on 3 metres

LEST you should spend all your time searching between 7 and 8 metres for the B.B.C. ultra-short wave transmissions, I ought to disclose the fact that recent tests have been carried out on 3 metres.

Another National Lecture

AFTER a lapse of many months, another National Lecture is to be heard on April 5th; it will be the first of the year 1933 and the eleventh to be broadcast. The lecturer, Sir Eric Drummond, K.C.M.G., C.B., will have as his subject "The League of Nations." Sir Eric recently retired from the position of Secretary-General, which he had held for thirteen years.

"Limitations of Programme Policy"

IN one sense the B.B.C. Sixth Annual Report is a thrilling document, for it tells of a net revenue of £1,628,738, an increase of £203,388 over 1931. At the same time it is a dull document, oozing bureaucracy at every turn of the page, and only really human when the Governors confess that "the problem of conveying humour purely by oral methods within the limitations of microphone and programme policy has not yet been solved."

I can understand the limitations of the microphone, but what exactly are these "limitations of programme policy"?

"Chu Chin Chow"

"CHU CHIN CHOW" is to be broadcast on the National wavelength on April 17th and to Regional listeners on April 18th. This radio version of Oscar Asche's musical fable of the East has been made by Henrik Ege, and the producers will be Harry S. Pepper and John Watt.



RADIO DRAMA IN ITALY. Recent suggestions that radio drama is moribund find no support in Italy, where plays of all types find favour with listeners. Above is a lively scene in a drama broadcast recently from Turin.

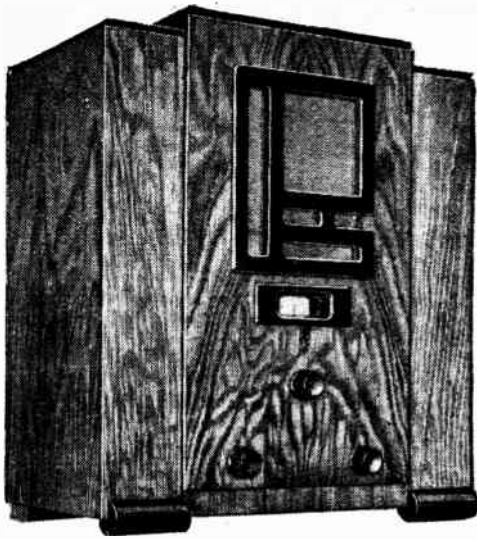
As a general rule, however, the engineers confine tests to the 7-8 metre band.

"Ultra Shorts" for Television

The feeling at Broadcasting House is that the "ultra shorts" will be used mainly for television in the near future. Mr. Baird has already secured impressive results with his ultra-short wave transmitter at Long Acre. I was privileged to witness reception at a distance of two miles, and can honestly declare that the image was comparable in clarity with those received over a short land line.

A Correspondence Record

The first announcement that the B.B.C. contemplated a studio performance of "Chu Chin Chow" resulted in the setting up of an unusual record in Broadcasting House correspondence, namely, an avalanche of applications for parts from members of the original cast and of numerous touring companies. The statement published recently that the play is to be revived on the West End stage will not affect the arrangements already made by the B.B.C., for the leading part in the broadcast version is to be taken by Oscar Asche.



Bush Q.P.P. Battery Receiver

A Four-Stage Set with All Modern Features

BATTERY sets are at present very much in the limelight and are fast becoming just as interesting technically as their mains-driven counterparts. Those who cater for listeners without a mains supply are realising that there is a distinct demand for the more ambitious type of set.

The Bush Q.P.P. model differs mainly from the majority of other up-to-date battery sets in that it includes an intermediate L.F. amplifier. Although it is possible to drive a quiescent push-pull output stage direct from the detector, there is never very much margin of safety in such an arrangement; the extra valve undoubtedly provides this margin and at the same time allows the designer greater scope in planning his L.F. inter-valve couplings. It also gives a very acceptable extra measure of L.F. amplification, and certainly increases the effective range of the receiver.

A Flexible Set

There are a number of details in the circuit arrangement to which attention should be directed. Although the accompanying diagram shows a plain capacity-coupled input filter for the medium band, the wiring is so disposed that a certain amount of "top-end capacity" coupling is introduced as well; this helps to prevent falling off in sensitivity at the lower end of the band. On long waves an extra coupling condenser between the high-potential ends of the coils becomes operative.

Another worth-while feature, which increases the flexibility of the set, is the provision of alternative filter couplings; a parallel coupling condenser may be placed in circuit by means of a plug-and-socket connection when extreme selectivity is needed.

Plain tuned anode coupling is used for the H.F. stage, but the combined reaction-sensitivity control system, which is operated by a single knob, is unconventional. Reaction is applied by variation of a resistance, which, as it is reduced in value, simultaneously brings about a reduction in the value of negative bias on the H.F. valve grid. By making the re-

sistance contact brush run off the resistance element at the extreme end of its travel, the bias battery circuit is interrupted without the need for an extra on-off switch. The L.T. battery switch is linked mechanically to the spindle of this variable resistance, and so the operating knob performs three distinct functions.

In the parallel anode circuits of the detector are two 600-ohm resistances, both of which are associated with the reaction system. The first, in series with the bypass condenser, ensures the maintenance of a sufficiently high H.F. potential on the anode, while the second, in the control circuit, helps to prevent L.F. howling.

After the detector comes a conventional resistance capacity-coupled L.F. amplifying valve, with an H.F. stopping resistance in its grid circuit. The succeeding push-pull stage is coupled by a parallel-fed transformer, the usual anti-parasitic resistance being inserted in the grid return lead. Separate feed leads for the auxiliary grids for each of the high-efficiency pentodes are brought out to the H.T. battery.

Tone control is provided by the simple expedient of fitting a variable instead of a fixed resistance in the compensator circuit, which is shunted across the output transformer primary. This control, together with the others which do not need constant adjustment (external aerial circuit trimmer and filter coupling sockets), are mounted at the back of the receiver.

As befits a set of such aspirations, construction is everywhere beyond criticism, both inside and out, and there is no evidence of skimping. Similarly, the cabinet is soundly made, the design is well conceived and pleasing to the eye.

The valves in the quiescent push-pull output stage are properly matched by the makers, the appropriate auxiliary grid voltages for each valve being recorded in the instruction book. Full instructions for carrying out this operation when valve replacements become necessary are given, and in the event of failure of one of the output valves the makers undertake to rematch the remaining valve. No difficulty should, therefore, arise on this score.

It is difficult to decide whether sensitivity or selectivity is the most impressive feature of the Bush set. On both counts its performance is well above the average, and is distinctly better than that of many 1-v-1 mains set. In cases where interference is troublesome it is sometimes necessary to work with the looser of the two alternative filter couplings, but only under exceptionally unfavourable conditions. This method of artificially enhancing selectivity, though open to the usual objection that it introduces a slight falling-off in range, is distinctly better than most of the competing methods.

Low H.T. Consumption

The combined sensitivity-reaction control, which has already been described, was found to work extremely well. Reaction begins to operate at exactly the right point—that at which the H.F. valve bias approaches optimum.

There is no need to sacrifice range for selectivity by using a short aerial, but the set will work very satisfactorily with one if necessary. Indeed, its sensitivity when operated with the built-in plate aerial is sufficient for those who do not require long-distance reception. Worked in this way, the set is, of course, entirely self-contained, except for an earth connection.

Without any sign of overloading, reproduction at a level that would have been considered impossible a few short months ago is obtainable for a very modest anode current consumption. With regard to quality, the general balance is good, with a fully adequate output in the upper register. There is no

obtrusive bass resonance, but perhaps a trace of over-emphasis is given to a band of frequencies between about 100 and 200 cycles. This can seldom be detected, except when listening to certain forms of speech. Piano music—an exacting test—is reproduced exceptionally well.

Economy in anode current at every point has obviously been studied. In the quiescent condition total consumption amounts to about $7\frac{1}{2}$ milliamperes; under working conditions the average current is about $8\frac{1}{2}$ milliamperes.

FEATURES

General.—A self-contained 4-stage receiver (5 valves) for battery operation with an external or built-in plate aerial. Permanent-magnet moving-coil loud speaker; provision for gramophone pick-up.

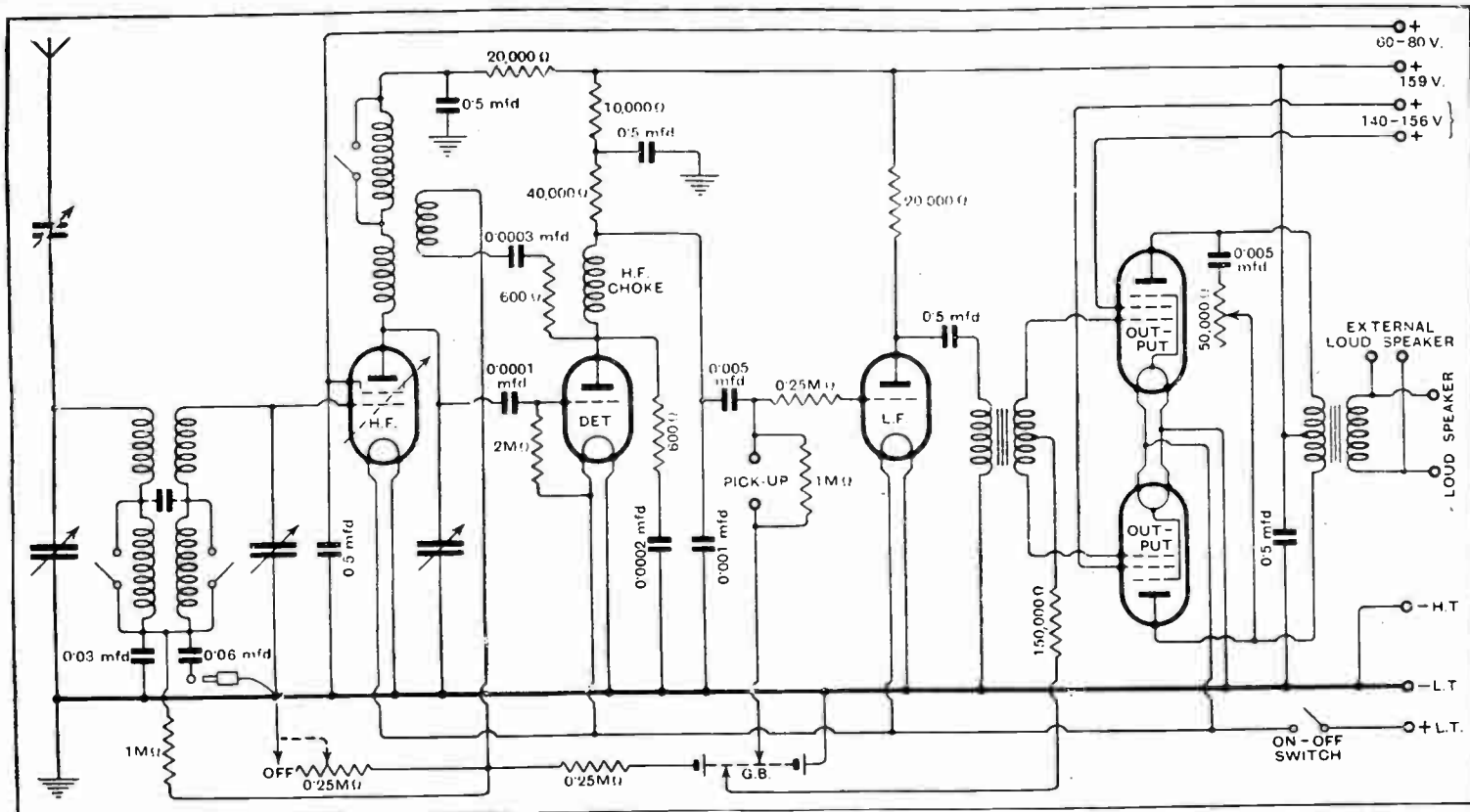
Circuit.—Input band-pass filter; one H.F. stage and grid detector, followed by resistance- and transformer-coupled L.F. stages. Quiescent push-pull output.

Controls.—(1) Ganged tuning. (2) Wave range switch. (3) Combined on-off and sensitivity controls. (4) Tone control.

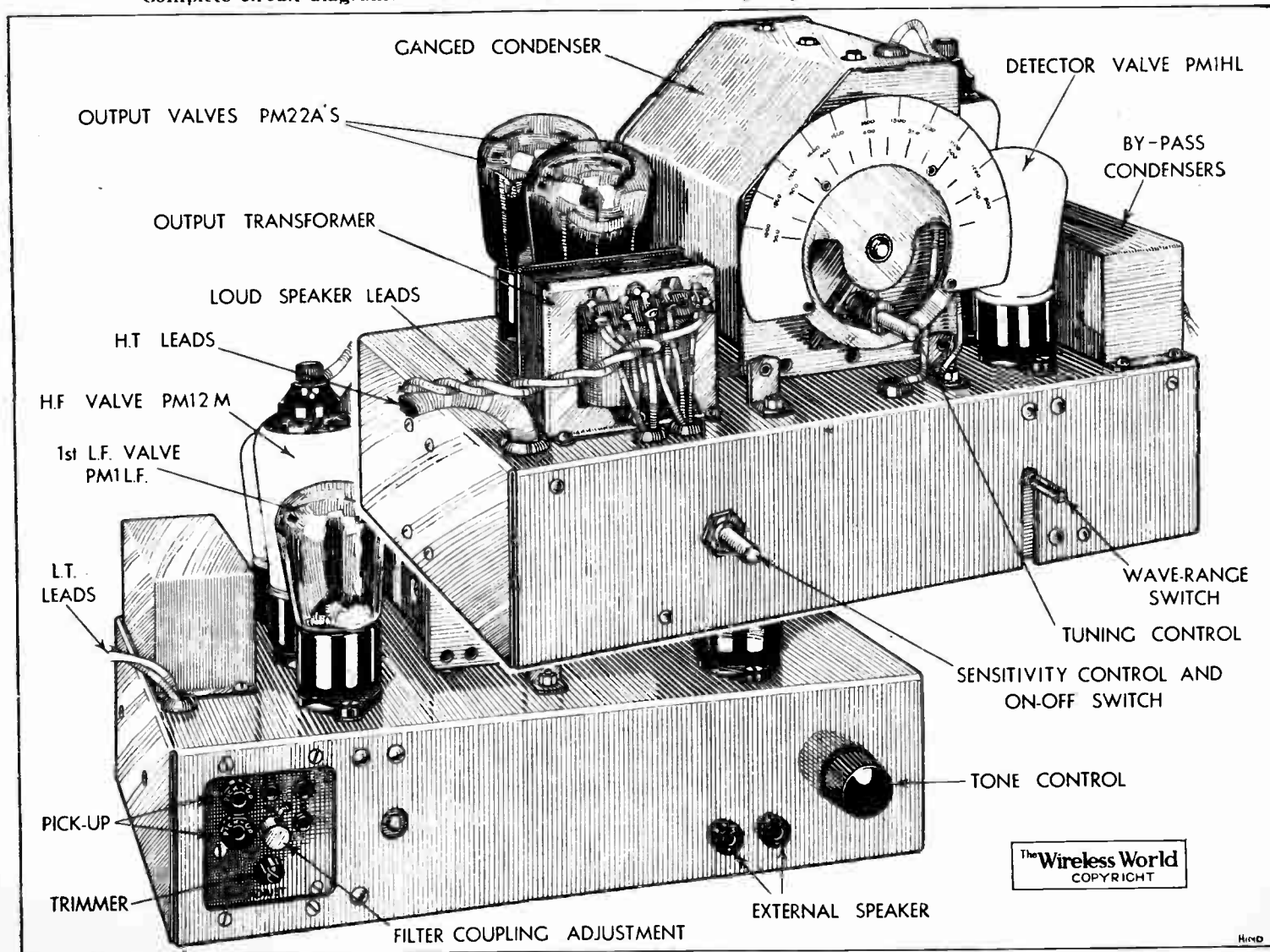
Price.—£14 19s. 6d.

Makers.—Bush Radio, Ltd., Woodger Road, Shepherd's Bush, London, W.12.

An Economical Battery Set Giving Ample Volume



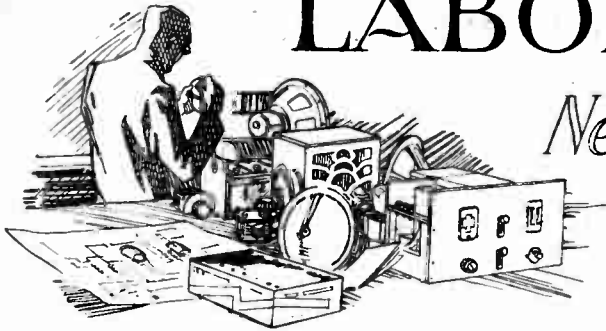
Complete circuit diagram. The variable element of the H.F. grid potentiometer also controls reaction.



Two views of the Bush Q.P.P. receiver chassis showing arrangement of the controls.

LABORATORY TESTS

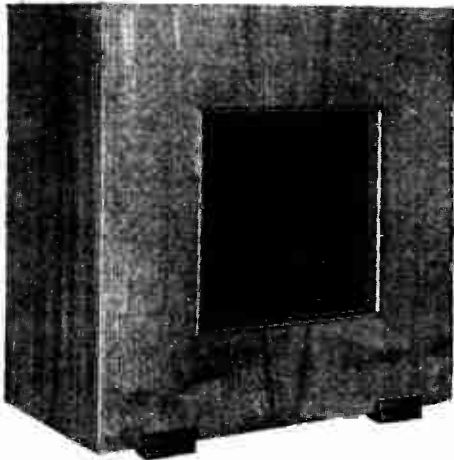
New Radio Products Reviewed



LOCKWOOD LOUD SPEAKER CABINETS

PARTICULARLY well-made loud speaker cabinets, the smallest of which provides ample space for accommodating the majority of moving-coil loud speaker chassis now in general use, are obtainable from the Longley Radio Manufacturing Co., 63, Longley Road, Harrow, Middlesex, at prices which are undoubtedly most reasonable considering the workmanship and the nature of the material employed.

The specimen examined and illustrated here is listed as Type S2, a walnut-finished model costing 22s. 6d., with inside dimensions of 14in. x 14in. x 7 $\frac{3}{4}$ in., and having a silk-covered front opening 7 $\frac{1}{2}$ in. square. Behind this is a removable baffle board $\frac{3}{8}$ in. thick, in the centre of which is a circular hole 6 $\frac{1}{2}$ in. in diameter. Since the cabinet is constructed from $\frac{1}{2}$ in. wood the loud speaker is mounted on the equivalent of a



Lockwood walnut-finished loud speaker cabinet model S2.

board $\frac{1}{2}$ in. thick, which should go a long way towards eliminating all objectionable box resonance.

The back, which is removable, is cut from $\frac{1}{2}$ in. wood, and has a number of wide vertical slots, silk-covered to prevent the ingress of dust, and so offers little or no impedance to the sound waves given off from the back of the cone. A mahogany cabinet of equivalent size is available at the same price, while one in oak costs 21s.

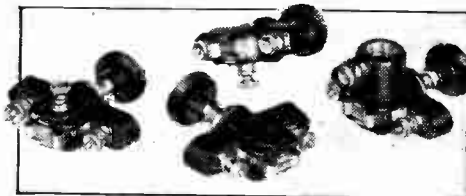
There is a larger model made, measuring 17in. x 17in. x 9 $\frac{1}{2}$ in. inside, which in oak costs 28s. 6d., and finished in either walnut or mahogany 30s. each.

"BUSCO" SWITCHES

ALTHOUGH in general design "Busco" switches remain much the same as hitherto, sundry refinements have been introduced into their latest models; also, a few new types are now available. That no marked changes have been deemed

necessary points to the soundness of the design as originally conceived, and the particular style of non-rotating and self-cleaning contacts would be difficult to better.

A neat bakelite moulding is employed for the body, the one style serving for all models. The switch is compact and easy to fit, being provided with a single-point fixing and a shoulder and insulating washer for mounting on metal panels.



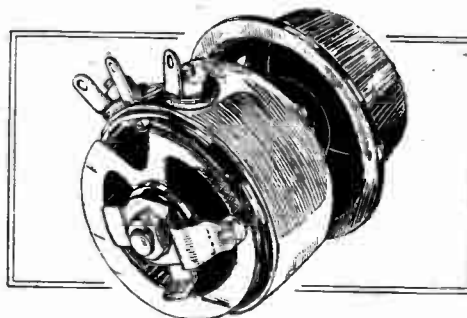
Selection of the latest "Busco" switches.

There are five different types made—a plain battery on-off switch, a three-point model, a single-pole change-over model, a radio-gramophone switch with a long extension rod, and, finally, a fuse-switch embodying a small lamp holder which enables a lamp-type fuse to be included in the H.T. negative battery lead as a safeguard for the valves. The first mentioned costs 1s. 3d., the three-point and change-over types 1s. 6d. each, and the fuse switch 2s. 6d. Fuse bulbs cost 4 $\frac{1}{2}$ d. each. The price of the radio-gramophone model is 3s.

The makers are Busby and Co., Price Street, Birmingham.

PREH POTENTIOMETERS

A NEW range of variable resistances and potentiometers of the type in general use as volume controls are now obtainable from the Preh Manufacturing Co., Ltd., Broadwater Road, Welwyn Garden City. The potentiometers are available either wound to a uniform resistance throughout or



Preh 10,000-ohm wire-wound volume control potentiometer.

fitted with a logarithmic-type resistance element. All models are wire-wound and contact is made by means of a squash-type rocking disc. This is pressed on to the resistance track so that the fine wire is not subjected to a lateral strain, and is unlikely to develop defects due to this cause.

These models are very compact, measuring 1 $\frac{1}{2}$ in. in diameter and 1in. overall in depth.

The resistance is protected by a metal casing to which is attached the single-hole fixing bush. They are rated to handle up to two watts.

We have tested some specimens and find them entirely satisfactory; the measured resistances agree well with the marked values, and they are perfectly silent in operation. Preh potentiometers are made in all the usual values, and the price is 5s. 6d. each.

These components can be obtained fitted with a quick action on-off switch suitable for mains use.

GARRARD RADIO-GRAMPHONE UNITS

TO facilitate the conversion of existing radio receivers to radio-gramophones, the Garrard Engineering and Manufacturing Co., Ltd., Newcastle Street, Swindon, have introduced a new series of radio-gramophone



Garrard radio-gram. unit with No. 30 spring motor.

units consisting of a gramophone turntable and motor mounted, complete with the Garrard pick-up and tone-arm, on a bronzed and lacquered rectangular unit plate. All the units are fitted with the Garrard automatic stop and two needle cups.

The electric type can be supplied with the "Universal," No. 202A induction, or A.C.4 induction motors, the prices being £6 8s. 6d., £4 1s. 9d., and £3 15s. respectively. For battery-operated sets, and particularly in view of the introduction of Q.P.P. and class "B" output, units with spring-type motors are also available. The price with the No. 10B double-spring motor is £4 1s. 9d., and with the No. 30 motor £3 3s. A volume control can be supplied with any of the above models at an extra charge of 5s.

The pick-up unit is the same as that supplied with the Garrard record changer unit, and a test report, including the characteristic curve, was given in the November 18th, 1932, issue of this journal. Incidentally, the record changer unit is now available with a "Universal" motor for A.C. or D.C. mains, the price being £10 17s. 6d.



Garrard unit with A.C.4 induction motor.

It has also been decided to market the pick-up and tone arm as a separate unit, the price being 32s. 6d., or with volume control 37s. 6d.



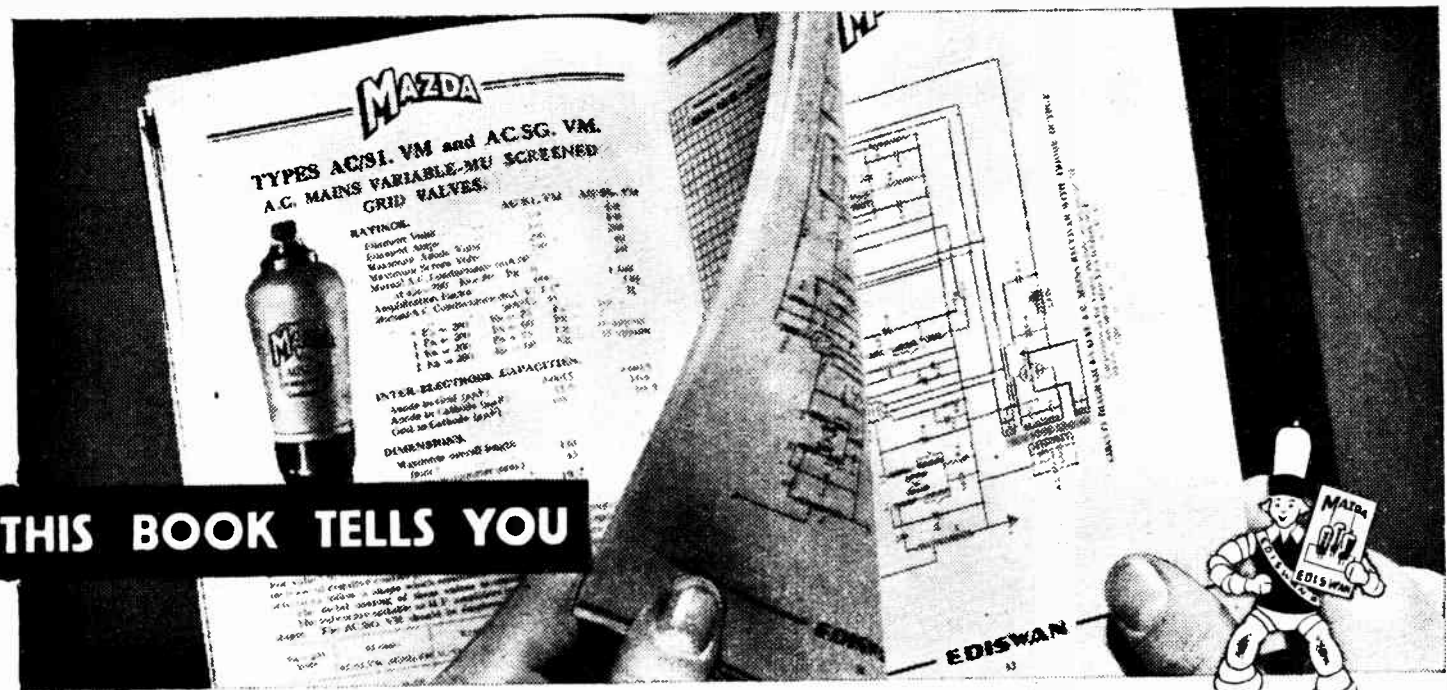
EDISWAN



The name that means 'EXCELLENCE'

DO YOU KNOW the most efficient circuit arrangements for variable-mu valves?

You do? Good—but do you know the correct resistance and condenser values? Yes, that is the difficulty. They depend on the valve used. The best way of making absolutely certain that you are using a multi-mu valve to the fullest advantage is to rely on this book. There are four multi-mu valves in the Mazda range. Full particulars are given about each one but, in addition, circuit recommendations and suitable component values are included. In this way, you are familiar with the valve right from the start. You get the results you want—first time and all the time.



THIS BOOK TELLS YOU

"The Book of the Mazda Valve," No. R.782, is a mine of useful information about valves in general and Mazda Valves in particular. It contains facts and figures, circuit diagrams, component values, characteristic curves—in fact, all the valve user wants to know about valves. Send for your FREE copy to-day—or ask your dealer for one.

MAZDA THE BRITISH VALVES



THE EDISON SWAN ELECTRIC CO. LTD., 155 CHARING CROSS ROAD, W.C.2

Mazda Radio Valves are manufactured in Great Britain for The British Thomson-Houston Co. Ltd., London and Rugby.

RECOMMENDED BY ALL GOOD RADIO DEALERS

V199



NOW ON SALE

Complete Constructional Details of

The
Wireless World
THE PRACTICAL RADIO JOURNAL

MONODIAL A.C. SUPER

A SEVEN-VALVE SUPERHETERODYNE RECEIVER OF OUTSTANDING PERFORMANCE

By W. T. COCKING

This booklet contains in a compact form the original articles which appeared in "The Wireless World" some months ago.

It describes at length, with full explanations and illustrations, a superheterodyne receiver for A.C. Mains which is still unchallenged for faithful reproduction and exclusive selectivity.

Since the Monodial A.C. Super was first described, many thousands have been built, and no single instance of failure or disappointment

with the performance due to difficulties of construction, has come to light. The Receiver is an ambitious one, but the design is straightforward, and a simplified method of construction has been adopted.

For quality, range and selectivity, the performance is unsurpassed by any known receiver.

Crown 4to. 24 pp. In attractive coloured cover

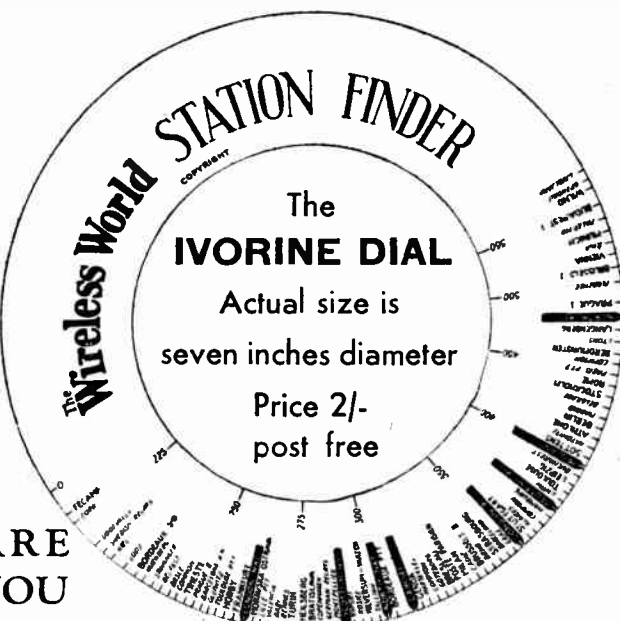
PRICE 1/6 net. By post 1/8

From all booksellers, or direct from the Publishers

ILIFFE & SONS LIMITED, DORSET HOUSE, TUDOR STREET, LONDON, E.C.4



W.W.38



ARE YOU BUILDING

The Wireless World STATION FINDER?

The handy accessory which positively identifies Foreign Stations. Described for constructors in "The Wireless World" of January 13th.

Make sure of the efficiency as well as the good appearance of the FINDER by using the Ivorine Dial obtainable from The Publishers "The Wireless World" Dorset House, Tudor Street, London, E.C.4.

W.W.75

The only Diary published which is compiled by the Staff of "The Wireless World"

The Wireless World DIARY for 1933

This handy little pocket volume is now in its ninth year of publication. As a convenient source of information on many aspects of wireless theory and practice it is unique. In addition to the usual Diary pages — one week at an opening — there are 78 pages of facts, figures and explanations to which wireless amateurs make frequent reference. These include a series of 16 up-to-date circuit diagrams of complete receivers and accessories such as Band Pass Filters, Volume Controls, Eliminators and Rectifiers, and Methods of applying Reaction.

Size 3 1/2 x 4 1/2 inches. 192 pages. Bound leather cloth, back-loop with pencil, round corners and gilt edges

PRICE 1/6
By Post 1/7

From all Booksellers, Stationers and Bookstalls or direct from the Publishers

LIST OF CONTENTS

Regulations controlling Receiving Licences — Broadcasting Stations of Europe — Principal Short-Wave Broadcasting Stations of the World — Useful formulae — A Series of Abacs — Copper Wire Tables; Sizes, Weights and Resistance — Conversion Tables — Symbols in Common Use — Symbols Used in Wireless Diagrams — Circuit Diagrams and Notes — Tracing Hum in Mains Receivers — Coil Construction Data — Practical Hints and Tips — Matching Output Valve and Loud Speaker — Morse Code — Valve Data.

ILIFFE & SONS LTD.
DORSET HOUSE, TUDOR STREET, LONDON, E.C.4
W.W.66

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

THE CHARGE FOR ADVERTISEMENTS in these columns is

12 words or less, 3/- and 3d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

SERIES DISCOUNTS are allowed to Trade Advertisers as follows on orders for consecutive insertions, provided a contract is placed in advance, and in the absence of fresh instructions the entire "copy" is repeated from the previous issue: 13 consecutive insertions 5%; 26 consecutive, 10%; 52 consecutive, 15%.

ADVERTISEMENTS for these columns are accepted up to **FIRST POST** on **MONDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Tudor Street, London, E.C.4, or on **SATURDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham, 2; 260, Deansgate, Manchester, 3; 26, Renfield Street, Glasgow, C.2.

Advertisements that arrive too late for a particular issue will automatically be inserted in the following issue unless accompanied by instructions to the contrary. All advertisements in this section must be strictly prepaid.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made payable to **ILIFFE & SONS Ltd.**, and crossed & Co. Notes being untraceable if lost in transit should not be sent as remittances.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

RECEIVERS FOR SALE.

MANUFACTURER'S Surplus, guaranteed new and unused. All mains A.C. 3 valve (S.G., Det. Pen.) receivers, Reola M.C. speaker, walnut cabinet, complete with valves; £7/10; carriage paid.—Partridge, King's Buildings, Smith Sq., S.W.1. [2203]

APPLEBY'S, Central London Office, 46, Bloomsbury St., New Oxford St., London, W.C.1. Museum 8195. [1933]

MARCONIPHONE 82 3-valve Superhet. frame aerial, valves and remote control; first offer of £5 secure.—Grenston, Sittingbourne. [2278]

"WIRELESS Constructor" S.T.400 Receiver, factory built last November. Atlas eliminator, and Baker's M.C.L.S. outfit; cost £24; accept £10; bought radiogram.—Harrison, 68, Eccleston Sq., S.W.1. Tel.: Victoria 7435. [2285]

CLEARANCE Stock A.C. Mains Receivers, Amplion Six and Philips Types 930A, 2514, 2531; originally 25 guineas; yours for 10 guineas each.—A. Phillips, Grayshott, Hindhead, Surrey. [2277]

OSTAR-GANZ 2-valve Combined A.C. and D.C. Receiver, in modern walnut cabinet, with Reola M.C. loudspeaker, unopened; list price 10 guineas, our price £4/15; e.o.d., carriage paid; state voltage.—Kay, 167, City Rd., Finsbury, London, E.C.1. [2202]

EDDYSTONE Kilodyne Four, in cabinet (less valves), coils 12 to 170 metres, perfect condition, any trial; £3, 17/6.—Richards, Ray St., Hleanor. [2298]

EDDYSTONE S.G. Four, short-wave, all mains, 240 A.C., additional coils for medium broadcast, little used; cost £35, offers.—Clements, 11, Manton Av., Hanwell, W.7. [2286]

1933 Kilodyne Short Wave, complete valves, batteries; what offers? must sell.—Stokes, 44, Ridgale St., E.3. [2205]

11 Guineas.—Six Sixty Battery 3, M.C., complete, unused, just delivered; offers.—37, Wilberforce Rd., Liverpool. [2315]

1932 McMichael D.C. Mains Three, with Baker Super Power M.C. speaker, cost £28, new condition; £15.—58, Ham Rd., Worthing. [2318]

MODERN D.C.3, exact to specification, with valves, no cabinet or speaker, very good; £7/10; well below cost of components. Lawnds, The Cottage, Old Denton, Nottingham. [2330]

CHARGERS AND ELIMINATORS.

TANTALUM for A.C. Chargers, H.T. and L.T.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [2139]

SURPLUS Material.—In order to clear our stocks ready for new season's goods, we are making up a limited number of mains transformers for the

A.V.C. Monodial, 2½ watt chassis, for the remarkable sum of 19/6 each; genuine Bryce production, with 12 months' guarantee.

SECURE Your Bargain Now Before Stocks Run Out from Surplus Dept., W. Andrew Bryce and Co., Woodfield Works, Bury, Lancs. Phone: 1251. [2221]

A.C. Charging Plant, unused; cost £18/18, for £6/15/6; write for makers' specification.—Jersey, Cunnor Hill, Oxford. [2310]

SCOTT SESSIONS

INTERPRETATIONS of "WIRELESS WORLD" MONODIALS

Supreme for **WORKMANSHIP FINE TONE — SENSITIVITY SELECTIVITY AND VALUE**

Specially Recommended: "W.W." MONODIAL with **AUTOMATIC VOLUME CONTROL** and 5-Watt (A.C.) Output assembled with de luxe workmanship, tested and adjusted by experts, including Royalties and delivery **FREE** in Gt. Britain. **£42-0-0** (or 1st deposit of £5 5 0; balance over 12 months).

The **ULTIMATE RADIO-GRAMPHONE** for the Connoisseur.

"W.W." MONODIAL with **AUTOMATIC VOLUME CONTROL** and 5-Watt (A.C.) Output with **GARRARD AUTOMATIC RECORD CHANGER** and **FERRANTI M.J. Speaker**, in very handsome hand-polished walnut, oak or mahogany radio-gramophone cabinet. Individually built, assembled and tested by experts throughout. Inclusive of all Royalties. Delivery free in Gt. Britain. **£75-0-0** (or 1st deposit of £9 7 6; balance over 12 months).

ORIGINAL "W.W." MONODIAL with 5-Watt Output (no A.V.C.), including Valves and Royalties.

£34-0-0 (or 1st deposit of £4 5 0; balance over 12 months).

ORIGINAL "W.W." MONODIAL with 2.5-Watt Output (no A.V.C.), including Valves and Royalties.

£28-15-0 (or 1st deposit of £3 11 10; balance over 12 months).

"W.W." BATTERY ALL-WAVE MONODIAL with Valves, Royalties, fully assembled and ganged.

£23-8-6 (or 1st deposit of £2 18 6; balance over 12 months).

EXISTING MONODIALS CONVERTED TO A.V.C. Send for Quotation.

TRADE ENQUIRIES INVITED.

The following testimonial from a prominent London business man is typical of many which we have received from satisfied customers:—

Ref. S. 2333.
"I should like to place on record my appreciation of the excellent job you have made of the "Monodial" Superhet Set which I recently ordered from you. Results have been most pleasing, and I am highly satisfied with the whole outfit, and with the reproduction it gives.

I have also been very pleased with the excellent "Service" which you have given, and I shall have the greatest pleasure in recommending your Firm to any of my friends who may be in need of the services of a competent firm of Radio Engineers."

IMPORTANT SERVICE TO ALL READERS:

Thousands of "W.W." readers in the past 7 years have sent us their sets for repair, adjustment and rebuilding, with finest workmanship, modernising of obsolete apparatus, etc. This service is available to YOU... Whatever parts you used, and no matter who assembled your set, send it to us now if you have any work that can be done by experts that will give you better results! Our Service Department is formed solely to help you and your friends in doing those jobs that take your valuable time and trouble. Our skilled staff and equipment are at your disposal. **SCOTT SESSIONS** original and best **FIELD REPLACEMENT CHOKE**, 2,500 16/- ohms, 60 henries (as specified) each

SCOTT SESSIONS & CO.

RADIO ENGINEERS,

MUSWELL HILL, LONDON, N.10

Telephone No.: Tudor 5326.

Contractors to H.M. Government Departments, Crown Agents for the Colonies, Electricity Corporations, etc.

NUMBERED ADDRESSES.

For the convenience of private advertisers, letters may be addressed to numbers at "The Wireless World" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Wireless World." All replies should be addressed to the Box number shown in the advertisement, c/o "The Wireless World," Dorset House, Tudor Street, London, E.C.4. Readers who reply to Box No. advertisements are warned against sending remittance through the post except in registered envelopes; in all such cases the use of the Deposit System is recommended, and the envelope should be clearly marked "Deposit Department."

DEPOSIT SYSTEM.

Readers who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Wireless World," both parties are advised of its receipt.

The time allowed for decision is three days, counting from receipt of goods, after which period, if buyer decides not to retain goods, they must be returned to sender. If a sale is effected, buyer instructs us to remit amount to seller, but if not, seller instructs us to return amount to depositor. Carriage is paid by the buyer, but in the event of no sale, and subject to there being no different arrangement between buyer and seller, each pays carriage one way. The seller takes the risk of loss or damage in transit, for which we take no responsibility. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50, 5/-. All deposit matters are dealt with at Dorset House, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Iliffe & Sons Limited.

SPECIAL NOTE.—Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post. When sending remittances direct to an advertiser, stamp for return should also be included for use in the event of the application proving unsuccessful.

Chargers and Eliminators.—Contd.

BROWN and **SALTER**, Vortexion, Wembleton, for the finest transformers made regardless of price; all models guaranteed 12 months; tested on full load and 2,000 volts between windings before despatch; all finished in cast aluminium frames or shroudings.

VORTEXION Model Specified for the Modern A.C. Quality Amplifier, 400-0-400, 110 milliamps, 4v, 3a. C.T., 4v, 2a., 4v, 1a. C.T., any input, 50c., insulated terminal type; 24/-. [2278]

VORTEXION Model for the Ferrocart 111, 350-0-350v. 60 ma., 4v, 2.5 C.T., 4v, 3.5 C.T., screened primary cfm type, 13/6; shrouded, 16/-. [2278]

VORTEXION—W5, 6, or 7 for Westinghouse H.T.5, 6, or 7, with 4v, 1-4a., C.T.; 11/6.

VORTEXION—W8, 9, or 10 for Westinghouse H.T.8, 9, or 10, with 4v, 1-2a. C.T., 4v, 2-5a. tagged leads, shrouded; 16/6.

VORTEXION—W11 for Westinghouse H.T.11, with 4v, 1-2, 4v, 1-6a., all C.T., shrouded; 40/-. [2278]

VORTEXION—250-0-250, 60 ma., 4v, 1-2, 4v, 2-4a., all C.T., open type tagged leads; 11/6.

VORTEXION—350-0-350, 120 ma., 4v, 2.5, 4v, 1-5, 4v, 2-4, all C.T., shrouded type tagged leads; 16/6.

VORTEXION—400-0-400 or 450 or 500-0-500, 120 ma., open types, 4v, 2-4a., 4v, 2-5a., 4v, 2-5a., all C.T.; 19/-. tagged leads.

VORTEXION—500-0-500, 150 ma., or 450-0-450, 160 ma., or 400-0-400, 190 ma., 4v, 2-5a., 4v, 4a., 4v, 2a., 4v, 2a., 4v, 2a., all centre tapped, any input, 50 C., beautifully shrouded, core size 2¼x1¼, screened primary, and strips, a £5 model, 35/-. [2278]

VORTEXION—30h, 50 ma. chokes, 5/6; 20h, 120 ma., 8/6; 15h, 350 ma., excellent for rough D.C., shrouded, 15/-. [2278]

VORTEXION for Helby Condensers, 750 D.C. working, 6 mfd.; 6/6, list price 21/6.

VORTEXION—Transformers made to your specification.

VORTEXION—Brown and Salter, 182, The Broadway, Wembleton. Tel.: Liberty 2814. [2034]

SERADEX All-British Radio; lists of full range for stamp.

SERADEX Transformers for A.V.C. Monodial 5-watt Chassis, terminal type; £1/15; as specified.

SERADEX Resistors, complete kits, A.V.C. chassis, 14/4; 2.5-watt chassis, 3/4; 5-watt power chassis, 6/6.

SERADEX Resistances, condensers, mains transformers, etc., can be supplied for any "Wireless World" receiver.

SERADEX Products are Obtainable from Your Dealer or Direct from Trevor Pepper, Wake Green Rd., Birmingham. [2294]

DEMON Radio Power Transformers; see last week's advert; inquiries invited; best and British.

R. A. ARNELL Offers Guaranteed Valves, slightly used, at half price; 210D.G.S. 210R.C., 215P, P.M.H.F., D.E.H.210, P.M.22A, U.D.2.

LSO L.P.2, H.L.2/C, H.L.210, H.2, 4/9 each; U.D.2, L.P.2, 2/6; P.M.256, 7/-; enquire all-mains types, —8, Fishponds Rd., S.W.17. [2293]



Chargers and Eliminators.—Contd.

TRICKLE Charger, Exide combined H.T. and L.T.—Offers to Alford, Berrow, Burnham-on-Sea. [2306]

TRICKLE Chargers, 2-6v., with Westinghouse rectifiers, complete, 1/2 amp., 11/9; 1 1/2 amp., 19/11; 7 days' approval; postage 9d.; illustrated list free.—Arden Agency, Wollaston, Wellingborough. [2273]

CABINETS.

RADIO-GRAM Cabinets; fully illustrated list free; remarkable values.—Gilbert, Cabinet Maker, Swindon. [1686]

WE Can Supply Brand New Complete Gramophones, London made cabinets, at less than the cost of cabinets; ideal for converting to radiograms; 28 models to choose from; 52/6 to £10; illustrated list free.—Hodley's, Ltd., Canal Rd., Bradford. [1786]

CLEARANCE Lines in Cabinets for Radiograms, mains or battery sets, loud-speakers, etc. (no catalogues), end of season, all prices reduced to clear stock.

H. J. SMITH and Co., Ltd., 287-9, Edgware Rd., W., and Charles and Co., 27, Lewisham High Rd., [2266]

HANDSOME Radiogram Cabinet, in beautiful figured walnut or mahogany, £7 7 model, in ebon, £5 15; also table models, 16" ; on approval.—Rochester Cabinet Co., 9a, Wichester Place, Rochester Mews, N.W.1. Phone: Gulliver 2594. [2303]

LOUD-SPEAKERS.

B.T.H. R.K. Moving Coil Speakers, guaranteed new, unused, manufacturers' surplus; original price 6 guineas, highly sensitive and wonderful tone response, will handle up to 10 watts output, available for 6v., 100v., 200v., 30v.; also A.C. models, £2 10; carriage paid, c.o.d., or cash with order; send for list of other unused bargains.—Seekamp, 46, Farringdon St., London, E.C.4. [1425]

AM perfectly satisfied with (W type) speaker, many thanks for your promptness and fair dealing.—S. Y. (Worcester).

18/9.—W type P.M. moving coil speakers, originally 49/6; reputable manufacturer's 1933 surplus; carriage paid; cash or c.o.d.—Streeter, 84, Riversdale Rd., Highbury, N.5. [2274]

MAGNAVOX New British Speakers, surplus, and boxed; please state whether for push-pull, power or Pentode output when ordering.

MAGNAVOX D.C.144, cone 7in, field 2,500 (100-190v.) or 7,500 (200-290v.); state transformer required; 22/- each.

MAGNAVOX D.C.142, cone 8 1/2in diameter, details above, 23/6; fitted into magnificent solid walnut corner pedestal cabinet, excellent for extension, room for Monobloc power unit if required; price 49/6.

ROLA American Model K, 2,500, triode transformer, 10 1/2in cone; 29/6; Magnavox Magna models available; enquiries invited.

MAGNAVOX. Any of the above fitted Westinghouse H.T.B for energisation; 17/- extra.

PARTICULARS Free of Any Model.—Phone or Telegram, Streatham 8209, or write, James, 49, Aragon Gardens, Streatham, S.W.16. Callers strictly by appointment only. [2292]

B.T.H. R.K. Senior P.M. Moving Coil Unit; £2 15.—Sevier, 37, Terminus Rd., Eastbourne. [2285]

FERRANTI M.I. C4, or near offer; heard evenings.—Jasper, 3, Eaton Rise, Ealing, W.5. [2287]

A.C. Kolster Brandes M.C., with rectifier; 22/6.—Porter, 27, The Pavement, S.W.4. [2304]

QUAL-ELECTRIC Offers Brand New Set Manufacturers' Brand New Guaranteed Surplus (30 in all left); Rola's F6 7-in. cones, with power Pentode transformers, 90-130 volts (2,500 ohms), 110-175v. (2,000 ohms), 230-250v. (6,500 ohms), listed 55/-, at 18/- each; F7 models, as above, 9in. cones, listed 46/6, at 25/-; permanent magnets, F6 P.M., 7 1/2in. cones, listed 49/6, at 28/-; F7 P.M., 9in. cones, listed 60/-, at 32/-; ask for quotations, dual compensated; cash with order, or c.o.d., carriage paid.—Chal-Electric, 6, Conduit St., London, W.1. [2325]

30/-!—B.T.H. R.K. moving coil speakers, 6in. cone, new and unused, guaranteed; these speakers are type as used in cinema sound equipment; suitable for public address work; weight 30lb., and are vastly superior to cheap speakers now on the market, 100 volts, 150 volts, and 200 volts D.C.

27/6!—6v. D.C. speaker, as above; £2 7/6, speaker as above, for 100-250 A.C.; Epoch Super Cinema speakers, £5/10.

CARRIAGE Paid, cash with order, or c.o.d.—Ward, 12, Tregear Rd., Bow, E.3. [2323]

TRANSMITTERS.

RADIO MART, Birmingham, specialise in transmitting requirements; Staff 65N1, C6X.K., and E.X.S.U.8R.S.

T.C.C. 4-4 mfd. brand new condensers, 1,700 working, massive Standoff insulators; 25/-—19, John Brickle St., Birmingham. [2289]

VALVES.

NEW Large Purchase of a Set Manufacturers' Stock of Valves, guaranteed as new, all latest types, and any valve differing from the makers' characteristics exchanged free.

210 H.L.S., 210H.F.s., 210L.F.s., P.M.H.F.s., P.M.H.L.S., H.L.210s, H.210s, D.E.H.210s, L.210, 3/3; 215P.s., 220P.s., L.P.2s., P.215s., D.F.E.P.215s., P.M.2s., P.220s., P.M.2A., 4/9; D.H.L.s., 41M.H.L.s., 41M.H.s., M.H.4s., A.C./H.L.s., A.C./2H.L.s., 354V.s., 904V.s., D.C.3/H.L., 7/-; 41M.P.s., M.L.4s., A.C.P.s., 7/6; P.P.4., P.P.41., P.E.N.4V., M.P./P.E.N.s., 12/-; latest metallised 84V.B.s., M.S.4B.s., M.S.G./H.A., A.C.S.G.s., 9/-; Cuso M.A.S.G., 12/-; 442B.V., 1807s, 7/9; 1821s, 7/-; 620P, 15/-.

2,000 Valves are Always in Stock for Immediate Despatch, prompt attention, for cash or c.o.d.—Newman, 309, Roman Rd., E.3. [1659]

A set is as good as its components

When you incorporate a BURTON TRANSFORMER in your set you are using a component of the highest efficiency, which will reveal itself in the tonal purity and volume of your set.

Ask your dealer for BURTON.

Wound in ratios of 3:1 and 5:1.

PRICE 5/9

Made by C. F. & H. BURTON, Walsall.

BUILD A BETTER SET WITH

BURTON COMPONENTS

FIT THIS ELECTRIC CLOCK TO YOUR SET!

NO MAINS NEEDED! KEEPS CORRECT TIME! NO WINDING!

Works off small battery lasting 12 months, or can be plugged into G.B. Battery without affecting reception. Uses practically no current. Fits into hole 3 1/2" dia. in any panel up to 1 1/2" thick. Easy to fix—no screws required. Only 1/2" from front of panel to back of case. Swiss movement. Hands set from front. Nickel plated bezel. Useful addition to any set.

RIVERSIDE MFG. CO., LTD., Dept. 20, Crisp Rd., Hammersmith, W.6. Telephone: Riverside 6300.

COMPLETE WITH BATTERY POSTAGE 6D

CRESSALL RESISTANCES

"Cressall" Asbestos-Wire Woven Resistance Nets for voltage absorbing on D.C. Mains Receivers. Mica-Wound Resistance Units. Sliding Resistances. Resistance Wires.

Please write for Lists

CRESSALL MANUFACTURING COMPANY, 31-32, TOWER STREET, BIRMINGHAM.

GRIPSO PATENT PUSH-ON EARTHING CLIP TO FIT 3/4" PIPE

THE GRIPSO COY. 28 VICTORIA ST. LONDON S.W.1

4 EACH

ERIE

Write for NEW Technical Brochure

THE RADIO RESISTOR CO 1, Golden Sq., Piccadilly Circus, London, W.1

Famous Maker's Offer!

£5 Radio-Gram CABINET for 65/- 7 DAYS' FREE TRIAL (OR 10 - MONTHLY).

Piano built (but £120) the acoustic tone brings a fine thrill (Piano Desk). (Radio Press, B.B.P., 3mm chassis). Models from 35/- to £15. List FREE.

Send for photographs, detail drawings. Picketts Piano-Tone Cabinets, Albion Rd. (w.w.) Bexleyheath, Kent

£6-15-0

The Autocar

EVERY FRIDAY FOURPENCE

Valves.—Contd.

BUY with Confidence.—Valves, as new, emission guaranteed. Mazda A.C. Pen., 10/6; A.C./S.G., 9/7; A.C./2H.L., A.C./H.L., 7/6; U.C.60/250, 7/6; 425 Pen., 7/6; Ostran, D.S., D.S.B., V.D.S., 9/6; D.H., 7/6; D.L., 8/6; M.S.4, M.S.4B, 9/6; P.T.425, 7/6; Cuso, 215 A.C.220 S.G., 220 V.S.G., 9/6; F. Anderson, 31, Lansdowne Rd., Walthamstow, E.17. [2279]

THE Following Valves are Guaranteed as new, and any valve differing from the makers' characteristics will be exchanged; all latest types.

A.C. Pen.s., A.C.S., V.M.S., M.P.T.4s., D.C.2 Pen., V.M.4V.s., Pen.4V.s., D.C.2S.G., V.A.s., 11/-; M.S.4, M.S.4B.s., A.C.S.G.s., 8.4V.A.s., M.S.G./L.A.s., D.S.B., A.C.044s., A.C.S., 2s., D.C.2 S.G.s., 9/6.

M.L.4s., A.C.P.s., 41M.P.s., P.M.24s., 8/-; A.C.H.L., M.H.L.4s., A.C.2 H.L.s., 354V.s., 41M.H.L.s., U.10, U.C.60 250s, M.H.4s., 7/6; V.S.2s., 215S.G.s., 9/-; 442B.U., 8/6; D.C.3H.L.s., D.W.3s., 8/6.

ALL Types of Brand New American Valves in Stock first class makes; 247-, 235-, 222s., 236s., 237s., 12/-; 227s., 242-, 226s., 230s., 232s., 10/6.

U.X.250s., 7 watts output, 16/-; for quickest delivery send telegraph money order.

OVER 2,000 Valves are Always in Stock for Immediate Dispatch; carriage paid, cash with order, or c.o.d.—Ward, 12, Tregear Rd., Bow, E.3. [2323]

COMPONENTS, ETC., FOR SALE.

NEWTONS Offer Brand New Set Manufacturers' Surplus

MAINS Transformers.—Note: These are manufacturer's current lines, guaranteed 12 months, all tapped and screened primary, I.T. windings, C.T., 500-0-500 a 120 ma., 22/-; 450-0-450 at 120 ma., 21/-; 350-0-350 a 120 ma., 20/-; all above have following I.T. windings, 4v. 2.5a., 4v. 2a., 4v. 5v., specials to "W.W." specified: 110 Straight 5; 400-0-400 at 120 ma., 4v. 3a., 4v. 2a., 4v. 1a., 24/-; 350-0-350 at 60 ma., 4v. 2.5a., 4v. 4a., 14/-; 325-0-325 at 80 ma., 4v. 2.5a., 4v. 3a., 12/-; 250-0-250 at 60 ma., 4v. 1a., 4v. 5a., 14/6; another, 4v. 1a., 4v. 1a., 4v. 3a., at 12.6 for metal rectifiers; H.T.B. 200 volts, at 200 ma., 4v. 3a., 12/-; another, with 4v. 5a., 14/-; for H.T.9 or "W.W." Baby Super, 240v., 200 ma., 4v. 3a., 16/-; for H.T.11 (Savage), 300 volts 550 ma., 4v. 3a., 4v. 2a., listed 56/-, at 28/-; H.T.11 Westinghouse rectifier for this, 18/-.

SMOOTHING Chokes, 20 henry 30 ma. (400 ohms), 6/-; 30 henry 60 ma. (500 ohms), 7/-; 50 henry 60 ma. (500 ohms), 8/6; 20 henry 120 ma. (375 ohms), 9/3.

CONDENSERS.—G.E.C., non-inductive, 750 test, 1 mfd., 1/3; 1 mfd., 1/9; 4 mfd., 2/6; 1,500 test, 1 mfd., 1/3; 2 mfd., 2/4; 4 mfd., 4/-; multiple blocks (20 mfd.), 4/4; 2+2+2+2+1+1, 11/6; 11 mfd., 4/-; 2+2+2+1, 6/9; separate tapings.

AUTOMATIC Record Changer, Garrard (2 only), with pick-up, A.C., listed 10 guineas, at £7 10 each; Allen Hougl's A.C., complete with pick-up, etc., £6 each (few only).

COLLARI Gramophone Motors and Pick-up Combined, with automatic stop, 100 240 A.C.; £2 17/6.

VALVES (few only), as new; U12, H.U.442, M.P.T.4, 10/- each.

H.F. Screened Chokes, H.M.V., 50-60 ma., 100,000 microhenrys; 1/- each.

ROTARY Converters, electric, dynamic.—1933 models (2 only), used; demonstration only, 90-watt model listed £14, at £8; 180-watt model, listed £17.5, at £11 10, complete with silence cabinet and filter unit.

MOVING Coil Speakers (few only)—Rola's F6, 110-175 V.s. (2,000 ohms), 90-130 volts (2,500 ohms), 200-250 volts (6,500 ohms), complete with transformer, 18/-; F7 (as above), 25/-; F6P.M., 28/-; F7P.M., 32/-; carriage paid, or call, or c.o.d., Newells Mayfair Radio, 31, George St., Hanover Sq., W.1. Mayfair 5346. [2327]

GUARANTEED Component:—

BRAND New American Valves.—224, 235, screened grid, 10/- each; 226, 227, 280, 8/-; and other types pro rate.

UTILITY 0.0005 Condenser, new, double ball bearing spindles; 3/6.

SUITCASE Cabinets, 14, 14-8, guaranteed real hide, crocodile pattern; 12/6.

TABLE Radiogram Cabinets, in blue texture; 5/- each.

MICA Dielectric 0.0005 Condensers, at 9d. each.

D.C. Eliminators, all types and makes, output 10 to 50 ma.; from 5/- each.

POWER Chokes, 30 henrys, 40 ma.; 3/6 each.

CONDENSERS.—750v. D.C. test, 1 mfd., 1/-; 2 mfd., 1/8.

LARGE Stock of Various Components, sets, cabinets, etc., etc., in stock.

MAINS Transformers, manufacturer's type, 250-0-250, 60 ma., 4v. 2a., 4v. 1a., C.T., 8/6; 300-0-300 60-80 ma., 4v. 3a., 4v. 2a., C.T., 9/-.

240V. Transformers, for use with H.T.8 rectifier, 11/-; and various other types of all the above.

3-VALVE Strips, complete with ready wired filaments, with 2 fixed condensers, 0.002 and 0.0003, 1/6 each.

2-GANG Condensers (H.M.V.), with trimmers, complete; 5/6.

ROTARY Converter, input 100 volts D.C., output 110 V. A.C. at 300 Watts, complete smoothing, totally enclosed in heavy copper screening box (converter mounted sorbo rubber), starter if necessary; £4.

FORMO Variable, air spaced, mid. log. 0.00035; 1/11 each.

UNIVERSAL RADIO, 220-221, City Rd., E.C. [2297]



Explanatory leaflets free

WATES METERS CAN ALWAYS BE REPAIRED

WATES UNIVERSAL METER

The ONLY popular priced instrument testing resistances, as well as voltage of H.T. and L.T. batteries, valves, transformers, coils, condensers, short circuits, distortion, etc. NO SKILL REQUIRED to see what's wrong, yet nearly all the experts use it. FOUR readings on one dial, (1) 0-150 v. for H.T. (2) 0-6 v. for L.T. (3) 0-30 milliamps. (4) resistance test 0-2,000 ohms. Of all Wireless Dealers, Ironmongers, etc., including 4-page instruction leaflet

12/6

OTHER WATES METERS INCLUDE

Wates famous 3-in-1 Pocket Meter testing L.T. (0-6 v.), H.T. (0-150 v.) 0-30 milliamps ... **8/6**
Milliameters for Q.P.P. receivers, Panel type (0-10). (By post, 6d. extra) ... **7/-**

REPAIRS. You are sure of meter satisfaction by buying a Wates, for our service staff will recondition any Wates meter cheaply, no matter how old.

WATES RADIO LTD.,

184-188, Shaftesbury Avenue, London, W.C.2

NEW RADIO BARGAINS! BY THE HUNDRED! SET MANUFACTURERS SURPLUS!

SATISFACTION GUARANTEED

Columbia Cabinet Moving Coil Speakers for A.C. Mains, 200 250 v. complete with rectifier, in fine oak cabinet, £4 10 model for 45- (carr. 2-). **Goodman Perm. Mag. Moving Coil Speakers**, complete, 39 6 model for 22 6 (carr. 1 6).
A.C. Eliminators, best makes, Westinghouse rectified, for 200 250 v. A.C. Mains. Outputs (3 pos.) up to 150 v., 20 mA., 27 6. **Combined Units** for A.C. 200 250 v., Westinghouse rect., H.T. (3 pos.) 150 v., 20 mA., and charging 2 and 4 v. at .5 amp., 45- (these are listed £4/10). Post on either 1-.
D.C. Eliminators for any D.C. Mains, 3 pos. (1 var.), 150 v., 40 mA., 16 6 (post 1-).
Mains Transformers, highest grade, 250 v., 60 mA. (for H.T. 8), 4 v., 4 a., 4 v., 2 a., 8 6 (post 6d.). Also 350-0-350, 120 mA., 4 v., 4 a., 4 v., 2 a., 4 v., 1 a., remarkable offer, 17 6 (post 9d.). Many others.
Condensers, T.C.C., 1.2 mf. (250 wkg.), 1 6; six for 7 6 (post 4d.). Polymet Electrolytic, 8 mf., 435 v., 2 11 (post 3d.).
Variable Condensers, slow motion, complete, .0003 and .0005, 2 11 (post 3d.).
Ekco Dual Range Coils, 10d. each, 1 6 pair (post 3d.).
Paraflex Transformers, 2 9 (post 3d.).
Microphones, genuine Reisz, 55- (post 1/-). Home recording type, with transformer, 16 6 (post 9d.). Others from 5 6.
H.M.V. Potentiometers, 50,000 ohm, in bakelite case, 2 6 (post 3d.).
Electric Clock Movements for any clock, synchronous type, first-class job with machine cut gears, 14 6 (post 6d.).
Special to "Wireless World" readers! The "Shaftesbury Gold Mine"—a 48-page Handbook of Radio, Electrical, and Sporting Goods; with tips, hints, and charts—for only 7 d., post free. Include it in your order.

SHAFTESBURY SUPPLIES

Head Office and Mail Order Dept.:
224, SHAFTESBURY AVENUE, LONDON, W.C.2.
Shop Sales only at
247, LONDON ROAD, SHEFFIELD. 13, CUMBERLAND STREET, STOKES CROFT, BRISTOL.
BECOME A SATISFIED SHAFTESBURY CUSTOMER!

Components, etc., for Sale.—Contd.

R.

SELECTED Parts for Sale, as new; any e.o.d. or "Wireless World" deposit system, which we recommend if in doubt as to the splendid value offered; we take risk of damage in transit to our customers; goods tested for callers and guaranteed.

RYALL'S Mains Transformers, new goods; 250v. 60m.a., 4v. 1 amp., 4v. 3 amp., 10/6; ditto super type, with 4v. 3-5 amp., tapped at 150 150v., 15 6; 350v. 60m.a., 4v. 2 amp., 4v. 4 amp., 12/9; step up or down transformers, 60 watt 110v. to 250v., tapped, 10/-; H.T. 6 or H.T. 7, with 4v. 4 amp., 10/9; filament, 4v. 3-5 amp., 8/9.

RYALL'S Chokes—20 h. 120 m.a. resistance, 260 ohms, 8 9; 40 h. at (C.T.) 100 m.a., resistance 600 ohms, 10 6; 25 h. at 60 m.a., resistance 260 ohms, 6/9; constant inductance chokes: 200 h. at 5 m.a., resistance 1,200 ohms, 8/9; 60 h. 60 m.a., 2,500 ohms, 12/9.

T.C.C., type 84, 1 mfd., 375v. working, 1 3; T.C.C., 2 mfd., 375v. working, 1 6.

METERS, moving iron and moving coil, all new instruments, specially made for Ryall's Radio, all guaranteed for one year, moving coil meters to B.E.S. first grade specification, all panel flash type bakelite case.

MOVING Iron Meters, first grade air damped, with zero adjustment, A.C. meters, 0-250v., 18/-; A.C. and D.C., 0-50 m.a., 15/-; size as above.

MOVING Iron Meters, in cases, as above, A.C. meters, 0-6v., 10/-; 0-3 amp., 10/-; 0-12v., 10/-; 0-250v., 12/-; 0-6 amp., 10/-; A.C. and D.C., 0-20 m.a., 10/-; 0-50 m.a., 10/-; (0-10 m.a., 8/6, D.C.).

RYALL'S Mains Condensers, offered with confidence, all with terminals, 4 mfd. 250v. working, 400v. peak, 3 6; 4 mfd. 400v. working, 600v. peak, 4/-; 4 mfd. 750v. working, 1,000v. peak, 5 6; 2 mfd. 750v. working, 3 6; new goods, guaranteed one year; ditto, bakelite case, non-inductive, 350v. working, 1 mfd., 1 5; 2 mfd., 2/-; 4 mfd., 3/-.

P.F.I.F.O. Multi Meter, 500 ohm per volt., as new, 28/-; Cassor A.C. 2v. set, without speaker, 50/-.

POLAR Tub 3-gang, with trimmers, 10/-; Amplion A.B.41 cone speaker, 18/18, 20/-; B.F.H. Senior m.c. 6in. corrugated cone with separate valve rectifier for A.C. mains, £3; G.E.C. cabinet m.c. speaker, P.M., 30/-; set 4 Lewins superb. coils with base, as new, 20/-; Radiophone 4-gang, with cover and disc drive, less centechon, 16/6.

R.F. Multi Ratio P.P. Transformer, 7 6; Ferranti B8 choke, 5/-; Regentone 860 eliminator, 200v. 30 m.a., 4v. 6 amp., £2; Six Sixty valve eliminator, 200v. 30 m.a. and G.B. 32 6.

IGRANIC Mains Transformers, 110 220v. input, 250v. 75 m.a., 4v. 1 amp., 12/-; 460v. 120 m.a., 7.5, 8v., 15v., to clear at 15/-; ditto H.W. 550v., 60 m.a., 7.5v., 6/-.

MAGNAVON D.C. 144, with transformer, 2,500 ohms, 15 6; Rola D.C. 2,000 ohms, with pentode transformer, 17 6.

SET Cabinets for 3v. A.C. Sets, room for speaker, suit "W.W." A.C.3, etc., brand new, fitted escutcheon, 20/- used, 16/-.

SPECIAL Offer of Pye 20h. Chokes, 40 m.a., 130 m.a., maximum, D.C. resistance 300 ohms, brown crystalline finish, new, Pye 32h. chokes, D.C. resistance, 700 ohms, 30 m.a., 80 m.a. maximum, ditto, 6 3 each, post free.

RYALL'S Own Wire Wound Resistances, wound on vitreous tubes, wire ends, wattage ratings doubled when well ventilated, accuracy plus or minus 2 per cent. in values: 250 1-watt, 300 1-watt, 350 1-watt, 500 1-watt, 510 3-watt, 540 3-watt, 715 1-watt, 750 2-watt, 800 1-watt, 1,200 1-watt, 4,000 2-watt; prices, 1-watt 1/-, 2-watt 1 3, 3-watt 1 6; guaranteed one year.

SUITCASE Cabinets in Best Crocodile Leather, 14 x 14-8, ample room for 12in. turntable and pick-up; 15/- new.

EDISON BELL, 10,000, Eureka wire wound, with holders, 1/-; Edison Bell 0.0005 universal log all metal condensers, 1 6, new.

RYALL'S RADIO, 33, Chancery Lane, London, W.C.2 (nearest Tube Chancery Lane; bus 67 passes door, or train to Savoy St.). Holborn 3529. Open Saturday afternoon, close 7 p.m., Thursdays 1 o'clock, Saturday 6 p.m.

R.

[2299]

SOUTHERN RADIO'S Set Manufacturers' Guaranteed Surplus, Mains transformers, 250-250 60 m.a., 4 volt 3 amp., 3 volt 1 amp., 10/3 each, all capacities in stock and specials made to order; mains transformers, to suit Westinghouse rectifiers, H.T. 4, 5, 6, 7, 8 or 9, 13/- each, all transformers guaranteed 12 months; Ready Radio "303" 3-valve battery kits, less valves, 21/-, with 3 specified Mullard valves, 39/- each (list £3 10); Ready Radio Meteor Screen Grid 3-valve kit, less valves, 27/6; with 3 specified Mullard valves, £2 10 6 each (list £5 7/6); Ready Radio Meteor Screen Grid 3-valve "A" kit, including cabinet and celestion moving coil P.M. speaker, less valves, £3 7 6, with 3 specified Mullard valves, £4 12 6 each; Mullard Radio for Million 3-valve A.C. kit, complete with 3 specified Mullard valves, £3/12/6 each (list £6 10); all above kits are brand new and packed in original sealed cartons; screened chokes (H.M.V.), 1/- each, 9/- doz.; genuine Amplion loud-speaker units, 2 9 each (listed 12/6); Radiophone volume controls and switch combined, 3 9 each (listed 10/6); dual gang condensers 0.0005 (H.M.V.), 6/- each (listed 29/6); Cyclon 3-gang condensers, 0.0005, with trimmers and fully screened, 9 9 each (listed 32/-); S.G. Brown's A.C. moving coil speakers, incorporating Igranite Elcom rectifier, 12in. coil speakers, (listed 8/10); condensers, 4 mfd., 2/6; 2 mfd., 1/6; 1 mfd., 1/- each (all 750-volt test); every article sold by us is guaranteed and carriage paid.—Southern Radio, 323, Euston Rd., London, N.W.1 (near Warren St. Tube). Phone: Museum 6324. [2300]

A Complete Range MAINS SWITCHES

TAKE YOUR CHOICE

... from the largest range of British made mains switches yet available. Each and every one is fully guaranteed by us and will give you lasting satisfaction.

List No.	Type	Price
S. 102	On-Off	1/3
S. 103	S.P.C.O.	1/6
S. 104	D. Pole	2/-
S. 80	On-Off	1/6
S. 81	S.P.C.O.	1/9
S. 87	3-Point	1/9
S. 88	D. Pole	2/9
S. 89	D.P.C.O.	3/3
S. 98	D.P.D.T.	2/3
S. 91	Rotary	1/9

BULGIN

SEND FOR 80 PAGE CATALOGUE & MANUAL Enclose 2^d Postage

Dept. W.
A. F. BULGIN & CO. LTD.,
Abbey Road, Barking, Essex.

13

Electrical Measuring Instruments in one

BRITISH MADE

Illustrated Pamphlets free on request.

THE AVOMETER

REGD. TRADE MARK.

AUTOMATIC COIL WINDER & ELECTRICAL EQUIPMENT CO., LTD.,
Winder House, Douglas Street, London, S.W.1.
Telephone: Victoria 3405/3406.

THE AVOMETER is the only portable electrical measuring instrument in the world that gives direct and accurate readings in Amps, Volts, and Ohms without the use of external shunts or multipliers, and without the need for calculations of any kind.

£8 : 8s.
or Deferred Payments.

And NOW The UNIVERSAL AVOMETER
which covers the thirteen D.C. ranges of the Avometer, also four ranges of A.C. voltages and three of A.C. current for use on 50 cycles.

£12 : 12s.
Deferred Terms if desired.

Components, etc., for Sale.—Contd.

PREMIER SUPPLY STORES Offer the Following Brand New Goods at a Fraction of the Original Cost; all goods guaranteed perfect; carriage paid over 5s., under 5/- postage 6d. extra (Ireland carriage forward).

PREMIER Eliminators, input 200-250 volts, 40-100 cycles A.C., incorporating Westinghouse metal rectifiers, output 250 volts at 60 milliamps, 80 and 120 volt taps, 42 6; with 4 volts 4 amps. L.T. (c.t.), 7/6 extra.

PREMIER Eliminators, output 150 volts at 30 milliamps, 80 and 100 volt taps, with 4 volts 3-4 amps. (c.t.), L.T., 37 6; with trickle charger, 42 6.

PREMIER Eliminators, output 120 volts at 20 milliamps, 80 and 100 volt taps, 27 6; with L.T. trickle charger incorporated, 35.

D.C. Eliminators, output 120 volts at 20 milliamps, 80 and 100 volt taps, 15/-; larger model, output 200 volts 50 milliamps, 80 and 120 volt taps, 25/-.

ACCUMULATOR Chargers, 200-250 volts A.C., all incorporating Westinghouse rectifiers: 2, 4, and 6 volts at 1/2 amp., 17 6; 4 and 6 volts at 1 amp., 22 6; up to 12 volts at 1 amp., 27 6; up to 12 volts at 1.5 amps., 30/-; up to 6 volts at 2 amps., 35/-; up to 6 volts at 3 amps., 39 6; up to 12 volts at 3 amps., 52 6; 3 separate 12 volt 1 amp. circuits, 75/-.

T.C.C. Condensers, 250 volts working, 4x4x1 mfd., 5/-; 300 volts working, 4x4x2x2 mfd., 7/-; 375 volts working, 6x4x2x2 mfd., 10/-; 300 volts working, 4x4x2x1 mfd., 6/-.

400 Volts Working, 3 separate 4 mfd. condensers, 8 6; with 2 separate 1 mfd. condensers, 2/- extra.

WESTERN ELECTRIC, 400 volts working, 0.01-0.01 mfd., 1/-; blocks 4x2x2x2, 1x0.09 mfd., 400 volts working, 6/-.

FERRANTI Condenser Blocks, 300 volts working, 4x4x2x2 mfd., all entirely separate, 10/-.

T.C.C. Condensers, 750 volts working, 2 mfd., 4/-; 750 volts working, 4 mfd., 6 6; 4 mfd., 400 volts D.C. working (300 volts A.C. working), 4/-; 4 mfd. electrolytic condensers, 440 volts working, 3/-; 8 mfd., 3/3.

WESTERN ELECTRIC Condensers, 250 volts working, 1 mfd., 6d.; 2 mfd., 1/-; 400 volts working, 1 mfd., 2 mfd., 2/-.

POLAR 3-gang Variable Condensers, tub type, fully screened, split end vanes and disc drive, 0.0005; 10/-.

ORMOND All-brass 2-gang Condensers, semi shielded, 0.0005, 5/-; Ameco 3-gang 0.0005 condenser, with trimmers (listed 30/-), our price 7 6; Polar 0.0005 and 0.00035 Bakelite dielectric condensers, with knob, 1/-.

BRITISH RADIOPHONE 4-gang Condensers, with trimmers, fully screened; 16/-.

PREMIER Mains Transformers, all guaranteed, terminal connections, input 200-250 volts, 40-100 cycles, output 175 volts, 80 milliamps, for voltage doubling, 8 6; 4 volts 4 amps., centre tapped, L.T., 2/- extra; Westinghouse rectifier for above, giving 180 volts at 30 milliamps, 8 6.

PREMIER Mains Transformers, output 250-0-250 volts at 60 milliamps, 4 volts 1 amp., 4 volts 2 amps., and 4 volts 3-4 amps. (all c.t.), with screened primary, 15/-.

PREMIER Mains Transformers, output 400-0-400 volts at 100 milliamps, 4 volt 4 amp., and 4 volt 2.5 amp.; 18 6.

H.T.8 Transformers, with 4 volts 3-5 amps. L.T. (c.t.), with screened primary, 15/-; with Westinghouse rectifier, 25/-.

H.T.9 Transformers, output 230 volts 200 milliamps, with 4 volts 4 amps. (c.t.), with screened primary, 15/-; with Westinghouse rectifier, 26/-.

H.T.10 Transformers, with 4 volts 4 amps L.T., 15/-; with rectifier, 27/- (output 200 volts at 100 milliamps).

PREMIER Mains Transformers—12 volts 1 amp., 7 6; 9 volts 1 amp., 7 6; 4 volts 4 amps., and 4 volts 2 amps., 8 6; 14 volts 4 amps., 12 6; 4 volts 3 amps., 7 6; 4 volts 5 amps., 8 6; 22 volts 1 amp., 10/-; 6 volts 2 amps., 7 6.

MAINS Transformers, output 350-0-350 volts, 90 milliamps, 4 volts 3 amps. (c.t.), 4 volts 2 amps. (c.t.), 12 6.

AMPLION Mains Transformers, input 100-250 volts, output 350-0-350 volts, 120 milliamps, 4 volts 5 amps., 4 volts 2 amps., and 6 volts 1 amp. (all c.t.); 17 6.

AUTO Transformers, 110 200-250 volts or vice versa; 60 watt, 7 9; 100 watt, 10/-; 180 watt, 15/-.

PHILIPS 323 Valves for L.T. Charging, 5 6; transformer for same, 15/-.

SPECIAL Offer of Mains Transformers, manufacturers' type, any input, output 250-0-250 volts 60 milliamps, 4 volts 1 amp. (c.t.), 4 volts 3 amps. (c.t.), 8 6; 180-0-180 volts 40 milliamps, 4 volts 1 amp., 4 volts 2 amps., 4 5; 175 volts 50 milliamps, 4 volts 4 amps., 4 volts 1 amp., 5 6; H.T.3, with 4 volts 3-4 amps., 3 6; with rectifier, 18 6.

MULTI-RATIO Output Transformers, 6 taps giving 15 different ratios, 7 6; Pye chokes, 20 or 32 henrys, 4/-.

PREMIER Chokes, 40 milliamps 25 henrys, 4/-; 65 milliamps 30 henrys, 6/-; 150 milliamps 30 henrys, 10 6.

SMOOTHING Chokes for Series Connected Filaments from D.C. Mains, carry 1 amp., 7 6; H.M.V. 110 henry chokes (100,000 ohms resistance, carry 10 m.a.), 3 6.

AMPLION High Inductance Chokes, resistance 2,500 ohms, 80 henrys, 60 m.a.; 5 6.

SPECIAL Offer of Wire Wound Resistances, 4 watts, any value up to 10,000 ohms, 1/-; 8 watts, any value up to 15,000 ohms, 1 6; 15 watts, any value up to 50,000 ohms, 2 6; 25 watts, any value up to 50,000 ohms, 3 6; 50 watts, any value up to 50,000 ohms, 5/-.

(This advertisement continued in third column.)

Components, etc., for Sale.—Contd.

(This advertisement continued from first column.)

WIRE Wound Potentiometers, 15,000 ohms, 1/6; Centrabal potentiometer volume controls, 50,000 ohms, 2/-; Colverstas, logarithmically wound potentiometers, 6,000 ohms, 1 9.

HEAVY Duty Variable Resistances, slider type, wound on porcelain, 2,000 ohms, 1 4 amp., 5/-; 500 ohms, 1-2 amp., 5/-.

ROLA 2,000 and 6,500 ohms, type F6, 17 6; Rola F.P.M. permanent magnet, 20/-; F.P.M. permanent magnet, 31/- (all with pentode output transformers).

AMPLION Moving Coil Speakers, type E.M.644, dual fields 2,500 and 5,000 ohms (100-250 volts); with output transformer, 12 6; ditto, 200-250 volts A.C., 22 6.

B.T.H. Induction Type (A.C. only) Electric Gramophone Motors, 100 250 volts, 30—complete; double spring gramophone motors with 12in. turntable, 15/- complete.

SPECIAL Offer of Kolster Branded Electric Gramophone Motors, all complete with turntables, list price £5; No. 1 super, A.C., 100-250 volts, 35/-; No. 2 super universal, 100 250 volts, A.C. or D.C., £2; automatic stops.

EKCO Microphones, complete with transformer, a really fine job, 18 6; wire wound Clarostat potentiometer, 50,000 ohms, 2 6.

WESTINGHOUSE Metal Rectifiers, 120 volts at 20 m.a., 6 6; 180 volts at 30 m.a., 8 6; 8 volts at 0.5 amp., 6 6; 250 volts at 60 m.a., 10/-; 6 volts at 1 amp., 9 6; 12 volts at 1 amp., 12 6; 6 volts at 2 amps., 20/-; 200 volts at 100 m.a., 11/-.

ALL the Following Lines, 6d. each, or 5/- per doz. assorted: Trimming condensers, shielded, S.G. or pentode leads; Polymer 0.01 condensers; 21in. lengths of screened wire; 5-pin valve holders; Crabtree sunk 5 amp. switches; T.C.C. 0.1 condensers; 0.5 condensers.

AMPLION Six Receivers, listed £21, complete with valves, 200-250 volts A.C.; 9 guineas.

TOR Callers Only: The following valves, guaranteed as new: DC2G, VDS, DC8G, 9 6 each; UF60 250, 7 6.

ALL Orders to 2022, High St., Clapham, S.W.4. Macaulay 2188. Closed 1 o'clock Wednesdays. Open to 9 o'clock Saturdays. Nearest station Clapham North Underground. [2324]

COSMIC RADIO SERVICE, 23, Water St., Liverpool.—Ferranti M3 P.M. speaker, new, £1; Ormond Pilot chassis, £2; Ferranti A.P.5C, 18/-; A.P.3, 11 6; A.P.4, 8/-; Polar 3x, 0.0005, less trimmers, unshielded, 7/-; postage extra. [2276]

MOVING Coil Milli-Ammeters, 0-50, 10 6 each; 2 milliamps and 120v, 17 6 each; other ranges in stock; alterations, repairs of every description.—The Victoria Electrical Co., 47, High St., Battersea, S.W.11. [10355]

MURRAY Paththrough Soundheads, complete with optical systems; splendid condition; £5 10 each.

BROWNS First Stage Amplifiers, in metal cases, £1/5 each; Voigt cinema speakers, 200v. D.C. field, £3 10 each.

MURRAY Portable Projector, complete with soundhead, £7 10; Igranic twin electric turntable, in oak case, £7 10.

BROWNS A.C. Eliminators, for first stage amplifiers, £2 each; Igranic 24 Watt A.C. amplifiers, £3 each.

TOR Callers—A large quantity of public address and radio gear, to be cleared knockout prices, prior to removal to larger premises, comprising travelling amplifiers with R.C.A. valves, B.T.P. amplifiers, Amplion and numerous other makes, motor generators, Amplion and 100 G.E.C. and Zenith various slider resistances, microphones, Edibell voltage regulators, Weston meters, A.C. transformers, P.A. horns and units, leaf portable projector, charging panels, variable transmitting condensers, 100lb. Europa various gauge wire, Ferranti transformers and chokes and electric motors and starters, etc.; please phone before calling or write.

H. FRANKS, 42a, St. George's St., Shadwell, London, E.L. Phone: Royal 2546. Nearest Underground Railway, Shadwell Station. [2291]

T. W. THOMPSON and Co., 14-17, Stratton Ground, Westminster, S.W.1. Tel.: Franklin 6355. Nearest station, St. James' Park (Underground). Open every day (Sundays excepted) until 7.30 p.m. All goods on 3 days' approval against cash or card. (I.P.S. excepted).

UNIVERSAL Electric Gramophone Motors, A.C. or D.C., 200-250 volts, 19 6; post 9d.; A.C. gramophone motors, 200-250 volts, 500 current type, 17 6; post 9d.; D.C. eliminators, brand new, output 150 volts, 30-40 milliamps, 200-250 input, 15/-; post 9d.; A.C. eliminators, 200-250 volts input, 150 volts 25 m.a. output, Westinghouse rectified, 23/-; post 1/-; Regenzat voltage controls, list 6 6; to clear 1/- each; post 9d.; automatic electric gramophone motors, plays 9 records, complete with all fittings, £5 each; Brown's public address Cabinet moving coil speakers, in large oak cabinets, 100 250 volts mains, D.C., 55/- each; twin gang variable condensers, 0.0005, with trimmers, Claude Lyons, 4 6; British Radiophone, screened, 6 6; post 6d.; all-electric automatic floor polishers, for large halls, ball rooms, etc., all guaranteed, £7 10; wrist watch pattern Broadcast microphones, 4/- each; post 6d.; Broadcast microphones, on stand, 15/- and 27 6; Reisz pattern microphones, large, broadcast type, in aluminium cast case, 55/-; Rola M.C. speakers, 22 6; Magnavox, 22 6; portable accumulators, unspillable, size 4 1/2x5in. 2 1/2in. 6/-; post 6d.; condensers, Dubilier 12 m.f. banks 1,000 volts, 5/-; post 6d.; Western Electric 1 m.f., 6d. each; post 5d.; 2 m.f. in bakelite cases, 700 volt, 1 9; post 3d.; T.C.C., 2,000 m.f. dry electrolytic, 12 volt peak, 5/-; post 6d.; T.C.C., 8 m.f. electrolytic, 440 volt working, 3 9; post 5d.; 2 m.f. 1,000 volt test, 2/-; post 3d.; 4 m.f. 1,000 volt input, output, 250-0-250, 4 volt, 4 amp., 4 volt 2 amp., 3 6; post 6d.; Westinghouse L.T. rectifiers, 6 volt 1 amp., 6 6; genuine Pyrene fire extinguishers, reconditioned, guaranteed, 22 6.

T. W. THOMPSON and Co., 14-17, Stratton Ground, Westminster, S.W.1. [2282]

OSTAR-GANZ
HIGH VOLTAGE MAINS VALVES
 These valves work direct off either A.C. or D.C. supply. No transformers or resistances required. Remarkably free from mains hum.
 A.520. G.P. - 17 3 E.G.50. 50 m.a. Half Wave - 14 6
 W.310. R.C. - 17 3 E.G.100. 125 m.a. do. - 15 8
 U.920. L.F. Power 17 3 N.G.40. 40 m.Voltage double 22 6
 L.1525. Super Power 18/- V.G.45. 45 m.a. Full Wave - 42-6
FREE BLUE-PRINT with first order.

UNIVERSAL
RECEIVER AND AMPLIFIER KITS
 With British Components. Work off either A.C. or D.C.
 2-v. Receiver with Rectifier - £8 10 0
 3-v. Receiver with Rectifier - £9 0 0
 2-v. Amplifier with Rectifier - £4 4 0
 3-v. Amplifier with Rectifier - £5 5 0
 Latest type Energised Moving Coil Loud-speaker complete with Ostar-Ganz Valves, £2 5 0
 Write for leaflet.
EUGEN FORBAT
 Sole representative for Great Britain.
 c/o Nivalight Ltd., 1, Rosebery Avenue, E.C.1. Tel.: Clerk 1227.

Grippleshell
Aerial Brackets



are simple and economical to install and avoid unsightly poles. Write for leaflet to:—
PARTRIDGE WILSON & CO.
 Dept. 29, Davenset Works, Leicester.

EVERY PART FOR EVERY BLACKPOOL CIRCUIT
LEONARD HEYS
NOTICE TO TRADERS
 Your Quiescent Push-Pull, Monodial, Station Finder, S.T.400, New Century Super, Melody Ranger and all other radio requirements can be obtained QUICKLY from
LEONARD HEYS WHOLESALE ONLY
 Faraday House, Henry St., Blackpool, Lancs.

IGRANIC COMPONENTS
WILL TELL YOU HOW GOOD THEY ARE

Hear PERFECT radio through a PERMAG REPRODUCER
 CHASSIS ONLY 38/6
 CABINET MODEL 49/6
BAKER'S SELHURST RADIO
 75 & 77, Sussex Road, Croydon.
 Phone: Croydon 3447/2.

PARIMA SELENIUM CELLS
FOR ALL PURPOSES.
 Parima Light-Sensitive Resistances are constant mechanically strong, moisture proof and exceedingly sensitive. Fully guaranteed for 12 months. **5/-** Prices from
PARIMA MANUFACTURING CO.
 21, BROMLEY ROAD, S.E.6
 Hither Green 38929

A RELIABLE ADJUSTABLE MICROPHONE at LOW PRICE
 Perfect Speech and Music without distortion.
 The Wilson Hand Microphone can be adapted 6/6 each to many uses with first-class results. Price reduced to 2/6 each Screened 100 to 1 Transformers 6 each
 Also Manufacturers of Microphone Amplifiers, Electric Bowl Heater-Cookers, Irons, etc. Write for List.
THE IMPROVED WILSON MICROPHONE & ELECT. Co. Ltd.
 Prince of Wales Terrace, LONDON, W.4.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

MAINS TRANSFORMERS

FOR THE A.C. MONODIAL SUPER WITH A.V.C.

For 2.5 watt A.V.C. Power Chassis. Mains Transformer: 350-350 v. 100 m/A. 4 v. 6 amps. centre-tapped, 4 v. 2.5 amps. centre-tapped, and twice 4 v. 1 amp. centre-tapped with screened primary. Standard type, Price **37.6**. Manufacturers' type, Price **33**.

For 5 watt A.V.C. Power Chassis. Mains Transformer: Primary with earthed screen, secondary windings 400-0-400, 120 m/A, 4 v. 6 amps. c.t., 4 v. 3.5 amps., 4 v. 2 amps., 4 v. 1 amp. c.t. Standard type, Price **50**. Manufacturers' type, Price **45**.

FOR THE FERROCART III

Mains Transformer to exact W.W. specification, type F.C.3. Price **22**. Speaker field replacement choke, type X37D. Manufacturers' type, Price **16**. Standard type, Price **18**.

SAVAGE MAINS EQUIPMENT

W. BRYAN SAVAGE
56/58, CLERKENWELL ROAD, E.C.1.
Phone: Clerkenwell 3068.



CLIX NEW CHASSIS MOUNTING STRIPS

CLIX are again first in supplying a new component to meet the needs of the up-to-date constructor. These strips provide a easier means of obtaining Perfect Contact. Strongly made of highest quality insulating material, they may be chassis mounted on metal, ebonite, or wood, or adapted to baseboard. Sockets of the Turned Resilient Type, take solid or resilient plugs with equal efficiency and with smooth insertion and withdrawal. Terminals allow secure and solderless connections.

- Type 1. Three sockets for Aerial and Earth ... **7D.**
- Type 2. Four sockets: Loud-speaker and Pick-up ... **8D.**

No More Corroded Contacts CLIX NEW SPADE TERMINALS



have a specially designed collar which fully protects from creeping acid a positive metal-to-metal wiring contact. Corrosion is impossible and Perfect Contact is always assured.

- Large size: Nickel-plated or lead-coated. This type is especially for accumulator work ... **2D.**
- Small size: For terminal contact work. Nickel-plated ... **1D.**

Write for CLIX Leaflet W.31.

LECTRO LINX, LTD., 79a, ROCHESTER ROW, S.W.1

Components, etc., for Sale.—Contd.

- HOYNE'S Transformers and Chokes.
- 250-0-250 v. 60 m.a., 4 v. 1.2 a. C.T., 4 v. 2.3 a. C.T., 10/-, post 9d.
- 250-0-250 v. 60 m.a., 4 v. 1.2 a. C.T., 4 v. 2.3 a. C.T., 4 v. 1.2 a. C.T., 12/6, post 1/-.
- 350-0-350 v. 60-70 m.a., 4v. 2.3 a. C.T., 4 v. 3.4 a. C.T., Ferrocart III model, 12/6, post 1/-.
- 350-0-350 v. 120 m.a., 4v. 2.3 a. C.T., 4 v. 4.6 a. C.T., 4 v. 1.2 a. C.T., 16/-, post 1/3.
- 450-0-450 v. 150 m.a., 4 v. 2.4 a. C.T., 4 v. 2.6 a. C.T., 4 v. 2 a. C.T., 4 v. 2 a. C.T., 25/-, post 1/3.
- 500-0-500 v. 140 m.a., 4 v. 2.4 a. C.T., 4 v. 2.6 a. C.T., 4 v. 2 a. C.T., 4 v. 2 a. C.T., 27/6, post 1/3.

WESTINGHOUSE Model 150, 200, 240 v. 300 m.a., 4 v. 1.2 a. C.T., 4 v. 2.6 a. C.T., suitable for H.T.8, H.T.9, H.T.10, 15/-, post 1/3.

LINE Transformers (auto wound), 0-100, 110, 200, 220, 240 v. 60 watts, 7/9; 120 watts, 11/-; post 1/-; 160 watts, 15/-, post 1/3.

CHOKES. 30 henry 150 m.a., 12/-, post 1/-; 20 henry 120 m.a., 8/6, post 1/-; 30 henry 60 m.a., 6/-, post 6d.; 20 henry 30 m.a., 3/6, post 6d.

HOYNE'S Transformers are Guaranteed for One Year.

HOYNE'S Transformers.—All primaries are tapped and screened, clamped in aluminium frames, and fitted with clearly marked terminal strips; any model can be obtained with screw terminals and engraved terminal strips at 2/6 extra.

HOYNE'S Transformers for Reliability.

HOYNE'S for the Best Components and Quickest Service.

M. J. HOYNE, Offices and Works, 8a, Gladstone Rd., Wimbledon, S.W.19. Tel.: Liberty 3303. [2220]

EVERYTHING for Movies and Talkies.—Phone, write or, better still, call and inspect immense stock of bargains.

ILLUSTRATED ENTERPRISES, 159, Wardour St., London, W.1. Tel.: 6889 Gerrard. [1621]

ROLA. 32/6: F5P.M., 19/6; Lumophone P.M., 16/6; Ferranti O.P.1. 9/6; O.P.M.4, 10/6 O.P.M.1(e), 12/6; U10. 6/-; M.S.4, metallised, 9/-; A.C.P., P.X.4, D.C.H.L., D.C.Pen., 35/4, 6/6 each; all as new.—Hulbert, 24, Pargeter Rd., Warkley, Birmingham. [2290]

PARTS for Eliminator and Sets; send postcard; long list; mark your price.—6, Dallas Rd., Stockland Green, Birmingham. [2272]

PARTRIDGE.—If you cannot afford expensive components, assure equivalent results by dealing direct with a qualified mains specialist.

PARTRIDGE Transformers, guaranteed 12 months; primaries 200-250v., 50 cycles, all L.T. and C.T., carriage free.

PARTRIDGE "W.W." Specifications.—A.V.C. Monodial 2 1/2 W. chassis, 20/-; 5 W. chassis, 24/-; Ferrocart 111, 15/-; quality amplifier, 22/-; A.V.C. conversion, 4v. 1a., 8/-.

PARTRIDGE Popular Specifications.—250-0-250v., 60 m.a., 4v. 1a., 4v. 3a., 12/-; 350-0-350v., 120 m.a., 4v. 2 1/2a., 4v. 4a., 4v. 1a., 18/6; 500-0-500v., 120 m.a., 4v. 2 1/2a., 4v. 5a., 4v. 1a., 23/-.

PARTRIDGE Westinghouse Specifications.—135v. (tapped 110v.), 90 m.a., 4v. 3a., for H.T.6 or H.T.7, 11/-; 240v. (tapped 200v.), 180 m.a., 4v. 4a., for H.T.8 or H.T.9, 14/-.

PARTRIDGE Transformers Wound to Your Specification, extra charge negligible, quotation per return.

PARTRIDGE Chokes.—10H, 100 m.a., 120 ohms, 10/6; 28 14H, 120 m.a., 260 ohms, 11/-; 30H, 50 m.a., 460 ohms, 9/-.

PARTRIDGE.—Trade enquiries invited.

PARTRIDGE, B.Sc.(Eng.), A.M.I.E.E., A.I.R.A.E.

PARTRIDGE, N., King's Buildings, Dean Stanley St., London, S.W.1. Phone: Victoria 5035. [2284]

PEPPER Draws Your Attention to Advertisement on page 6, col. 3, of last week's issue, and also the following:—

VALVES. Cossor 2158.G.V.M.s. 9/6; D.G.210, 8/6; A.C.2 H.L., 104v., A.C.104's, 7/11; P.M.24's, 8/6; many boxed, as new; satisfaction guaranteed.

KOLSTER BRANDES Super Induction Motors, new, for A.C., 50 cycles, complete; cost £5.17.6, low only at £2.10.-48, Wake Green Rd., Birmingham. [2295]

RADIO MART, Birmingham, announce purchase large portion Radio Reordinators stock, consisting of Blalock, Riffel, Truvox, Rola, Phillips, and R.K., P.A. speakers; valves, M7B, V600, U.L.4, E.S.75, 4211B, E.S.U.75, D.U.40, D.O.60; high voltage condensers, complete amplifiers, etc.; list 6d.

OWING to Expansion of Business we are opening new works and showrooms, 44, Holloway Road, 18,000ft. floor space, Midland 3254. Private Branch Exchange. Why not call and see the values that made this possible?—Radio Mart, 19, John Bright St., Birmingham. [2288]

MAINS RADIO'S Clearance Week.—Set manufacturer's surplus, guaranteed as new, carriage paid or call; valves, latest types, P.N.4's, 7/6; M.N.4's, 7/3; A.C./P1's, 5/-; A.C.064's, 4/6; U.U.60 550, U.U.60 250, P.M.24a, P.M.24s, 4/-; P625, 3/-; V.D.S., 8/-; D.C./S.G., 5/-; D.C./H.L., 4/-; D.C./P.E.N., 6/-; components—Hubilier 2 mfd., 250v. working, 1/4; 12 mfd., electrolytics, 450v. working, 2/4; paraflex transformers, 1/10; 100 m.a. 20h. chokes, 8/6; 60 m.a. C.T. chokes, 2/-; Magnum single screened coils, hand pass or h.f. (perfect, but no switch red), 1/9 each; Ekco 5-pin v-holders, 1/3 half dozen; 10h. coils single screened heater wire, 9d. each; grassman 200-250v. D.C. M.A. speaker, 10/6; nitro 16 Watts input), 4/-; Gidon 2 gang extensor, 16/-;—Mains Radio Development Co., 4-6, Muswell Hill Rd., London, N.6. [2296]

FOR EVERY SET—there's a

PILOT AUTHOR KIT

CASH—C.O.D.—or H.P.

A.V.C. MONODIAL SUPER

KIT "A" Author's Kit of FIRST SPECIFIED Components for Set only including Ready Drilled Polished Oak Panel, Ready Assembled and Drilled FLYMAX Set Chassis, screws, wire and sleeving but excluding Eliminator Components, Valves and Cabinet.

Cash or C.O.D. **£11. 10. 6**

or Deposit £1-10-6 and 11 monthly payments of £1.

2.5 WATTS POWER CHASSIS.

Includes all FIRST SPECIFIED Components for 2.5 Watt Power Chassis with ready drilled and assembled Flymax chassis with screws, wire and sleeving, but less Valves. Cash or C.O.D. Carriage Paid. **£8-5-6** or 12 monthly payments of **15 2.**

5 WATTS POWER CHASSIS.

Includes all FIRST SPECIFIED Components for 5 Watt Power Chassis with ready drilled and assembled Flymax chassis with screws, wire and sleeving, but less Valves. Cash or C.O.D. Carriage Paid. **£12-0-0**, or 12 m'thly payments of **22/-**.

COMPLETE KITS

Includes all FIRST SPECIFIED Components for Set and 2.5 Watt Power Chassis with Valves, less Cabinet, Cash or C.O.D. Carriage Paid. **£26-18-0**, or deposit **£4-18-0**, and 11 monthly payments of **£2-4-0**.

Includes all FIRST SPECIFIED Components for Set and 5 Watt Power Chassis with Valves, less Cabinet, Cash or C.O.D. Carriage Paid. **£31-8-0**, or deposit **£6-8-0**, and 11 monthly payments of **£3-10-0**.

FERROCART III

KIT "A" Author's Kit of FIRST specified Parts complete down to the last screw, including READY DRILLED Peto-Scott Panel with assembled and drilled Peto-Scott FLYMAX CHASSIS but less Valves **12 GNS.** and Cabinet. CASH or C.O.D. Carriage Paid. **or 12 monthly payments of 23/-**. Set of 4 Specified Valves: £3-7-8, or add 6 2 to each Kit "A" monthly payment. COLVERN Ferrocart Coils per return, CASH or C.O.D., **£2. 10. 0** or 12 monthly payments of 4 7.

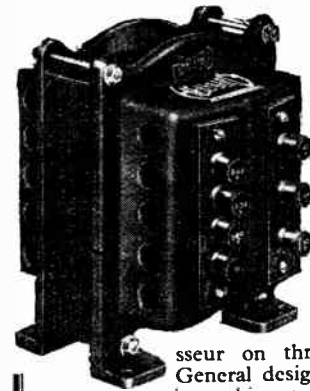
AUTOMATIC VOLUME CONTROL UNIT

Described in this week's issue. Complete Kit of Components, CASH or C.O.D., only **13/7**

Any Item supplied separately if value over 10s., sent Cash or C.O.D. Carriage Paid.

PETO-SCOTT CO. LTD.
77, CITY ROAD, LONDON, E.C.1.
Telephone: Clerkenwell 9406/7.

West End Showrooms: 62, High Holborn, London, W.C.1.



MAINS POWER for Radio!

Designed by Specialists in mains apparatus, Heayberd transformers appeal to the radio connoisseur on three points: 1. General design, 2. Efficiency in working, and 3. Guarantee.

All standard transformers are shrouded in cast end-plates, effectively shielding the windings. Good voltage regulation, with negligible temperature rise. Tested at every stage of manufacture. Here is a typical example from the wide range available.

HEAYBERD MODEL W.31 TRANSFORMER (For Westinghouse H.T.8 Rectifier) Rectified Outputs: 200 or 250v. 60ma. L.T.2 2v. 1 amp. and 2+2v. 5amps. **30/-**

Send for Handbook giving full details of Heayberd Transformers, Chokes, Units and Battery Chargers. **10, FINSBURY STREET, LONDON, E.C.2.**

POST COUPON

I enclose 3d. stamps for 36 paged Handbook containing Technical Hints and diagrams.

Mr.
Address W.W.

Components, etc., for Sale.—Contd.

CONDENSER Blocks 6d. per mfd., 650-volt test, in blocks of 6 mfd. upwards, wired in 2 mfd. units; 2 years' guarantee; sent by return of post on 7 days' approval; cash with order. Butlers Radio, Ltd., 191, Forest Rd., Walthamstow, E.17. Phone: 3134. [0396]

PART Exchange. We can offer you liberal allowance on your second-hand components in part exchange for new.—Write now to The Radio Exchange Co., 68, Colville Rd., E.11. [2268]

CELESTION Permanent Magnet Moving Coil Speakers, multi-tap transformer, guaranteed unused, 35/-; 18/-; postage 9d.; 21/2 watt quality amplifier, complete with valves, universal A.C. tapplings, 46/- Watts, Service engineers, 21 Garway Rd., W.2. [2265]

PA. Apparatus, including valves, turntable, pick-up, Baker De Luxe speaker, 4ft. baffle, amplifier, microphone; reasonable offer accepted.—Radio Grams Services, Clifton St., Hurst Hill, Bilston. [2263]

PEDESTAL Telephones, 7/6; telephone magnets, 4/-; microphones, 1/-, 2/-, and 4/6; microphone transformers, 2/6; automatic switching dials, 2/-.—Below

PORTABLE Morse Wireless Transmitting Sets, 15/-; 2 valve receivers (no valves), 10/-; Breatt microphones, with condenser and switch for transmitting, 5/-.—Below

PLATING Dynamo, 6 volts 30 amps, slow speed, 43/-; 12in. spark coil, complete, 43/10; 100 volt 40 amps, dynamo, 41/0; 4hp. induction motor, A.C., 100V., 3 phase, 50 cycles, 44/-.—Below

ROTARY Converter, input 6 to 12 volts, D.C., output 30v. Ia. A.C.; the A.C. can easily be removed to higher voltages, 15/-.—Below

A.C. Motors, high-p. repulsion, 220v. 50c., 1 p.h., 17/6; 4hp. 220 240v. 50c., 1 p.h., centrifugal starting, reversible, double shaft, ball bearing, 43/15.—Below

ALSO Charging Dynamos, regulators, meters, resistances, D.C. motors switches, transformers, valves; please state requirements; send for list.—Below

GALPIN, 23, Tyrwhitt Rd., Brockley, London, S.E.4 (nearest station, St. Johns, Lewisham). All goods cash with order or cash (charges extra); 3 days' approval from date of delivery; all goods guaranteed. [2267]

ULTRA Air-Chrome Double Liuen Diaphragm Speaker Chassis for True Reproduction; 3/-

MARCONI (EX) L.F. Transformers, 3/1 and 5/1; 4/-; all new and guaranteed.

ROLA Matched Pair Speakers, P.6500 and P.M.7M; 50/- list price 46/10.

MIDDLELAND Radio Manufacturers' Clearing House for Radio Bargains 60, Hockley Hill, Birmingham. [2313]

EXPERIMENTER'S Surplus, A.F.6, 17/6; A.F.4, 7/6; R.I. Hyperon, 12/6; Ultra air chrome speaker, 17/6; Chokes H.T. unit, 60, 90, 120, 20 m.a., 41/10, 110, Moor End Rd., Huddersfield. [2314]

NEW Hartley-Turner Speaker, complete with rectifier, half price, unused; Monodial parts, 3 Colverdynes, 20/-; Varley coils, 19/-; M.S.4, 10/-; 164V., 8/-; 2.5 watt amplifier, with valves, offers; all as new; stamp reply, 45, Woodland Lane, Clapton, Leeds. [2317]

COLVERN Coils for Single Dial Super K21-22 23, 19/6; Varley coils, B.P.12-17-20, on base, 15/6.

VORTEXION Mains Transformer for "Modern Straight 5," 200 250v. A.C., 12/6; Weirite frame aerial for Super Sixty, 12/6.

SONOCORDE Standard P.M. Speaker, with universal transformer; 22/6; unused

WESTINGHOUSE Rectifier, H.T.1, 25/-; mains transformer for same, 12/6.

J.B. 3-gang Condenser, R3W, 15/-; J.B. Uniteau, with case, drive fully screened, 10/6, unused.

WESTINGHOUSE Metal Rectifier, 300v. at 60 m.a., 13/6; 350v. at 65 m.a., 15/-, unused; all goods guaranteed perfect and sent on 7 days' approval against cash, or cash; we allow 50% of the list price of your surplus components in part exchange for new.—W. B. Mackie, 61, Dartmouth Rd., Forest Hill, S.E.23, Sydenham 6741. [2319]

CHAL-ELECTRIC Offers Brand New Set Manufacturers' Surplus, Condensers 1,500 test multiple block, 20 mfd., consisting (1) 4 mfd., (5) 2 mfd., (2) 1 mfd., 11/-; 11 mfd., (1) 4 mfd., (3) 2 mfd., (1) 1 mfd., 6/9; separate tapplings.

VARIABLE Condensers.—Complete with screens cover, trimmers, disc drive, oscutcheon plate, knob, etc., J.B. Nu-Gang 3-gang 0.0005, 14/-; 2 gang, as above, 9/-; Polar Star, 3 gang, complete, as above, 14/-; British Radiophone, 17/6.

ELECTRIC Motors (6 only), Collaco combined motor pick-up and fully automatic stop; listed 86/- and 76/- with volume control, at 43/-; without volume control, 42/16.

CASH With Order or c.o.d., carriage paid.—Chal-Electric, 6, Conduit St., London, W.1. [2326]

MISCELLANEOUS.

EASY Payments.—We supply, by easy payments, components, accessories, and sets, any make; 10% down, balance spread over 11 months.—Send list of requirements to London Radio Supply Co., 11, Oat Lane, London, E.C.2, 10337

ENGINEERS and Technical Workers of All Kinds.—A proper training by post in your spare time will take you through your right examination, then employment is waiting. Our advice on all careers free.—Dept. 92, The Bennett College, Ltd., Sheffield. [0395]

NO Cash.—We will accept your old set or apparatus as deposit for new set or apparatus, balance by 12 monthly payments; first payment not due until one month after delivery of new goods.—Bostock and Stonnill, 1, Westbourne Terrace, S.E.23. [2312]

No other H.T. Accumulator Possesses Such Patented Features—



ACCUMULATORS ELITE

SEMI-OIL SUBMERGED

The reason of the ever-increasing popularity of "ELITE" H.T. Accumulators is not far to seek. The film of oil, which definitely prevents loss by CREEPAGE, is a feature of tremendous importance, and is found only on "ACCUMULATORS ELITE" H.T. Batteries.

Again these Accumulators last practically FOR EVER, since any damaged plate can be replaced instantly by anyone, without skill. They are as clean in operation as a dry battery, and are DEAD SILENT.

Prices:—Type O2
60V. 3-amp-hour 41-2-6
120V. 3-amp-hour 42-4-0
Write for Lists, Post Free.



It will pay you handsomely! our remarkable

H.T. BATTERY HIRE SERVICE SCHEME Write for Particulars—

ACCUMULATORS ELITE Hebble Mills, Salterhepple HALIFAX.

SERADIX RESISTANCES

Illustrated List for stamp.

Special terms to Factors and Manufacturers.

TREVOR PEPPER WAKE GREEN ROAD, BIRMINGHAM.

WIRELESS DIRECTION FINDING & Directional Reception

By R. Keen, B.Eng. (Hon.) Second Edition (1927)

THIS volume describes the principles of Direction and Position Finding and is invaluable to wireless engineers tackling this field of work for the first time. Well illustrated from photographs and diagrams.

PRICE 21/- net. By Post 21/9

From Leading Book-sellers or direct from

LILIFFE & SONS LIMITED Dorset House Tudor Street, London, E.C.4

W.W.68

Miscellaneous.—Contd.

AMBITIOUS Men.—Qualify for a well-paid post by studying at home with The T.I.G.B. Write to-day for "The Engineer's Guide to Success," 144 pages, free, which contains the widest selection of engineering and wireless courses in the world, and shows you how to become A.M.I.E.E., A.M.I. Mech. E., A.Rad. A., etc. State branch, post or qualification that interests you.—The Technological Institute of Great Britain, 82, Temple Bar House, London, E.C.4. (Founded 1917. 19,000 Successes.) [1297]

PATENT AGENTS.

PATENTS and Trade Marks, British and foreign.—Lee and Co. (H. T. P. Gee, Member R.S.C.B. and A.M.I.R.E.), 51-52, Chancery Lane, London, W.C.2. Phone: Holborn 1525. [0001]

KING'S PATENT AGENCY, Ltd., 146a, Queen Victoria St., London, E.C.4. Phone: Central 0682. 35 years' experience. Advice Handbook free. [0331]

A. MATHISEN, B.Sc. (Elect. Eng.), specialist, patents for radio inventions.—First Avenue House, High Holborn, London. [1342]

REPAIRS.

REPAIRS to Loud-speakers, transformers and headphones, 4/- each; Blue Spots or Wulfs, 5/-; mains eliminators, etc., quoted for; prompt service; satisfaction guaranteed; terms to trade.—Loud-speaker Repair Wk., 2, Shipka Rd., Balham, London. Streatham 6618. [0334]

GUARANTEED Repairs by Experts; specialists for repairs to S.G. Brown and Amplion radio apparatus, also loud-speakers, headphones, pick-ups, Blue Spots, any type re-tuned, remagnetised and adjusted; 4/-; not free; mains transformer repairs; terms to trade.—Howell, 91, Morley Hill, Enfield, Middlesex. [1976]

WEST Country Service Depot.—Repairs and reconstruction, all classes radio apparatus; loud-speakers, etc.; re-wound; P.A. hire service; terms to trade; estimates free.—Lawes Radio, Trade Service Depot, 5, George St., Exeter. [2310]

ELECTRIC CLOCKS.

MAJNS Synchronous Clock Movements, any voltage, 60 cycles, 3 1/2in. diameter, 12/6, postage 6d.; hands, 6d. pair extra; centre seconds, 6d.—Lincoln Electric Clock Co., 155a, Burnt Ash Hill, S.E.12. [2317]

EXCHANGE.

COSMIC RADIO SERVICE, 23, Water St., Liverpool, accept modern receivers and components in part exchange for new. [2215]

SEE Details of Our New Scheme under Miscellaneous.—Bostock and Stonnill. [2311]

TUITION.

RADIO Engineering.—Well-paid posts brought within reach of all at small expense; courses from 43/-; write for particulars and free lesson.—Westminster Correspondence School of Engineering, 84, Chandos House, Palace St., Westminster. [2313]

YOUTH Offered Training in Radio in Return for Light Duties.—Amalgamated Services, 161, Wardour St., W.1. [2319]

WANTED.

NEW or Second-hand Wireless Parts Wanted for Cash, any amount, any condition; send yours, stating reasonable price; cash by return; top prices paid for 1932 parts; also meters, etc.; will call London districts.—Milmay Radio Exchange, 24 Midway Grove, London, N.1. [1167]

SPOT Cash for Components, etc.—Economic Radio Co., 96 99, South Lambeth Rd., S.W.8. [1924]

AMATEURS' and Experimenters' Surplus Components Bought for Cash; best prices paid.—24a, Newport Court, Charing Cross Rd., W.C.2. [2288]

WANTED, Murphy AB Superheterodyne Receiver.—Bovilsky, 165, Hospital St., Glasgow, C.5. [2270]

MICHAEL, Portable; state lowest price for cash.—Birks, 15, Tivoli Rd., N.8. [2271]

WANTED, all types of A.C., D.C., and battery valves, also A.C. and D.C. receivers, and any other components in quantities for spot cash.—Ward, 12, Trolege Rd., Bow, E.3. [2321]

FOUR-FOLDED Exponential Horns, 2 to fit Western 555W units and 2 to fit Tunvox units; must be 10ft or over.—Colbourn and Kernole, Ridgeway St., Douglas Isle of Man. [2301]

ROTARY Converter, 6v. input, 150v. 30 m.a. output.—M., 171, Stockwell Rd., London. [2304]

BUSINESSES AND PROPERTY FOR SALE, TO BE LET, OR WANTED.

LOCK UP Shop, with stall, in heart of West End splendid living for practical man; huge stock; 4300 a.m. Box 6494, c/o The Wireless World. [2288]

SITUATIONS VACANT.

If You Wish to Enter the Wireless Profession with a Thorough Training, or if you wish to improve your present position, you will need the certificate issued by Britain's leading wireless college. This is not a correspondence college. Apparatus of all leading makes is stabled for instructional purposes. Boarders accepted. Training fee can be paid after appointment. Prospectus free.—Wireless College, Colwyn Bay. [0388]

A SET IS AS GOOD AS ITS COMPONENTS

You cannot hope to get best results unless your set is built with the most efficient and reliable components.



Ask for the BURTON Biotube H.F. Choke. Scientifically designed to avoid peaks and external magnetic field. Will cover a wave band of 50-3,000 metres. Sold by leading Radio Dealers. PRICE 6/- Made by C. F. & H. BURTON, PROGRESS WORKS, WALSALL.

BUILD A BETTER SET WITH

BURTON COMPONENTS

EASY TERMS PROMPT DELIVERY

Any Amplion, BlueSpot, Baker, Celestion, Epoch, R. & A. Rola, Sonochorde, or W.B. Moving Coil Speaker supplied

Send 5/- only

and pay the balance by monthly instalments. No references. Entirely private and confidential.

KITS, PARTS, SETS, ELECTRIC CLOCKS ON EASY TERMS.

Write for Catalogue and details to:

TURNADGE & PARTNERS, LTD.
111, Fleet Street, London, E.C.4
Telephone: Central 1923

Situations Vacant.—Contd.

AMBITIOUS Men Should Apply for Free Particulars of Training or Appointments in Radio or Talkie Engineering; valuable introductions.—Radio Training Institute, St. John St., Newcastle-on-Tyne. [1927]

RADIO Valve Engineer, also with good knowledge of radio circuits, required by large firm near London.—Write, stating age, experience and salary required, to Box 215, c/o Mitchell and Co., 1, Snow Hill, E.C.1. [2262]

WANTED for North London Radio Valve Factory, 2 assistant foremen, must have experience in assembly of radio valves and be good disciplinarians, age 23-27.—Write, giving full details and wages required, Box 6478, c/o The Wireless World. [2269]

RADIO, electrical and gramophone shop, N.W. London; opportunity for thoroughly capable man for responsible position; state age, experience, and salary required.—Box 6093, c/o The Wireless World. [2301]

RADIO Engineer Required for Research Department; only applicants having previous experience of development work need apply.—Telsen Electrical Co., Aston, Birmingham. [2328]

SITUATIONS WANTED.

DO You Want Skilled Certified Service Engineers and Salesmen? Then consult the Principal, The Wireless College, Colwyn Bay. Phone: 2467. [0392]

MAN, 29, servicing and experimenting for 12 years, seeks London situation. Box 6474, c/o The Wireless World. [2264]

BOOKS, INSTRUCTIONS, ETC.

"**MOTOR** Racing," by B. C. H. Davis ("Casque" of "The Autocar"). A book of speed and thrills by a racing driver of international repute who secured notable successes at Le Mans in 1927, and in the 500 miles race in 1930. Demy 8vo., 320 pages, 6 maps, numerous illustrations from photographs, and pen sketches by the Author. Price 7/6 net by post 8/-. from the Publishers, Hiffe and Sons Ltd., Dorset House, Tudor St., London, E.C.4.

EPOCH

MOVING COIL SPEAKERS

The Finest in The World in Each of Their Price-classes.

Ask your Dealer or call for a demonstration at Exmouth House.

Send for New Booklet W.S.5a. It is free.

EPOCH RADIO MANUFACTURING Co. Ltd.
Exmouth House, Exmouth St., London, E.C.1
A the junction of Rotherby Avenue and Farringdon Road.
Phone: Clerkenwell 9666 (4 lines).

FIRST CLASS REPRODUCTION

AN UNREPEATABLE OPPORTUNITY TO SECURE A REAL B.T.H. **R. K. LOUDSPEAKER**

GUARANTEED NEW AT BARGAIN PRICES!



Specification:—6 in. diameter cone Moving Coil Loudspeaker giving full bass response and handling the output from the heaviest power valve. Far superior to many small modern moving coil speakers. Weight 30 lbs. Field winding to suit 6, 100, or 200 volts D.C. Send cash with order or C.O.D.

R. K. SPEAKER Originally listed at £6. 6. 0 Now offered for **30/-** A.C. MODELS £2. 10. 0

O. H. SEEKAMP, 46, FARRINGTON ST., E.C.4

FOR HIRE RADIO, MICROPHONE & GRAMPHONE AMPLIFIERS

ALEXANDER BLACK

WIRELESS CONSULTANT

55, EBURY STREET, LONDON, S.W.1

ESTABLISHED IN 1925

SLOANE 1655

Trade Enquiries Invited.

SERVICE

SETS OF ALL TYPES

Supplied, Serviced and Visited in any district, or may be sent for Full Test and Report, at 2/- per valve-holder; portables, 1/6 per valve-holder.

70% OSBORN

RADIO-GRAM CABINET

Model No. 234

Beautiful Queen Anne Style Radio-Gram Cabinet, 3' 3" high x 2' 6" wide x 1' 6" deep. Takes panel 19" x 12" or smaller. Ample room for any type of gramophone motor including Garrard Automatic Record Changer and largest H.T. and L.T. Batteries made. Accommodation for 35 records on each side of set. Should you require a larger panel space for your set, cabinet will take panel 27" long by omitting records storage. Height between motor board and baseboard 12 1/2".

OSborn Super Acoustic Baffle Board. Prevents 90% Speaker worry.

PRICES.

MACHINED READY TO ASSEMBLE. KIT OF PARTS, OAK £3.10.0, Mahogany £3.15.0, Walnut £4.10.0. Assembled Ready to Polish, Oak £4.10.0, Mahogany £4.15.0, Walnut £5.10.0. Assembled and Polished, Oak £5.10.0, Mahogany £6.5.0, Walnut £7.5.0.

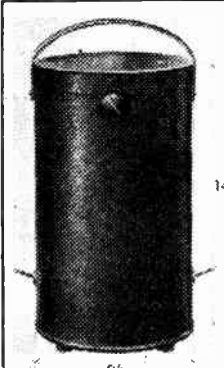
ALL MODELS CARRIAGE PAID.

Write for Catalogue.

CHAS. A. OSBORN Dist. W.W. Regent Works, Arlington St., New North Rd., London, N.1. Tel. Clerkenwell 5095. Showrooms: 21, ESSEX ROAD, ISLINGTON, N.1. Tel. Clerkenwell 3634.

50 CYCLE A.C.

From Your D.C. Mains



THE NELCO ROTARY CONVERTER

is the only converter specially designed for use with the new synchronous gramophone motors. It is fitted with a regulator and 50 cycle frequency reed illuminated by a small pilot lamp. This device enables anyone to obtain exactly 50 cycles A.C. irrespective of input voltage and load. Entirely free from electrical interference. Silent and reliable. Occupies extremely small floor space. A highly finished, sound mechanical and electrical job. British throughout. (Prov. Patent)

£8. 8. 0 100 WATT.

Send for fully descriptive leaflet to:

SPECIAL OFFER TO TRADERS **NELCO LTD.,** 15, Caroline St., London, W.C.1.

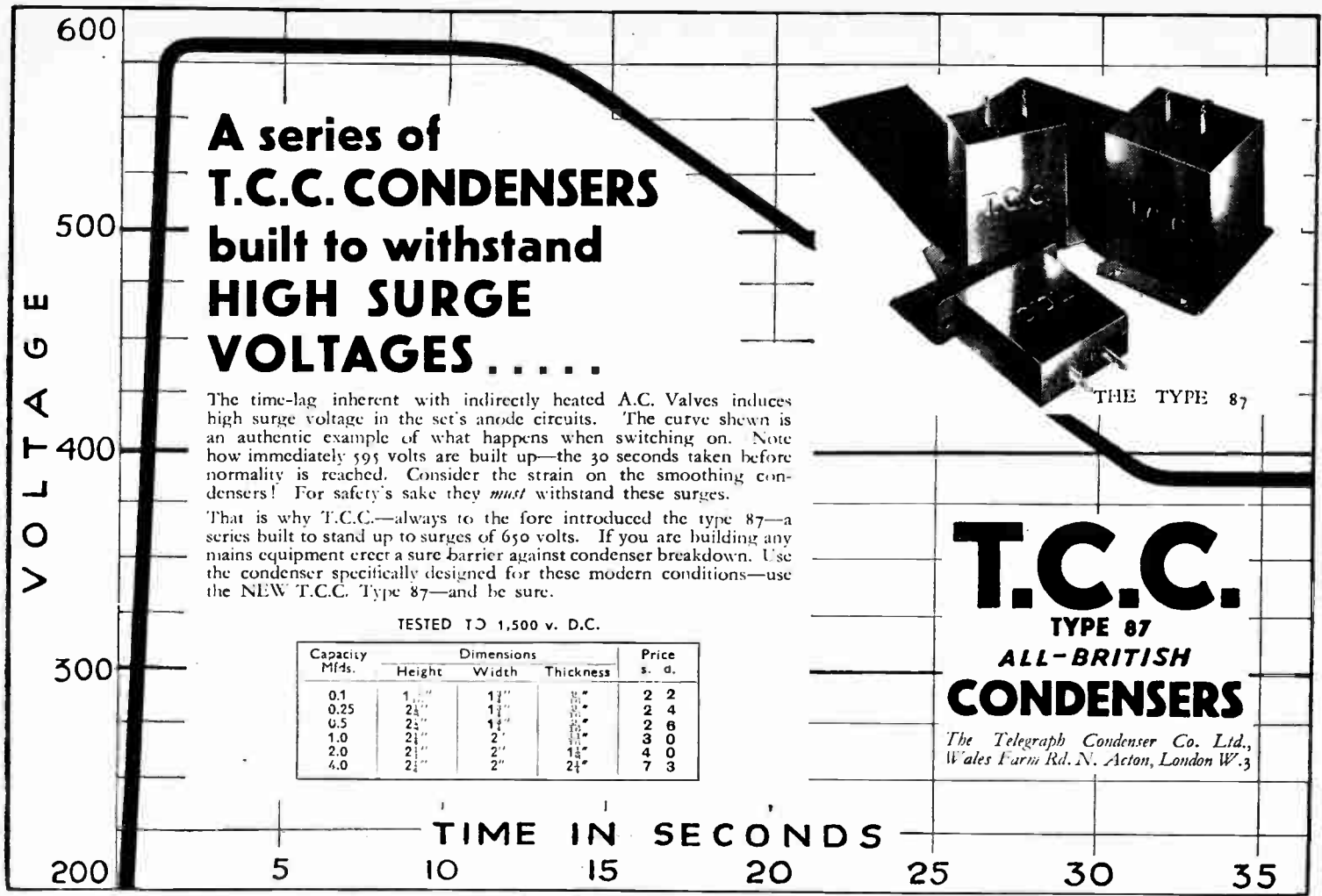
Write for full particulars. Phone: MUSEUM 3474.

INDEX TO ADVERTISEMENTS.

	PAGE
Accumulators, Elite	10
Alton Battery Co., Ltd.	10
Atwater Kent (G. A. Britain, Ltd.)	Inside Front Cover
Automatic Coil Winder & Elec. Equipment Co., Ltd.	7
Baker's "Selhurst" Radio	8
Barber & Colman, Ltd.	11
Belling & Lee, Ltd.	11
Black, Alexander	11
Britannia Batteries, Ltd.	1
British Institute of Eng. Technology	11
British Pix Co., Ltd.	5
British Radiophone Co., Ltd.	11
British Rola Co., Ltd.	11
Bryce, W. Andrew & Co.	7
Bulgin, A. F. & Co., Ltd.	11
Burton, C. F. & H.	Con 111
Carrington Manf. Co., Ltd.	11
Challis, O. M.	11
Columbia Gramophone Co., Ltd.	11
Colvern, Ltd.	11
Cossor, A. C., Ltd.	2
Cressall Manf. Co., Ltd.	6
Dubilier Condenser Co. (1925), Ltd.	Front Cover
Edison Swan Electric Co., Ltd.	3
Electradix Radios	11
Electrical Trading Association, Ltd.	v.
Epoch Radio Manf. Co., Ltd.	11

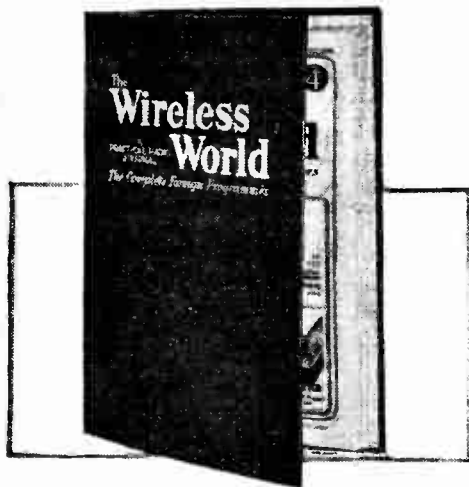
	PAGE
Exile & Drylex	11
Faraday All Wave Wireless, Ltd.	11
General Bros., Ltd.	11
General Electric Co., Ltd.	11
Goodmans	6
Grappes Co.	6
Haynes Radio	11
Healy, E. C. & Co.	9
Heys, Leonard	8
Imperial Electric Co., Ltd.	8
Improved Wilson Microphone & Electrical Co., Ltd.	8
Jackson Bros.	Inside Back Cover
Lectro-Linx, Ltd.	9
Lewis, Eric J. (Trixi), Ltd.	11
Lisdown Wireless Co.	11
London Electric Wire Co. & Smiths, Ltd.	11
London Radio Supply Co.	11
Milnes Radio Co.	11
Multiple Electric Co., Ltd.	11
Nelco, Ltd.	11
Osborn, Chas.	11
Ostar-Ganz (Eugen Forbat)	8
Parima Manf. Co.	8
Partridge, Wilson & Co.	8

	PAGE
Partridge & Moe, Ltd.	10
Pepper, Trevor (Seradex)	10
Pico-Synth Co., Ltd.	9
Pickets	6
Pilco, Ltd.	Inside Front Cover
Players	Inside Front Cover
Postlethwaite Bros.	11
Radio-Gramophone Development Co.	Outside Back Cover
Radios, Reeds & Co.	6
Reproducers & Amplifiers, Ltd.	vi.
Riverside Manf. Co., Ltd.	6
Rohax, Ltd. (M.L. Equipment)	Front Cover
Rover Electric, Ltd.	11
Savage, W. Bryan	9
Scott, Sossins & Co.	5
Seekamp, O. H.	11
Shafrin Supply	7
Scientific Reproducers, Ltd.	Front Cover
Telegraph Condenser Co., Ltd.	12
Telsen Electric Co., Ltd.	Front Cover
Turnadge & Partners, Ltd.	11
Varley (Oliver P.H. Control, Ltd.)	11
Wales Radio, Ltd.	7
Westinghouse Brake & Saxby Signal Co., Ltd.	11
Wilburn and Co.	11



2634

Keep the Week's Foreign Programmes handy for constant use



"The WIRELESS WORLD" READING CASE

Price 2/6 net. By post 2/10

Now obtainable from the publishers

ILIFFE & SONS LTD., DORSET HOUSE, TUDOR STREET, LONDON, E.C.4

The many Listeners who habitually use the Foreign Station Programmes in "The Wireless World" will appreciate the value of the useful READING CASE for the weekly issue which is now available.

It is an attractive cloth-board cover, gold lettered on front, and provided with silk holding cord for the current copy of "The Wireless World."

It has the merit of keeping the programmes immediately available for reference, and at the same time protecting them from damage by frequent use.

WEDNESDAY

APRIL THE FIFTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** National lecture by Sir Eric Drummond. Serenade. Orchestral concert.
- LONDON REGIONAL** "Songs from the Shows," a feature programme by John Watt.
- MIDLAND REGIONAL** Choral concert from the Town Hall, Birmingham.
- NORTH REGIONAL** Choral concert from the Milton Hall, Manchester. "Cue for Number," some pages from Music Hall History, by L. G. Williams.
- WEST REGIONAL** "House of Rosieburn," a play by S. Cumine Russell.
- SCOTTISH REGIONAL** "Hiawatha" (Coleridge Taylor), dramatised by T. C. Fairbairn.
- BELFAST** Orchestral concert from Stranmillis.

ABROAD

- BERLIN (Witzleben)** 6.50 p.m. Opera: "Rienzi" (Wagner), from Unter den Linden.
- BRUSSELS (No. 2)** 7.30 p.m. Instrumental concert.
- BUCHAREST** 7.45 p.m. Violin and pianoforte recitals.
- COPENHAGEN** 8.5 p.m. A Radio Ball for young people.
- EIFFEL TOWER** 7.30 p.m. Symphony concert, conducted by M. Flament.
- HAMBURG** 7 p.m. Max von Schillings concert.
- LANGENBERG** 8 p.m. Mozart concert.
- RADIO-PARIS** 8 p.m. Lamoureux concert from the Salle Gaveau.
- STRASBOURG** 7.30 p.m. Concert from the Palais des Fêtes.
- WARSAW** 7.15 p.m. Concert from the Conservatoire.

Housing. 6.0. See Prague. 8.0. See Brno. 9.0. See Prague. 9.15 (approx.). Close Down.

BREMEN. See Hamburg.

7.0 to 9.0, Ibsen Programme. 7.0, Gramophone Records. Norwegian Dances, Nos. 2 and 3 (Grieg). 7.5, Talk on Ibsen. 7.15, March from Sigurd Jorsalfar (Grieg), on Gramophone Records. 7.25, Scene from The Doll's House. 7.50, Elegiac Melodies, Nos. 1 and 2 (Grieg), on Gramophone Records. 8.0, Scenes from The Master Builder. 8.25, Svalve's Song (Grieg) and Peer Gynt's Return (Grieg), on Gramophone Records. 8.35, Scene from John Gabriel Borkman. 8.55, In the Hall of the Mountain King (Grieg), on Gramophone Records. 9.0, Le Journal Parlé. 9.10, Popular Music on Gramophone Records. 10.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish.—11.0 a.m., Orchestral Concert, conducted by Franz André. Soloist: M. Brenders (Pianoforte). Military March (Schubert); Pianoforte Solo: Musiquette (Post); Carnival (Ring); Popular Spanish Airs by Mme. Moulard-Maes; Russian and Romanian Dances (Bach); Extracts from Schaharazade (Rimsky-Korsakov). 12 Noon, Journal Parlé. 12.10 p.m., Concert by the Small Station Orchestra. Soloist: M. Douliex (Pianoforte). Overture, Le fils du Mandarin (Cui); Dances from Tom Jones (German); Serenade for Violin (Voss); Pianoforte Solo from Le roi des Aulnes (Benoit); Waltz (Reed); Habanera (Moumaert); Fox-trot, Fascinat' vamp (Nussbaum); Potpourri of Music by Padilla (Salabert). 4.0, Concert by the Radio Orchestra, conducted by Franz André. Marche Baroque (Goyens); Overture, The Gipsy Baron (Joh. Strauss); Four Viennese Pieces (Kreisler); Potpourri (Dostal); Ballet Music (Turina); Ballet Music from Faust (Gounod). 5.0, Variety Music on Gramophone Records. 5.15, Talk: The Dutch Indies. 5.30, Concert by the Small Station Orchestra, conducted by P. Lecmans. Soloist: M. Douliex (Pianoforte). Cortège des Bacchantes (De Taeye); Norwegian Sketch, Senta (Schneider); Suite (Flament); Pianoforte Solos: (a) Danse fantastique (Diels). (b) Danse infantine (Van Dorst); Ballet Music from Frameros (Rubinstein); Flemish Divertissement (Vidal). 6.15, Light Music on Gramophone Records. 6.30, Topical Talk. 7.0, Variety Music on Gramophone Records. 7.30, Instrumental Concert. Soloists: M. Pilsch (Cello) and M. Closset (Violin). Sonata in Five Movements (Pezehlius); Concerto in G for Violin (Bach); Suite of Dances from Aramide (Gluck); Adagio for Strings (Lekeu); Concertino for Cello (Pleyel); Symphony in A (Mozart). In the interval, Recitations. After the concert, Le Journal Parlé. 9.30, Dance Music on Gramophone Records. 10.0 (approx.), Close Down.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—3.0 p.m., Concert by the Station Orchestra. March,

Frühlingskinder (Blankenburg); Waltz, Seid umschlungen Millionen (Strauss); Overture, Don Giovanni (Mozart); Selection from Cavalleria rusticana (Mascagni); Selection from The Merry Widow (Lehár); First Suite from L'Arlesienne (Bizet); Slav Dances, Nos. 15 and 16 (Dvorák); Lullaby (Fueki); Clog Dance (Fétras). In the interval at 4.0, Radio Journal. 5.0, Talk: Romanian Beliefs and Superstitions. 5.20, Talks on Politics, Sociology and Law. 6.0, Concerto for Saxophone (Gurevichs). 6.30, Talk. 6.45, Violin Recital, Sonata in G Minor (Tartini); Jota (Falta); Scherzo-Tarantella (Wieniawsky). 7.15, Pianoforte Recital, Fantasia and Fugue (Bach-Liszt); Gavotte (Glück-Brahms); Etude in the Form of a Waltz (Saint-Saëns); Toccata, Op. III (Saint-Saëns). 7.45, News.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW.—Also relayed on 630 to 11.0 p.m.—4.30 p.m., Concert by the Budapest Orchestra. 6.0, Italian Lesson. 6.30, Song Recital by A. Strausky. 7.0, Talk in German on the Budapest International Fair. 7.15, Aimer—Play (Gérardy). 8.45, News, followed by Gypsy Music from the Café Baross. 9.30, Cello and Pianoforte Recital, Sonata in F (Beethoven); Sonata in B Flat Minor (Dohnanyi). After the Recital, Concert of Gypsy Music (cont'd).

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and **KALUNDBORG**, 260 kc/s, 1,153 metres; 7.5 kW.—11.0 a.m., Town Hall Chimes. 11.1 to 1.0 p.m., Concert from the Wivex Restaurant. 2.0, Violin Recital by Kasimus Sörensen. 2.30, Orchestral Concert, conducted by Emil Reesen: Overture, Mignon (Thomas); Lyric Suite (Grieg); Waltz, Serenade, and Polka, from Les Millions d'Arlequin (Drigo); Norwegian Rhapsody No. 3 (Svendsen); Bacchanale from The Seasons (Glazunov). 3.30, Talk for Women. 4.0, Gramophone Concert: Leonora's Cavatina from Il Trovatore (Verdi); Rubia (Armand Crabbe); Leonora's Aria from the Fourth Act of The Force of Destiny (Verdi); Musette (Bach-Pollain); Song, I'm sure of everything but you (O'Flynn); Das Glück ist troubles (Doelle); Song from Baby (Leux and Hannes). 4.40, Exchange and Market Prices. 4.50, Talk: John Bunyan. 5.20, French Lesson. 5.50, Weather and News. 6.15, Time Signal and Agricultural Talk. 6.45, The Hansen Family—a Humorous Episode (Jens Loeber). 7.0, Town Hall Chimes. 7.1, Concert of Music by the Old Masters: Trio in G for Flute, Violin, Harpsichord, and Cello (Bach). Songs: (a) Aria, with Cello obbligato (Scarlatti). (b) Aria from Nino German Arias, with Flute obbligato (Handel); Trio Sonata in C Minor for Flute, Oboe, and Harpsichord, with Cello (Quantz). 7.35, Talk: Problems of the Age—Nerves. 8.5 to 1.0 a.m. (Thursday), a Radio Ball for Young People. 8.5, Dance Music by Louis Preil's Orchestra, with Song Refrains. In the interval at 9.0, News. 10.20, Dance Music by the Valencia Orchestra. 11.0, Town Hall Chimes. 11.1, Dance Music from the Ritz Restaurant. 12 Midnight, Dance Music from the Nimb Restaurant. 1.0 a.m., Close Down.

CORK.—See Athlone.

CRACOW

950 kc/s, 312.8 metres; 1.5 kW.—5.45 p.m., Talk. 6.0, Miscellaneous Items and Announcements. 6.15, Talk: The Actual Output of Gold. 6.30 to 9.35, See Warsaw. 9.35, Talk in Esperanto. 9.55, See Warsaw. 11.0, Fareure from Notre Dame.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., Variety Music on Gramophone Records. 11.30, News. 11.45, Radio Concert. 5.0 to 6.0, Programme in English by the I.B.C., C. Danvers Walker, B. McNabb, and F. Lamping announcing. 5.0, Concert for Portsmouth Listeners. Special Request Programme: Sussex by the Sea (Higgs); Song, Danny Boy (Weatherley); Selection from H.M.S. Pinafore (Sullivan); Serenata (Toselli); Serenade (Heykens). 5.20, Concert for Southsea Listeners. Special Request Programme. The Whistler and his Dog (Pryor); Presto agitato from the Moonlight Sonata (Beethoven); Sanctuary of the Heart (Ketelbey); Xylophone Solo: Overture, Raymond (Thomas); Der Rosenkranzzeitung (Jessel); Wedgwood Blue (Ketelbey). 5.40, Concert for Isle of Wight Listeners: In the Gloaming; Sally in our Alley; The Butterfly (Bondis); Two Eyes of Grey; Serenata; The Grasshoppers' Dance (Bucalossi). 6.0, Radio Gazette. 6.20, News and Popular Music on Gramophone Records. 6.45, Answers to Correspondents and News. 7.15, "Simplice" in his Repertoire. 7.30, Concert. 8.0, Concert relayed from Dieppe. 10.0 p.m. till Close Down. Programme in English by the I.B.C. 10.0, Dance Music: I love a Parade; Lullabye of the Leaves; 1 do like to see a Game of Football; Underneath the Arches; Listen to the German Band; Paradise; The Clouds will soon roll by; Round the Marble Arch; Just another

ALGIERS

824 kc/s, 564 metres; 13 kW.—7.15 p.m., Agricultural Report and Weather Forecast. 7.20, Songs from Operetta. 7.55, News. 8.0, Time Signal. 8.2, A Travelogue. 8.15, Symphony Concert by the Station Orchestra. 8.45 (approx.) (in an interval). News. 9.30, News. 9.45, Hunting Horn Music. 9.55, News. 10.0, Dance Music relayed from the Hotel Aletti.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and **CORK**, 1,337 kc/s, 224.4 metres.—1.30 to 2 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Popular Music (cont'd.). 7.20, News. 7.30, Time Signal. 7.32, Gaelic Talk. 7.45, German Lesson. 8.0, Concert by the Dublin Postal Band. 9.0, Songs and Stories by Fay Sargent. 9.15, Pianoforte Recital by Mervyn Williams. 9.30, The Station Orchestra. 9.50, Soprano Solos by Eileen Hadyu. 10.5, The Station Orchestra. 10.30, Time, News, Weather and Close Down.

BARCELONA

RADIO BARCELONA, Call EAJ1, 860 kc/s, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Dance Music, relayed from the Ritz Hotel, followed by Request Gramophone Records. 7.20, Exchange Quotations. 8.0, Light Music on Gramophone Records and News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations and Market Prices. 9.5, Concert by the Station Orchestra. 9.45, Concert of Music by A. Cabané and J. Salvat—Winners of the Radio Competition. Part I, Suite muntanyenca (Cabané), for Soprano, String Quintet, Pianoforte and Harmonium. Part II, Six Soprano Solos (Salvat), with String Quintet, Pianoforte and Harmonium Accompaniment. After the concert, Sextet Concert, relayed from the Granja Royal. 11.0 (in the interval), News Bulletin. 12 Midnight (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Talk, and Dopulavoro Notes. 7.20, Giornale Radio and Weather. 7.30, Time and Announcements. 7.35 (approx.), Chamber Music; Soloists: Mario Gidilli (Pianoforte) and Enza Motti Messina (Soprano). In the interval, Talk: The Five Senses. 9.30, Light Music on Gramophone Records. 9.55, News.

BASLE.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—6.0 p.m., Talk. 6.30, Light Music on Gramophone Records. 7.0, Violin Duets. 7.50, Radio Play. 8.30, Concert by the Station Orchestra. 9.20, News Bulletin, followed by Gypsy Music relayed from a Restaurant.

BERLIN

KÖNIGS WUSTERHAUSEN, 183.5 kc/s, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert from Berlin (Witzleben). 1.45, Programme for Children. 2.30, Weather and Exchange. 2.45, Readings (Hans Christoph Kaergel): (a) Was einer bei seiner Mutter fand. (b) Der Tod über der Strasse. 3.0, Health Talks. 3.30, See Hamburg. 4.10, Topical Talk. 4.30, Talk: The Character of the German People. 5.0, Recital of Romantic Opera Arias by Rosalind von Schirach. 5.25, Talk: The Flemish People. 5.45, Wireless Hints. 5.55, Weather Forecast and Announcements. 6.0, English Lesson. 6.30, A Poem. 6.35, Political Press Review. 7.0, The Love Story of the beautiful Magdalen and Count Peter from Provence (Ludwig Tieck), arranged for the Radio with Brahms' Songs. 8.15, See Frankfurt. 9.15, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Concert from Heilsberg. 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.0 p.m., Topical Talk. 6.10, Talk: An Exemplary Life. 6.28, Announcement. 6.30, Introductory Notes to the following Transmission. 6.35, Rienzi—Opera (Wagner), relayed from the Opera House, Unter den Linden. In the intervals at 8.5 (approx.), The Unfamiliar Wagner—Reading of Letters, Conversations, and Documents; and at 8.50 (approx.), Weather, News, and Sports Notes. 9.45, Dance Music relayed from the Eden Pavilion. 11.0 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMÜNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—4.0 p.m., Reading. 4.10, Light Music on Gramophone Records. 4.30, Programme for Children. 4.40, Concert of Children's Gramophone Records. 4.55, Hungarian Programme; Song Recital by Marta Lanyi. 5.55, Talk on

BRESLAU

923 kc/s, 325 metres; 60 kW., and **GLEIWITZ**, 1,184 kc/s, 253 metres.—4.40 p.m., Arnold Mendelssohn Memorial Concert: A Double Quartet, Gretel Dostal (Soprano), Willi Wunderlich (First Violin), and Karl Kraizyk (Second Violin). 5.25, Talk: The Social Structure of the Population in the Upper Silesian Borderland. 5.45, Talk: Inherited Talents and the Choice of a Career. 6.5, Talk: German Patriotism in the Frontierlands. 6.25, Weather for Farmers and Market Prices. 6.30, See Heilsberg. 8.0, See Langenberg. 9.0, Time, Weather, News, Sports Notes, and Programme Announcements. 9.30, Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—4.10 p.m., Marionette Play. 5.5, Review of Periodicals. 5.15, Talk for Workers. 5.25, German Transmission: News, Talk on Science, Talk for Workers, and Talk on Mental Hygiene. 6.0, See Prague. 6.10, A Play (Rachilde). 6.35, Programme from Prague. 8.0, Jokes—Musical and Literary Programme by the Station Orchestra, the Station Chorus, and Members of the National Theatre. 9.0, See Prague. 9.15 (approx.), Close Down.

BRUSSELS (No. 1)

N.I.R., 590 kc/s, 569 metres; 15 kW.—11.0 a.m., Concert by the Small Station Orchestra, conducted by P. Lecmans. Overture, Euryanthe (Weber); Three Oriental Miniatures (Fischer); Serenade (Samazeuilh); Selection from Thaïs (Massenet); Cello Solo: Neapolitan Serenade (Sganibati); Estudiantina (Waldteufel); Selection from Elle est à vous (Yvain). 12 Noon, Journal Parlé. 12.10 p.m., Concert by the Radio Orchestra, conducted by Franz André. Soloist: M. Misson (Violin). Joyeuse marche (Chabrier); Ballet Music from Le petit elfe Ferme-l'oeil (Schmitt); Selection from Show Boat (Kern); Waltz for Violin (Saint-Saëns-Ysaye); Two Spanish Pieces (Albeniz); Orchestral Suite, Gli uccelli (Risphugi); Interlude by Mme. Stradell. 4.0, Concert by Mickey's Club Jazz Attraction, conducted by Ludo Langlois. 5.0, Talk on Trades and Professions. 5.15, Light Music on Gramophone Records. 5.30, Song Recital by Mme. Gallin. Arias from: (a) Hérodiade (Massenet). (b) Tosca (Puccini). (c) La Bohème (Puccini); Le rossignol s'est tu (Sokolov). 5.45, Tie à Tie—One-Act Comedy (de Férandy and Rouché). 6.0, Saxophone Recital by M. Gason. 6.15, Protestant Address. 6.30, Journal Parlé.

APRIL 5th

WEDNESDAY

continued

Dream of You; It ain't no Fault of mine; They all start whistling Mary; Love me tonight; Happy-go-lucky you; While we danced at the Mardi Gras. 11.0, Music from Many Countries; Musical Gems (arr. Shalmer); In a Chinese Temple Garden (Kotelbey); Souvenir de Capri (Boce); Valencia (Padilla); African Lament (Gilbert); In the Sudan (Sebeck); Black Eyes (arr. Ferraris). 11.30, Vocal Concert: Drink, drink, Brothers drink; (Bendix); The Laird o' Cockpen (Perry); The Sea Road (Haydn Wood); Musical Comedy Switch (arr. Hall); Good Friends (Heymann); The Pretty Creature (Lane Wilson); There is no death (O'Hara). 12.0, Midnight, Club Concert for Gatehead Listeners: Part I, Variety Music; Silver-toned Chimes of the Angelus; Doon the Watter; Two of Irish; You're tired; All in Favour; Bref; When your Hair has turned to Silver; Part II, Vocal Duets: Open up dem pearly Gates; Every time my Sweetie passes by; Little Sweetheart of the Mountains; Orchestra: Miracle Melodies; She was poor but she was honest; Zululand; Would you take me back again? 1.0 a.m. (Thursday), Accordion Solos: Javanette; Volante March; Bertina Waltz; Songs: (a) I'm in the Market for you, (b) Just like in a Story Book; The Waltz that made you mine; Senorita; Lullaby of the Leaves. 1.30, Popular Songs: I'm so used to you; Leave the Rest to Nature; Ma Curly-headed Babby; Trios: (a) Old-time Jigs and Reels, (b) Turkey in the Straw; Kiss by Kiss; If I have to go on without you; Indian Love Call. 2.0, Dance Music: Puttin' on the Ritz; I don't wanna go home; When I passed the old Church Door; With you; Lady Louisiana Moon; Rolling along; Meet me in my Dreams tonight; Get Happy; When it's Sleepy Time down South; Three little Times; Kisses in the Dark; A Faded Summer Love; Home; Desert Lover. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259 metres; 17 kW.; CASSEL, 1,220 kc/s, 245.9 metres; and TRIER, 1,157 kc/s, 259.3 metres.—5.25 p.m., Talk: The Beauty and Power of the German Language. 5.10, Topical Talk. 5.15, Time, Programme Announcements, Weather and Exchange. 6.30, A German Almanac. 6.45, See Stuttgart. 8.15, The Eifel, a Peasant Land of Western Germany—Radio Report by Paul Laven. 9.15, Time, News, Weather and Sports Notes. 9.45, See Munich. 11.0 (approx.), Close Down.

FREDESKTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GHAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 265.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—3.30 p.m. (from Flensburg), Concert of Austrian and Hungarian Music: Rakoczy Overture (Keler-Béla); Waltz, Winterstürme (Fueki); Ungarisches Erntefest (Dohnanyi); Ungarische Kinderszene (Dohnanyi); Dorfbilder aus Ungarn (Dohnanyi); Polka-Mazurka, Es gibt ja keine Männer mehr (Müllacker); Music for Strings and Harp (Komzak); (a) Ueberseelig, (b) Liechen träumt; Waltz, Wiener Praterleben (Translatour); Gallop, Grossstädtisch (Ziehler). 4.30 (from Kiel), Talk: The Months of the Year in Folklore and Popular Beliefs. 4.55, Variety Programme. 5.50, Frankfurt Exchange and Hamburg Market Prices. 6.0, Talk on Commercial Policy. 6.25, Weather Report. 6.30, Hanns Heinz Ewers reads from his own works, with Introductory Talk. 7.0, Max von Schillings Concert. Soloist, Jan Gesterkamp (Violin); Talk by Max von Schillings; Prelude to the Second Act of Ingwilde; Symphonic Fantasia, Sea Morning; Recitation, Das Hexenlied; Erntefest, from Moloch; Andante from the Violin Concerto; Suite from Mona Lisa. 8.45, Topical Talk. 9.0, Time and News. 9.20, Concert, relayed from the Alsterpavillon. 10.15, Dance Music, relayed from the Astoria, Bremen.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.; and Danzig, 453.2 metres.—12.5 p.m., Popular Music on Gramophone Records. In the interval at 12.20, News. 1.30, Programme, arranged by the Post Office, with Gramophone Records. 2.0, Agricultural Prices and Exchange Rates. 2.20, Talk for the Housewife. 2.30, Programme for Children. 3.0, Talk: Country Schools and Wireless Broadcasts. 3.30, Concert by the Königsberg Opera House Orchestra, conducted by Erich Börschel. Overture, Nebuchadnezzar (Verdi); The Mid-day Witch (Dvorák); Selection from Der Evangelist (Kieuz);

Norwegian Rhapsody (Svendsen); Overture, Abu Hassan (Weber); Selection from The Circus Princess (Kálmán); Waltz, Künstlerleben (Joh. Strauss). 4.45, Talk: Young People, Vocations and Sport. 5.15, Agricultural Prices. 5.25, Haydn Concert by a Boys' Choir. 6.0, Bridge Lesson. 6.25, Weather and News. 6.30, Dance Music by the Small Station Orchestra, conducted by Eugen Wileken. 8.15, See Frankfurt. 9.15, Weather, News and Sports Notes. 9.25, Concert by the Small Station Orchestra, conducted by Eugen Wileken. Overture, Fatinitza (Suppé); Strauss, Potpourri (Schlagel); Overture, Prinz und Mauerer (Ochlschlegel); Waltz, Im Reiche der Venus (Grisehed); Selection from The Merry Peasant (Fall); March, Potpourri, Lustiges Soldatenleben (Kochmann); Völkerfrühlung (Blankenburg); March (Blankenburg). 11.0 (approx.), Close Down.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Workers' Radio Society (V.A.R.A.).—11.40 a.m., Concert by De Notenkrakers Orchestra, conducted by D. Wins. Ins blauen Leben (Erwin); In lauschiger Nacht (Ziehler); Only a Smile (Zamenhof); Melody (Lodge); Serenade (Amadei); The Tyrol in Song and Dance (Fétras). 12.10 p.m., Organ Recital by J. Jong. Bridal Chorus from Lohengrin (Wagner); Consordino (Fellam); Bridal Procession of the Marionettes (Ratke); The Song of Songs (Moya). 12.25, Orchestral Concert (cont'd.). Le toupet (Gillet); Czardas from Ritter Pasman (Strauss); Rosita (Dupont); Magyar Dalok (Lehár); Two Russian Dances (Bortkiewicz). 12.50, Organ Recital (cont'd.). Mir gefällt jede Frau (Suppé-Gros); Fleurette (Nicholls); Wenn wieder Frühling ist (Abraham). 1.5, Orchestral Concert (cont'd.). Einzug der Rosenkönigin (Riodel); Veilchen (Rust); Es war herrlich, Lieblich (Grothe); Spiel mir auf der Balalaika (Kaper); Schöne Isabella aus Castilien (Boetz). 1.25, Interval. 1.40, Programme for Women. 2.40, Programme for Children. 5.10, Concert by the Small V.A.R.A. Orchestra, conducted by P. Duhan. March (Schogtemeyer); Schmetterlingtänze (Schmalstieg); Over the Waves (Rosas-Pachernegg); Das Blumenmädchen (Siede); In the Mystic Land of Egypt (Kotelbey); Gramophone Records: Greenland Suite (Juel-Fredrikson); With Love and Violin (Armandoli); Offenbachiana (Conradi). 6.10, Talk. 6.40, Organ and Song Recital by J. Jong and A. de Booy. Somewhere a Voice is calling (Tate); Der Spielmann (Wilszynski); Gebet des Landmannes (Granier); Es war einmal ein Baby (Kaper); Fahrt ins Blaue (Postal). 7.10, Talk. 7.25, Talk by F. v. d. Walke. 7.40, Election Talk. 7.55, Instrumental Concert of Polish Music. 8.50, News. 9.0, Concert by the V.A.R.A. Orchestra, conducted by H. de Groot. Selection from The Italian Girl in Algiers (Rossini); Suite algérienne (Saint-Saëns); Caprice italien (Tchaikovsky). 9.50, Vocal and Orchestral Concert. Conductor: E. Swerkoff. Soloists: Ira Gardini (Soprano), Ada Mares (Mezzo-Soprano), Willy Ikenon (Tenor), and L. Schindler (Bass). Selection from The Merry Widow (Lehár); Es führt kein and'rer Weg zur Seligkeit (Ferner-Heymann); Arias from: (a) Cavalleria rusticana (Mascagni), (b) The Magic Flute (Mozart); Cavatina from The Barber of Seville (Rossini); Waltz, Tales from the Vienna Woods (Joh. Strauss); Schwarze Katharina; Maskenball im Gänsesattl (May-Schwabach); Selection from The Merry Wives of Windsor (Nicolai); Irgendwo auf der Welt (Heymann); Waltz, Frühlingsstimmen (Joh. Strauss). 10.40, Variety Programme. 10.45, Concert by the V.A.R.A. Orchestra, conducted by de Groot. Dem Frühling entgegen (Blankenburg); Selection from La mazzette (Audran); Selection from The Golden Cross (Brüll); In a Japanese Garden (Higazi); Jungle Drums (Kotelbey); Erinnerung an Bitolia (Karastoyanov); Bubis Traum (Karke); L'Internationale (de Geyster). 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.55 a.m. till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 11.55, 1812 Overture (Tchaikovsky) on Gramophone Records by the Philadelphia Symphony Orchestra, conducted by Stokowski. 12.10 p.m., Music by the Van der Horst Trio. 12.55, Organ Solos. 1.40, Time Signal. 1.41, Gardening Talk. 2.25, Programme to be announced. 2.40, Time Signal. 2.41, Religious Address. In the interval at 2.55, Time Signal. 3.10, Recital by Annie Hermes (Contralto). G. Beths (Violin), and P. Halsema (Pianoforte); Ciacoua for Violin (Vital); Contralto Solos (Bach): (a) Erwürgtes Lamm, (b) Mein Jesu, was für Seelenweh, (c) Selig, war ein Jesum denkst, (d) So gehst du nun mein Jesu hin; Sonata for Violin, Op. 8 (Grieg); Gramophone Record: Seberzo from A Midsummer Night's Dream (Mendelssohn); by the San Francisco Symphony Orchestra, conducted by Alfred Hertz; Contralto Solos (Wolf): (a) Herr was trägt dein Boden hier, (b)

Seufzer, (c) Fussesreise, (d) Nimmersatte Liebe; Violin Solos: (a) Mazurka (Chopin-Kreisler), (b) Sicilienne (Paradise-Dushkin), (c) Chanson à border et a dansor (Artok-Dushkin), (d) Minute (Ravel-Dushkin); Contralto Solos: (a) Berceuse (Hens-Báton), (b) Le Secret (Fauré), (c) Automne (Fauré), (d) Aurore (Fauré). 4.40, Time Signal. 4.41, Programme for Children. 5.40, Time Signal. 5.41, Talk: Our Watchwords in the Struggle against Bolshevism—Religion, Family Life and Authority. 6.10, Talk on the Industrial Crisis. 6.40, Programme arranged by the Department of Buildings and Roads. In the interval at 7.10, Policy Notes. 7.40, Time Signal. 7.41, Concert by the N.C.R.V. Orchestra, conducted by Piet v. d. Hurk and the Utrecht Double Quartet: Ach, Herr, lass dein lieb Engelein, from the St. John Passion (Bach); O Lamm Gottes (Deuts.); The Utrecht Double Quartet: (a) Der Herr ist mein Hirt (Klein), (b) Jesus, meine Zuversicht (Crüger); Himmelsruh (Hellwig); Nach der Heimat (Nägeli); Herr, unser Gott (Schmabel); Praise Jehovah (Palmer); The Utrecht Double Quartet and Orchestra: (a) Die Ehre Gottes in der Natur (Beethoven), (b) Das ist der Tag des Herrn (Kreutzer); Chorus from Samson (Händel). 8.25, Programme arranged by the Department of Buildings and Roads. 8.40, Talk. 9.10, Concert (cont'd.). The Utrecht Double Quartet: (a) Abendständchen (Schubert), (b) Mein Heimatlied (Franz Wagner); Caprice on a German Theme (Becker); Song Potpourri (Scholtens); Overture, Raymond (Thomas); Selection from Aida (Verdi). 9.40 (in the interval), Press Review. 10.25, Popular Music on Gramophone Records. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,202 kc/s, 249.6 metres; 0.8 kW.—7.20 p.m., English Lesson. 7.30, Radio Concert. 8.0, Weather and News. 8.15, Concert. 11.0 to 12 Midnight, Programme in English by the I.B.C., H. K. Hitchcock announcing. 12 Midnight (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—6.0 p.m., Educational Talk. 6.15, Announcements and Popular Music on Gramophone Records. 6.30, See Warsaw. 9.40, Dance Music. 10.0, Answers to Correspondence in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Orchestral Concert: March, Gruss an Münster (Lange); Overture, Maritima (Wallace); Waltz, Träume auf dem Ozean (Gungl); Selection from La Favorita (Donizetti); Japanese Suite No. 2. In the Kingdom of the Sun (Yoshitomo); Slav Rhapsody No. 2 (Friedemann); Potpourri of Themes by Joh. Strauss; Millböcker and Suppé (Ziehler). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Economic Notes and Time. 2.50, Programme to be announced. 3.20, Reading. 3.40, Talk: Handicrafts in West Germany. 4.0, Concert. Kläre Hansen (Soprano), Elsie Schmitz (Soprano), Hans Wocke (Baritone), Wilhelm Strienz (Bass), Walter Schneiderhan (Violin), and Karl Delseit (Pianoforte). 5.20, Reading. 5.45, Weather, Time, Economic Notes, and Sports Results. 6.0, Talk: Cathedrals in the Upper Rhine District—Constance, Reichenau, and Basle. 6.20, Health Talk. 6.35, Talk: Causality and Freedom. 6.55, News. 7.0, Gramophone Concert: Adolf Busch and Rudolf Serkin; Sonata in G for Violin and Pianoforte (Bach); Elisabeth Schumann (Soprano): (a) Wiegenlied (Flies), (b) Warnung (Flies); Wilhelm Kempff (Pianoforte): (a) Bagatelle in C, Op. 33 (Beethoven), (b) Ecosaissees (Beethoven); Heinrich Rehkemper (Baritone): (a) Das Rosenband (Schubert), (b) Der Museusohnd (Schubert); Walter Rehberg (Pianoforte): First Movement from the Fantasia, Op. 17 (Schumann); Adolf Busch and Rudolf Serkin; Sonata in G, Op. 78, for Violin and Pianoforte (Brahms). 8.0, Mozart Concert by the Station Orchestra, conducted by Buschkötter; Soloists: Hans Belz (Pianoforte); Serenade in D; Pianoforte Concerto in A; The Jupiter Symphony in C. 9.20, News and Sports Notes. 9.30, Report on the World Championships in Billiards, relayed from the Gürzenich, Cologne (on Gramophone Records). 9.45, See Munich. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW. and Dresden 941 kc/s, 319 metres.—3.0 p.m., Programme for Young People: A Radio Play and a Concert. 4.50, Exchange Quotations, Weather and Time. 5.10, Review of Books.

5.35, Italian Lesson. 5.55, Programme to be announced. 6.5, Talk: The Destruction and Re-formation of Capital. 6.30, Popular Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer, and the Leipzig Soloists Choir. 7.45, Topical Talk, followed by News. 8.5, The Zwinger at Dresden—A Literary and Musical Sequence (Dr. Herbert Roth), with a Talk: The History of the Zwinger. 9.20, News, followed by Gramophone Concert of Verdi's Opera Music. 10.30 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—5.0 to 5.30 p.m., Programme in English by the I.B.C. International Broadcasting Club Concert. Orchestra: Waltz, Roses from the South (Strauss); Quintet, I know of Two Bright Eyes; Song, Il Bacio (Arditi); Quintet, Alumbblatt. Orchestra: Waltz, Wine, Woman and Song (Strauss); Quintet, Lies; Song, The Blue Danube (Strauss); Quintet, Romance. 6.0, Russian Lesson. 6.30, Literary Programme. 7.0, Gregor Rihar Concert. 8.15, Quintet Concert. 9.15, Time and News.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., Radio Gazette for Lyons and the South-East. 7.30, Concert of Opera Music by the Symphony Orchestra and Soloists. After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAO); 9,860 kc/s, 30.43 metres; 20 kW.—Spanish-American Programme. Items to be Announced.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, and Request Gramophone Records. 8.25, News Bulletin and Political Review. 8.30 to 9.30, Interval. 9.30, Chimes, Time Signal, Political Review, and Dramatic Programme. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—4.10 p.m., See Brno. 5.5, Agricultural Talk. 5.40, Light Music on Gramophone Records. 5.15, Talk for Workers. 5.25, Concert by a School Boys' Choir. 6.0, See Prague. 8.0, Talk on Journalism. 9.0, See Prague. 9.15 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—12.15 p.m., Opera Music by the Cast of the Scala, Milan, on Gramophone Records. 1.0, Time, Weather, Announcements, News, and Exchange. 1.20, Programme arranged by the Post Office, with Gramophone Records. 2.10, Reading for Young People. 2.25, Talk: Reminiscences of an Airman. 2.50, Weather and Agricultural Notes. 3.0, Programme for Children. 4.0, See Langenberg. 5.15 (from Nürnberg), Talk: Springtime in German Poetry. 5.35, Talk for Women. 5.55, Time, Weather, and Agricultural Notes. 6.5, Song Recital by Margot Leandor (Soprano) and Emanuel Gianna (Baritone): Songs from Goethe's Wilhelm Meister's Apprenticeship; Mignon's Songs: (a) Kennst du das Land, (b) Hebe mich nicht reden, (c) Nur wer die Sehnsucht kennt, (d) So lasst mich; The Harper's Songs: (a) Wer sich der Einsamkeit ergibt, (b) An die Türen will ich schleichen, (c) Wer nie sein Brot mit Tränen ass, 6.25, Talk: Nietzsche and the German Spirit. 6.55, Summer is Coming—A Variety Programme by the Small Station Orchestra and the Klemens Rapp Band. 8.30, Concert of Chamber Music by the Munich String Quartet; Soloist, Felix Saupé (Violin); Pianoforte Quintet in One Movement on a Silesian Folk Song (Kurt Schubert); Quartet in C Minor, Op. 60 (Brahms). 9.20, Time, Weather, News, and Sports Notes. 9.45, Serenade, conducted by Erich Kloss. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.15 p.m., Gramophone Concert: Music by Kotelbey, Lehár, Lasseret, Liszt, Donizetti, and Tchaikovsky. 5.0, French Lesson. 5.30, Talk for Boys' Easter. 6.0, Announcement, Weather and News. 6.30, Talk on Psychological Analysis. 7.0, Time Signal. 7.2, Concert by the Station Orchestra, conducted by Hugo Kramm: Overture, Arnide (Glinka); Concert Piece in F Minor, Op. 79, for Pianoforte and Orchestra (Weber); Andantino from the Fourth Symphony (Tchaikovsky); Suite (Saint-Saëns); In an Old Monastery Garden

APRIL 5th **WEDNESDAY** continued

ments. 9.40, Welchen Brief hätten Sie?—Radio Story (Hans Franck), arranged and recited by Edith Herrstadt-Oettingen. 10.10, Serenade from Munich. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

MIDI, 779 kc s, 385 metres; 8 kW.—6.30 p.m., Operetta Music: Songs from La Fille de Madame Angot (Lecocq), Muzette Nitouche (Hervé), and Véronique (Messager). 6.45, Bal Musette. 7.0, Arias from Opera: Prayer from Werther (Massenet); Sicilienne from Cavalleria rusticana (Mascagni); Mimi's Entry from La Bohème (Puccini). 7.15, Viennese Music. 7.45, Music Hall Programme. 8.15, Military Music. 8.30, Instrumental Solos. 8.45, Popular Songs. 9.0, Accordion Solos. 9.15, North African News. 9.30, Concert for Listeners in Morocco. 10.0, Orchestral Music: Selection from H Guarany (Gomez); Selection from La Princesse jaune (Saint-Saëns); Selection from Gwendoline (Chabrier); Ronde villageoise (Chabrier). 10.30 to 11.0, Programme in English by the I.R.C. W. Brown-Constable announcing: "A Young Ago": Song of Happiness; The Linger that you linger in Virginia; The Queen was in the Parlour; O Donna Clara; I'm happy when I'm hiking; Moonlight on the Colorado; You will remember Vienna; The Love Waltz. 10.57, I.R.C. Good-night Melody. 11.0, Weather and Announcements. 11.5, Operetta Music. 11.15, Military Music. 11.30 (approx.), Close Down.

TRIESTE

1,211 kc s, 247.7 metres; 10 kW.—6.50 p.m., Concert by the Caffè Dante Orchestra, followed by Programme from Trieste.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc s, 331.5 metres; Genoa, 959 kc s, 312.8 metres; and Florence, 959 kc s, 500.8 metres.—4.0 to 5.0 p.m., Song Recital. 5.35, Giornale Radio, Agricultural Report and Dopolavoro. 6.0, Time and Gramophone Records. 6.20, Giornale Radio. 6.45, Tourist Talk and Gramophone Records. 7.0, Announcements, Giornale Radio and Weather. 7.15, Medical Talk. 7.30, Comedy in Three Acts, followed by Orchestral Music. 10.0, Giornale Radio. 10.5 (Florence only), Dance Music from the Chez moi Rajola. 10.30 (approx.), Close Down.

VATICAN CITY

15,150 kc/s, 19.94 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in Spanish. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

581 kc s, 517 metres; 15 kW. Relayed by Graz, 852 kc s, 352.1 metres; Innsbruck, 1,058 kc s, 283 metres; Klagenfurt, 662 kc s, 452.2 metres; Linz, 1,220 kc s, 245.9 metres; and Salzburg, 1,377 kc s, 218.5 metres.—5.50 p.m., Norwegian Programme: Talk on Norway; Talk by Werner Weren-kjöld, the Consul General, Norwegian Folk songs sung by Gunnar Graund. 6.30, Time, Weather and Programme Announcements. 6.40, Orchestral Concert of Popular Music. 7.45, Gallsche Höner—Radio Play (d'Hautenville and Ludwig von Wolf). 9.3, News and Weather. 9.15, Talk on the Austrian Musical Festival. 9.25, Dance Music relayed from the Café Palmhof.

WARSAW

212.5 kc s, 1,411 metres; 120 kW.—10.57 a.m., Faufare from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.20 p.m., Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.30, Boy Scouts' Report. 2.35, Programme for Children. 3.0, Popular Music on Gramophone Records. 3.20, Talk on History. 3.40, Talk: Sport on Economical Lines. 4.0, Talk for Music Teachers. 4.30, Announcements. 4.40, Talk on Social Works. 4.55, Programme Announcements. 5.0, Biological Talk. 5.20, News. 5.25, Dance Music and Light Music relayed from the Café Italia. 6.0, Miscellaneous Items. 6.20, Agricultural Bulletin. 6.30, Literary Talk. 6.45, Radio Journal. 7.0, Talk. 7.15, Orchestral Concert by the Amateur Association for Old Music, relayed from the Conservatoire. Soloists: Lidia Baraban-Opieńska (Songs) and B. Kon (Pianoforte). Conductor: M. Mierzejewski. Introductory Talk; Symphony in D (Dankowsky); Two Songs (Kamieniski); Symphony in D (Eighteenth Century); Soprano Solos from (a) L'Escluse (Lully), (b) Les Fêtes d'Hebé (Rameau); Concerto in G No. 2, for Pianoforte (Haydn). In the interval: Sports Notes and Radio Journal. 9.0, Topical Talk. 9.15, Dance Music on Gramophone Records. 9.35, Talk in Esperanto, relayed from Cracow, 959 kc s (312.8 metres). 9.55, Aviation Weather Report and Police Notes. 10.0, Dance Music, relayed from the Café Gastronomica.

ZURICH.—See Schweizerischer Landessender.

Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last-minute News Flash. 4.20, Smith Ballou and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, College Inn Orchestra, from New York. 5.30, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

PRAGUE

614 kc s, 488.6 metres; 120 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by Otakar Párik. Soloist: Walter Süsskind (Pianoforte). Concerto for Pianoforte and Orchestra (Mastalerk); Symphonie Poem, Op. 107; Russalka (Dvorák). 4.0, Medical Talk. 4.10, See Brno. 5.5, Agricultural Report. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Talk for Workers. 6.0, Chimes. 6.10, Military Band Concert. 7.10, Talk: Present Day Economic Problems. 7.25, Talk on the following Transmission. 7.35, The Pianoforte Sonatas of Jiri Benda. Recital by Jan Herman. Sonata in A Minor: Andante quasi allegretto, and Tempo di minuetto from the Sonata in F; Allegretto giocoso from the Sonata in D; Allegretto and Minuetto from the Sonata in F; Allegro non troppo, Andantino and Allegro from the Sonata in E Flat. 8.0, Time Signal. 8.1, See Brno. 9.0, Time Signal. 9.1, News Bulletin. 9.15, Talk in French on Foreign Affairs. 9.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc s, 403 metres, 25 kW.; **LAUSANNE**, 442 kc s, 680 metres; and **GENEVA**, 395 kc s, 760 metres.—6.0 p.m. (from Geneva), Weather, News, and Announcements. 6.30 (from Lausanne), Agricultural Talk. 7.10, Rachmaninov Pianoforte Recital. 7.45, Concert by an Accordion Band, relayed from Neuchâtel. 8.15 (from Lausanne), Instrumental and Choral Concert. 9.0, News and Weather. 9.10, Dance Music, relayed from the Bel-Air Métropole. 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

680 kc s, 441 metres; 50 kW. Relayed by Naples, 941 kc s, 319 metres; and **ORO**, 11,810 kc s, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30, Giornale Radio and Announcements. 11.30, Weather and Variety Music on Gramophone Records. 12 Noon, Time and Announcements. 12.10 p.m., Orchestral Concert. In the interval at 12.30, Giornale Radio and Exchange. 1.15 to 3.45, No Transmission. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange, Report of the Royal Geographical Society and Giornale Radio. 4.30, Concert by Maria Luisa Sardo (Violin), Margherita De Acutis (Soprano) and Clara Sardo (Pianoforte); Violin Solos: (a) Slav Fantasia (Dvorák), (b) Fire Dance (Falla-Kochanski); Songs: (a) The Princess (Grieg), (b) Gretchen am Spinnrade (Schubert); Pianoforte Solo: L'Isle joyeuse (Debussy); Songs: (a) Assisa a piè d'un salice, from Otello (Rossini), (b) Das Veilchen (Mozart); Violin Solos: (a) Waltz, Hochstein (Brahms), (b) Guitare (Mozzkowsky). 5.15 to 6.0, Interval. 6.0 (from Naples), Shipping and Sports Notes. 6.10, Agricultural Report and Dopolavoro Notes. 6.20, Giornale Radio. 7.0, Time, Announcements and Gramophone Records. 7.15, Medical Talk. 7.30, Sports Notes and Tourist Report. 7.45, Relay from a Theatre. In the interval, News. 9.55, News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc s, 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on 31.48 metres and by **W2XAD** on 19.56 metres.—7.30 p.m., Westminster Choir from New York. 8.0, Two Seats in the Balcony from New York. 12 Midnight, Mischka Weisbord (Violinist) from New York. 12.15 a.m. (Thursday), Stock Reports. 12.30, Marion Williams (Soprano) and Roger Sweet (Tenor). 12.45 to 2.30, New York Relay. 12.45, The Goldbergs. 1.0, The Royal Vagabonds. 1.30, The Shadow, Mystery Drama. 2.0, General Tyre and Rubber Company Programme. 2.30, Supper Club Orchestra and Programme Resumé.

SCHWEIZERISCHER LANDESENDER

BERDMUNSTER, 653 kc s, 459 metres; 60 kW.; **BASLE**, 1,229 kc/s, 244.1 metres; and **BERNE**, 1,220 kc s, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Berne), Gramophone Records: Symphonie Poem, Mazeppa (Liszt). 11.55 (from Berne), Song Recital by Ciruso on Gramophone Records. 12.10 p.m. (from Berne), Selection from Cavalleria Rusticana—One-act Opera (Mascagni), on Gramophone Records. 12.35 p.m., Weather and Exchange. 12.45 to 2.30, Interval. 2.30 (from Basle),

Variety Music on Gramophone Records. 3.30 (from Basle), Programme for Children. 4.0 (from Basle), Light Music on Gramophone Records. 4.30, Weather and News. 5.30 (from Basle), Talk: The Influence of the Alps on the Weather Conditions in Switzerland. 6.0, Time, Weather, and Market Prices. 6.15 (from Basle), Talk: Voice as an Indication of Character. 6.45 (from Basle), Arias from Cantatas for Passion Week and Easter by Hans Jürgen Walter. 7.35 (from Basle), Heroic Flight—Radio Play (Robert Walter). 8.30, Weather and News. 8.40 (from Basle), Gramophone Concert of Popular Music. 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc s, 436 metres; 55 kW. Relayed by Boden, 244 kc s, 1,229.5 metres; Göteborg, 932 kc s, 322 metres; Hörby, 1,166 kc s, 257 metres; Motala, 221.5 kc s, 1,354.4 metres; Östersund, 389 kc s, 770 metres; and Sundsvall, 554 kc s, 542 metres.—4.5 p.m., Translation of a Student's German Exercise, relayed from Malmö (1,301 kc s, 231 metres). 4.15, Folk Music. 4.35, Popular Music on Gramophone Records. 5.30, From the Bird World: Reading and Talk. 6.15, Weather and News. 6.30, Talk, relayed from Malmö. 7.0, Concert by the Music Society of the Northern Museum: Canzona for Two Organs (Kerll); Brandenburg Concerto No. 6 in B Flat (Bach); Two Hymns (Roman); Concerto Gross No. 2 in F for Violin, Cello, String Ensemble and Organ (Händel). 7.50, Reading. 8.15, Cello Recital by Arnold Fildesly, relayed from Malmö: Sonata in G (Brevda); Fantastic Variations (Czajkowski-Telesco); Etude, Op. 25 (Chopin); Pièce en forme de Habanera (Ravel); Zapateado (Sarasate-Fildesly). 8.45, Weather and News. 9.0, Dance Music by the Enders Orchestra, relayed from the Bern Hall. 10.0 (approx.), Close Down.

STRASBOURG

869 kc s, 345 metres; 11.5 kW.—10.30 a.m., Classical Music on Gramophone Records. 11.45, News. 12 Noon, Time and Exchange. 12.5 p.m., Gramophone Concert: Intermezzo from Cavalleria rusticana (Mascagni); Thou art from The Tales of Hoffmann (Offenbach); Aria from Ma non (Massenet); Song of the Flea (Mussorgsky); Aria from The Fair Maid of Perth (Bizet); Mirror Scene from Thaïs (Massenet); Two Arias from Lakmé (Delibes); Selection from I Pagliacci (Leoncavallo); Arias from Boris Godunov (Mussorgsky); (a) Boris' Goodbye, (b) The Death of Boris; Prologue to The Twilight of the Gods (Wagner). 1.0 to 4.0, Interval. 4.0, Orchestral Concert, conducted by Roskann: Marche joyeuse (Grieg); Slow Waltz, Fleur d'Alsace (Christl); Overture, Große Fiedra (Lecocq); Song of the Bees (Filipucci); Selection from The Tales of Hoffmann (Offenbach); Mattinata (Leoncavallo); Tanga (Albeniz); Selection from The Gipsy Baron (Joh. Strauss); Prelude, La Violinista (Marcecu); March, King Colton (Souza). 5.0, Trio Concert relayed from Lille, 1,130 kc s (265.4 metres). 6.0, Talk on Sociology. 6.15, Talk on Handwork. 6.30, Time and News. 6.45, Extracts from The Merry Widow—Operetta (Lehar), on Gramophone Records. 7.20, Lottery Results. 7.30, Concert by the Municipal Orchestra, and the Conservatoire Choir, relayed from the Palais des Fêtes. Conductor: Fritz Munch. Soloist: Gaspard Cassato (Cello). Overture, Manfred (Schumann); Concerto for Cello and Orchestra (Schubert); Les cris du monde, for Choir, Soloists and Orchestra (Honegger). 9.30, Jazz Music, relayed from the Savoy. 11.0 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc s, 360.5 metres; 60 kW.; and **Freiburg**, 527 kc s, 570 metres.—12.30 p.m., Opera Music (Furtwängler conducting) on Gramophone Records. 1.0, Programme arranged by the Post Office, with Gramophone Records. 2.30, Programme for Children. 3.30, Pianoforte Recital by Paul Schotte. 4.0, See Langenberg. 5.0, Time, Weather, and Agricultural Notes. 5.10, Talk: The Motorist goes Rambling—some Practical Hints for Walking Tours. 5.35, Talk: The State Schemes for Providing Work. 6.0, Time Signal and News Bulletin, followed by Gramophone Music. 6.25 (from Mannheim), Programme in Palatine Dialect. 6.45, Concert by the Philharmonic Orchestra, conducted by Gustav Gähle; Soloist, Willy Döngel-Fasshaender (Baritone); Overture, The Merry Wives of Windsor (Nicolaï); Aria from Figaro (Mozart); Minuet from the Symphony in G (Leopold Mozart); Aria from Hans Helling (Marcelmeyer); Prelude to Aida (Verdi); Aria from A Masked Ball (Verdi); Overture, Post and Peasant (Suppé); Two Folk Songs: (a) Die alten Strassen nach (Redl), (b) Alle Tage ist kein Sonntag (Clewinger); March, Deutschlands Ruhm (Schroder). 8.15, See Frankfurt. 9.15, Time, News, Weather, and Programme Announce-

(Humm): Bergensiana (Halvorsen); Egyptian Suite (Haydn Wood); Four Pieces (Hjelleme). 8.30, Agricultural Report. 8.40, Weather and News. 9.0, Topical Talk. 9.15, Talk. 9.45, Dance Music. 11.0 (approx.), Close Down.

ÖSTERSUND.—See Stockholm.

PALERMO

658 kc s, 537.6 metres; 3 kW.—7.0 p.m., Dopolavoro Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 7.20, Light Music on Gramophone Records. 7.30 (in an interval), Time Signal and Announcements. 7.45, Orchestral Concert of Variety Music. Soloists: R. Alfano (Harp) and Ettore Padalino (Cello); Invitation to the Waltz (Weber); Harp Solo: Fantasia (Thomas); Intermezzo from I quattro Rusteghi (Wolf-Ferrari); Sonata for Cello and Pianoforte (Donato); Harp Solos: (a) Prelude Hasselmanns, (b) Minuet in G (Rameau); Mattinata sull'Appennino (Vaccari); Cello Solos: (a) Aria (Porpora), (b) Capriccio (Piaatti), (c) Tarantella (Cocce); Olaf's Dance (Piek-Mangiagalli). In the interval, Talk. After the concert, Song Recital. 9.55, News Bulletin.

PARIS

EIFFEL TOWER (FLE), 207.5 kc s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Talk on the Theatre. 6.0, Le Journal Parlé. 6.45, Talk for Young People. 7.20, Weather Forecast. 7.30, Symphony Concert, conducted by M. Flament; Soloist, Albert Lévêque (Pianoforte); Largo (Händel-Guiraud); Concerto in D Minor for Pianoforte and Strings (Bach); Symphony in E Flat (Mozart). In the interval at 8.15, News Bulletin. 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc s, 328.2 metres; 60 kW. 6.0 p.m., Light Music on Gramophone Records. 7.0, Talk on Social Insurance. 7.15, Interval. 7.30, Sponsored Concert. 8.0, Interval. 8.15, Concert. 9.20, Dance Music, relayed from the Lido. 10.0, News.

PARIS

RADIO-PARIS (CFR), 174 kc s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 6.45, Gramophone Records: Selection from La Vie Parisienne (Offenbach-Chapelier); Selection from Le Petit Duc (Lecocq). 7.0, Press Review and Weather. 11.0, Educational Talk. 11.15, Operetta Music of Many Lands—Concert by the Radio Paris Orchestra. 11.30, Organ Recital by G. T. Desserre, relayed from the Gantouf Palace; Overture, Morning, Noon and Night (Suppé); Je vous en prie (Desserre); Selection from La Fille de Madame Angot (Lecocq); Kermesse (Siedel). 12 Noon, Exchange, News, and Weather. 12.5 p.m., Operetta Concert (cont'd.). In the intervals at 12.30, Exchange. 1.0, Exchange. 2.45, Exchange and Market Prices. 5.10, Agricultural Talk. 5.30, Exchange and Market Prices. 5.40, German Lesson. 6.0, Medical Talk. 6.20, Concert of Old Dances: Bouree in A Minor (Bach); Gavotte from Iphigenia in Aulis (Gluck); Passepied du jardinier (Lully); Gavotte (Lully); Rigodon from Dardanus (Rameau); Ochsenmüch (Haydn). 6.50, Commercial Prices and News. 7.0, Literary Talk: The Art of Letter Writing. 7.30, News and Weather. 7.40, Fashion Review by Mlle José. 7.45, Gramophone Concert: Pièces de clavecin en concert (Rameau); (a) La Timothe, (b) Tambourin; Cello Solos: (a) Larghetto (Händel), (b) Tambourin (Somis). 8.0, Concert by the Lamoureux Concert Society, conducted by Théodore Mathieu, relayed from the Salle Gaveau; Soloists: Jean Hazart (Songs) and Emma Boynet (Pianoforte); Les Préludes (Liszt); Songs (Fragli); Concerto in F (Gaubert), conducted by the Composer; Ballad for Pianoforte and Orchestra (Fauré); Selection from Scheherazade (Rimsky-Korsakov).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc s, 306 metres; 25 kW. Relayed by **W8XK** on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Badtime Promenade, from New York. 9.30, Weather Report. 9.32, Market Reports. 9.45, Blue Ridge Buddies. 9.57, David Lawrence Dispatch. 10.0, Jean and Gene. 10.15, Dick Darling, from New York. 10.30, The Singing Lady. 10.45, Little Orphan Annie, from New York. 11.0, Bootie Tarkington's Maude and Cousin Bill, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45 to 1.45 a.m. (Thursday), New York Relay. 11.45, To-day's News, by Lowell Thomas. 12 Midnight, Amos 'n' Andy. 12.15 a.m., The Southern Singers. 12.30, International Tidbits. 1.0, Euro Crime Club. 1.30, Time Signal and Harriett Lee and her Leaders. 1.45, Programme to be announced. 2.0, Adventures of Sherlock Holmes, from New York. 2.30, Woodbury Programme, with Morton Downey and Donald Novis, from New York. 3.0, Programme to be announced. 3.15, Around the Cracker Barrel. 3.30, Music Magic, from New York. 4.0,

ALGIERS

824 kc/s, 364 metres; 13 kW.—7.10 p.m., Shipping Notes. 7.15, Agricultural Report and Weather Forecast. 7.20, Talk: Curiosities and Recreations. 7.35, Dance Music. 7.55, News. 8.0, Time Signal. 8.2, Radio Pay (Fleischman). 8.45, News Bulletin. 8.50, Request Gramophone Concert. 9.40, News Bulletin. 9.45, Music by an Argentine Orchestra. 9.55, News. 10.0, Concert of Oriental Music. 11.0 (approx.), Close Down.

ATHLONE

725 kc/s, 413 metres; 60 kW.; and CORK, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time, Weather, Stock Report, and Popular Music on Gramophone Records. 6.0, Variety Music on Gramophone Records. 6.15, Programme for Children. 7.0, Popular Music on Gramophone Records. 7.10, Dublin Cattle Market Report. 7.20, News. 7.30, Time Signal. 7.31, French Lesson. 7.45, Literary and Dramatic Programme. 8.0, Recital on Two Pianos by the Misses A. and Rhona Clarke. 8.30, Violin Duets by the Misses M. and U. Kenny. 9.0, Songs by T. Dawson. 9.15, Station Orchestra. 9.35, Cello Solos by Miss A. L. Carey. 9.50, Concert by the Station Orchestra. 10.30, Time, News, Weather Report, and Close Down.

BARCELONA

RADIO BARCELONA, Call EAJ1, 860 kc/s, 341.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Request Gramophone Concert. 7.30, Exchange Quotations and Educational Talk in Catalan. 8.0, Light Music on Gramophone Records and News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations, and Market Prices. 9.5, Concert by the Station Orchestra: March, Soldaditos en parada (Lluneta); Selection from Bruniselda (Morera); Pavane (Ravel); Gavotte and Musette (d'Ambrosio); Castilla (Albéniz); Invitation to the Waltz (Weber). 10.0, Dramatic Programme: Part I, En cuarto creciente Faerie in One Act (Manuel Linares Rivas); Part II, Entre riscos—Monologue in Verse (Marina de Castarlenas); Part III, La Senorita se aburre—Comedy in One Act (Benavente). 11.0 (in an interval), News Bulletin. 12 Midnight (approx.), Close Down.

BARI

1,112 kc/s, 269.8 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Talk, and Dopolavoro Announcements. 7.20, Giornale Radio and Weather Forecast. 7.30, Time Signal and Announcements. 7.35 (approx.), Military Band Concert, conducted by Salvatore Rubino. In the interval, Art Notes. 9.30, Popular Music on Gramophone Records. 9.55, News Bulletin.

BASEL.—See Schweizerischer Landessender.

BELGRADE

697 kc/s, 430.4 metres; 2.8 kW.—5.25 p.m., Time Signal and Programme Announcements. 5.30, Dialogue in French. 6.0, Concert by the Station Orchestra. 7.0, Choral Concert from Ljubljana. 9.0, News, followed by Cigany Music relayed from the Potrosacka Zadruga.

BERLIN

KONIGS WUSTERHAUSEN, 1,835 kc/s, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert from Berlin (Witzleben). 2.0, Programme for Children. 2.30, Weather and Exchange. 2.45, Reading: Die Gesellschaft im Keller (E. T. A. Hoffmann). 3.0, Talk for Women: The Palm Sunday Confirmation of Children. 3.30, See Berlin (Witzleben). 4.10, Talk: Nietzsche and the Prussian State. 4.30, Violin and Piano Recital by Willy Kirch and Oskar Wolf: Sonata in A, Op. 12, No. 2 (Beethoven); Violin Sonata in D, Op. 137, No. 1 (Schubert). 5.0, Dialogue: The Relations between Germany and Italy. 5.30, Five Songs for Contralto, Op. 15 (Otto Frickehofer): (a) Lebenslauf, (b) Die Götter, (c) Empedokles, (d) Abhütte, (e) An die Parzen. 5.55, Weather and Announcements. 6.0, Dialogue: Must we speak Academic German? 6.30, A Poem. 6.35, Agricultural Talk. 7.0, Concert of Popular Music by the Bastian Orchestra: Waltz, Mein Lebenslauf ist Lieb und Lust (Jos. Strauss); Overture, Morning, Noon and Night (Suppé); An den Frühling (Grieg); Anbetung (Schmalstich); Selection from Der Obersteiger (Zeller). 7.40, Reading: Der deutsche Mythos (Alfred Rosenberg). 8.20, Concert of Chamber Music. 9.20, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Programme from Langenberg. 11.0 (approx.), Close Down.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—6.0 p.m., Typical Talk. 6.10, Talk: German Idealism throughout the Ages. 6.35, Gerhard Menzel talks about himself and his Radio Play. The Cathedral. 6.45, Johann Strauss Concert by the Station Orchestra, conducted by Bruno Seidler-Winkler. Overture, Waldmeister; Russian March Fantasia; Waltz, Freut Euch des Lebens; Asen-Polka; Diplomat-Polka; Romance for Cello and Orchestra; Waltz, Rathausballtanz; Klipp-Klapp-Galopp from Waldmeister. 7.35, Announcement. 7.40, The Cathedral—Radio Picture (Gerhard Menzel). 9.0, Weather, News and Sports Notes. 9.15

THURSDAY
APRIL THE SIXTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL A village production of "Macbeth," L. du G. Peach. "Songs from the Shows," feature programme by John Watt.

LONDON REGIONAL Scots variety programme.

MIDLAND REGIONAL Military Band programme.

NORTH REGIONAL Choral and orchestral concert by children.

SCOTTISH REGIONAL Scots variety programme.

BELFAST "In Lighter Vein," orchestral concert.

ABROAD

BRUSSELS (No. 2) 8 p.m. The Radio Orchestra and the Choir of Notre Dame Médiatrice.

BUDAPEST 6.30 p.m. Ballet: "Fanny Elssler" (Nador and Farago), and opera: "The Violin Maker of Cremona" (Hubay).

COPENHAGEN HAMBURG 7 p.m. Opera: "William Tell" (Rossini).

8 p.m. Symphony concert, conducted by Prof. Hermann.

HILVERSUM 7.55 p.m. Concert from Amsterdam, conducted by Dr. W. Mengelberg.

7.25 p.m. Bach's St. Matthew Passion, from Haarlem.

9.20 p.m. Serenade and dance music.

7.45 p.m. Symphony concert, conducted by V. Gut.

9 p.m. Orchestral concert of Russian music.

8 p.m. Opera: "Mignon" (Thomas), from the Scala, Milan.

BRNO

878 kc/s, 342 metres; 35 kW.—3.10 p.m., Concert by the Station Orchestra, conducted by J. Janota: Overture, Corsair, Op. 21 (Berlioz); Scherzo-Caprice, Op. 5 (Nedbal); Invitation to the Waltz (Weber); Italian Caprice (Tchaikovsky). 4.10, News for Young People. 4.20, Programme for Children. 4.50, Students' Report. 5.0, Literary Review. 5.15, See Prague. 5.25, German Transmission: News, Talk, and Readings for Children. 6.0, See Prague. 6.25, Folk Music. 6.55 till Close Down, See Prague. 10.0 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—11.0 a.m., Variety Music on Gramophone Records. 12 Noon, Le Journal Parlé. 12.10 p.m., Concert by the Little Station Orchestra, conducted by Leemann: March (Heymann); Ballet égyptien (Luigini); Doll Dance (Turina); Selection from Lilac Time (Schubert-Berté); Humoresque for Violin (Wigy); Melodies from a Sound Film (Heymann). 4.0, Schubert Concert by the Symphony Orchestra, conducted by Kumpfs: The Unfinished Symphony; Military March No. 2. 4.30, Programme for Children. 5.0, Talk: Women and the Co-operative Movement. 5.15, Light Music on Gramophone Records. 5.30, Concert by the Little Station Orchestra, conducted by P. Leemann. 6.15, Report for Workers. 6.30, Le Journal Parlé. 7.0, Concert by the Radio Orchestra, conducted by C. Walpot: The Cadets' March (Souza); Waltz, Ange d'amour (Waldteufel); Overture, Martha (Flotow); Songs: Selection from Miss Decima (Andran); Vocal Quartet, Lying in the Hay (Mireille, arr. Brenders). 7.45, Talk: Co-operative Propaganda. 8.0, Concert by the Symphony Orchestra, conducted by J. Kumpfs: Canadian Fantasia (Hilson); Two Pieces (de Greef): (a) Menuetti est non cœur, (b) Le duc d'Albe. 8.20, Interlude by the Montmartre Group Le Grillon. 8.40, Concert (contd.): Divertissement on Brabançon Airs (Delcroix); Extracts from Scenes de Ballet (Glazunov). 9.0, Le Journal Parlé. 9.10, Old and New Dances—Gramophone Concert; Part I, Old and Modern Dances; Waltz, Sobre las Olas (Rosas); Old-Fashioned Dances; Waltz, Donauwellen (Ivanovic); Juhn (Costoncelli); Flamenco Pasodoble, Gallito (Lopez); Part II: Modern Music: Prelude à l'après-midi d'un Faune (Debussy); Aux étoiles (Dupare); Scherzo from the Irish Symphony (Hamilton Hart); Selection from Le Festin de l'araignée (Roussel). 10.0 (approx.), Close Down.

BRUSSELS (No. 2)

I.N.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish. 11.0 a.m., Concert by the Small Station Orchestra, conducted by P. Leemann. Soloists: F. Wigy (Violin) and A. Goethals (Songs). 12 Noon, Journal Parlé. 12.10 p.m., Gramophone Con-

cert: Overture, Le jeune Henri (Mehul); Selection from Lilac Time (Schubert); Réve d'enfant (Ysaye); Ballet égyptien (Luigini); Berceuse, from Jocelyn (Godard); Solenn Melody (Wallford Davies); Hungarian March (Berlioz). 4.0, Concert by the Radio Orchestra, conducted by Charles Walpot: K.V. 3.0. strijldel (Meulemans); Overture, Gwendoline (Chabrier); Julex, from Mors et Vita (Gounod); Carnival Suite (Thomé); Overture, Poet and Peasant (Suppé). 4.45, Programme for Children. 5.20, Heer, bind mij vast—Radio Play (Stat Weyt). 6.15, Talk. 6.30, Talk for Women. 7.0, Concert by the Symphony Orchestra, and the Choir of Notre Dame Médiatrice: Overture, Charlotte Corday (Benoit); Concerto for Trumpet and Orchestra; Danse macabre (Saint-Saëns); Choral Music (Clemens): (a) Ave Maria, for Mixed Choir, (b) Mère de Dieu, for Women's Choir, (c) Hodie Christus natus est, for Mixed Choir, (d) O quam suavis est, for Women's Choir, (e) Klapt in de handen, for Mixed Choir. 7.45, Talk on House Plants. 8.0, Concert by the Radio Orchestra and the Choir of Notre Dame Médiatrice. Orchestra: (a) Overture, The Italian Girl in Algiers (Rossini), (b) A Journey by Zeppelin (Müncke); Choral Music (Clemens): (a) Waltz met mirt en palmen, for Mixed Choir, (b) O memorabile, for Mixed Choir, (c) O. L. Vrouw ter Schaduw, for Women's Choir, (d) Kriskantate; Orchestra: Caprice italien (Tchaikovsky). 8.55, Evening Prayer. 9.0, Journal Parlé. 9.10, Variety Music on Gramophone Records. 10.0 (approx.), Close Down.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—3.0 p.m., Light Music and Romanian Music by the Dinco Orchestra. In the interval at 5.0, Radio Journal. 4.30, Talk: Romanian Philosophy. 4.50, Talk on Art. 5.30, Relay from the Opera House. In the intervals, Radio Journal.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW.—Also relayed on 840 metres from 6.25 to 11.0 p.m. 4.30 p.m., Talk. 5.0, Orchestral Concert of Light Music. 6.0, Talk. 6.30, Fanny Elssler—Ballet (Nador and Farago), followed by The Violin Maker of Cremona—Opera in Two Acts (Hubay), relayed from the Royal Opera House. After the Opera, Cigany Music from the Emke Café. 10.15, Jazz Music from the New York Café.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and Kalundborg, 260 kc/s, 1,153 metres; 7.5 kW.—11.0 a.m., Town Hall Chimes. 11.1 to 12.0 p.m., Concert from the Hotel d'Angleterre. 2.0, Reading. 2.20, Concert, from the Wixen Restaurant. 4.0, Programme for Boys. 4.40, Exchange and Market Prices. 4.50, Talk on Hygiene. 5.20, English Lesson. 5.50, Weather and News. 6.15, Time Signal. 6.16, Talk: Christianity in Scandinavia. 6.45, Talk on the following Transmission. 7.0, William Tell—Opera (Rossini), relayed from the Od-fellows' Hall. Conductor, Maestro Egiro Tango. Soloists: Luigi Børgonovo, Antonio Bagnariol, Emanuel List, Viorica Tangu, Ingeborg Steffenson, and Thyge Thygesen. 9.15, News Bulletin. 9.30, Reading. 9.40, Dance Music from the National Scala. In the interval at 11.0, Town Hall Chimes.

CORK.—See Athlone.

CRACOW

950 kc/s, 312.8 metres; 1.5 kW.—6.0 p.m., Answers to Correspondents. 6.15, Miscellaneous Items and Announcements. 6.30 to 8.30, See Warsaw. 8.30, Dramatic Programme, relayed from Katowice (734 kc/s, 408 metres). 10.0, Concert of Light Music and Dance Music, relayed from the Pavilion Restaurant. 11.0, Fanfare from Notre Dame.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., Variety Music on Gramophone Records. 11.30, News. 11.45, Programme for Children. 5.0 to 6.0 p.m., Programme in English by the I.B.C. C. Danvers Walker. B. McNabb and E. Lamping announcing. 5.0, Concert for Working Listeners: Special Request Programme: Try a little Tenderness; The Voice in the old village Choir; Let's put out the Lights; Good-night, Vienna; How deep is the Ocean?; Marta. 5.20, Concert for Brighton Listeners: Music by a Tango Orchestra: Te finiste ja ja; Adios Argentina; La Paloma; Thrill me; Tesoro mio; Mama Inez. 5.40, Concert for Home Listeners: Popular Songs—Sleepy Valley; The Clock is playing; S'posin'; She's such a Comfort to me; The Cuckoo Waltz; I'm a Dreamer. 6.0, Radio Gazette. 6.20, News and Light Music on Gramophone Records. 6.40, Answers to Correspondence and News. 7.20 to 9.30, Programme relayed from the Town Hall, Rouen. 7.30, Gardening Talk and Literary Review. 7.45, Symphony Concert. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0, Light Music: Say I Isn't So; Wanderer; How'm I doin'?; Let's all sing like the Birdies sing; The old Man of the Mountains; Try a Little Tenderness; Let's put out the Lights; When the Morning rolls around; Let's all Dance the Polka; We will always be Sweethearts; Hummity to Myself; What would you Do?; How ar-

APRIL 6th

THURSDAY

continued

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 20 kW.—11.30 p.m., Programme relayed from Madrid (Union Radio). In the interval, Radio Chronicle. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAQ7, 707 kc/s, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations and Programme for Children. 8.15, News Bulletin and Political Review. 8.30 to 9.0, Interval. 9.0, Linguaphone English Lesson. 9.30, Chimes, Time Signal, Political Review and Band Concert, relayed from the Hotel National. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—3.10 p.m., See Brno. 4.50, Light Music on Gramophone Records. 5.0, Talk: The Olympic Games in Antiquity. 5.15, See Prague. 5.30, German Transmission: Talk on the Abolition of Slavery. 6.0, See Prague. 6.25, Concert by the Station Orchestra. 6.55 till Close Down, See Prague. 10.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 80 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nurnberg, 1,256 kc/s, 239 metres.—2.50 p.m., Weather and Agricultural Notes. 3.0, Concert of Old Chamber Music by the Raba String Quartet and Soloists. 3.35, Talk: The Painter Joseph Stieler. 4.0, Concert by the Pforzheim Symphony Orchestra, conducted by Julius Schröder. Soloist: Erwin Pohl (Trumpet); Overture, If I were King (Adam); Selection from La Traviata (Verdi); Concertino for Trumpet (Gräfe); Emperor Waltz (Joh. Strauss); Selection from Faust (Gounod); March, Der Strassenjunge (J. Bernsdorf). 5.15, Talk: Travelling in the Malay Archipelago. 5.35, Agricultural Talk. 5.55, Time, Weather and Agricultural Notes. 6.5, Talk: Heinrich von Kleist. 6.25, Concert by a Schrammel Trio with Song Refrains. 6.50, (from Nurnberg), Concert by a Nazi Storm Troops Band; Conductor: Anton Lohenhofer; March (First); Festival Overture (Leutner); March and Chorus from The Magic Flute (Mozart); Potpourri of Patriotic Songs (Kreisel); Prince Eugene March (Lippe); March, Heil Franken (Feist). 7.55, Robert Guiskard—Short Play (Kleist). 8.45, Sonata in C Op. 1, for Pianoforte (Brahms), by Walter Lampe. 9.20, Time, Weather, News and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredrikstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.15 p.m., Cello and Clarinet Recital by Leif Holbuoke and Jan Berge; Melody (Palmgren); Gavotte (Lully); Old Melodies (Stindig); Dedication (Popper). 5.0, German Lesson. 5.30, Studio Service. 6.0, Announcements, Weather and News. 6.30, Trio Concert of Popular Music and Dances. 7.0, Time Signal. 7.2, Agricultural Talk. 7.30, Concert relayed from Trondheim, 665 kc/s (495.8 metres). 8.0, A Sketch. 8.40, Weather and News. 9.0, Topical Talk. 9.15 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—7.0 p.m., Dopplavoro Announcements, Agricultural Report and Giornale Radio. 7.20, Light Music on Gramophone Records. 7.30 (in an interval), Time Signal and Announcements. 7.45, Operetta Music: Selection from: (a) Les Saltimbanques (Ganne), (b) Countess Maritza (Kálmán), (c) La Vergine rossa (Cusina), (d) Duchessa del Bal Tabarin (Lombardo). In the interval at 8.30, Se tu non ami—Comedy in One Act (P. Ricca). 9.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 207.5 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Talk on the Theatre. 6.0, Le Journal Parlé. 7.20, Weather Forecast. 7.30, Gramophone Concert. Part I: Massenet Programme: Extracts from (a) Thais, and (b) Le Jongleur de Notre Dame; Part II: Variety Music: Potpourri of Popular Hungarian Songs (Göcsey); Melody from the Prodigal Son (Wormser); The Parade of the Tin Soldiers (Jessel); Hungarian Foxtrot, Vinka (Coste); Hatschi-Hatschi (May); Tales from the Vienna Woods (Joh. Strauss); Noctambula (Ziehrer); Mi chambre séparée (Heuberger); Memories of Juan-les-Pins (Carrara); Tango, Carmosa (Pesents); Souvenir de Ronen; Rallye Ardennes. 9.0 (approx.), Close Down.

KAUNAS

155 kc/s, 1,935 metres; 7 kW.—7.20 p.m., Popular Programme. 7.40, Sports Notes. 7.50, Talk in Esperanto: Life in Lithuania. 8.10, Concert. 9.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW; and Helsinki, 815 kc/s, 368.1 metres.—5.15 p.m., Concert by a Students' Choir, conducted by Professor Heikki Klemetti and Martti Turunen. 7.45, News in Finnish. 8.0, News in Swedish.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Orchestral Concert, conducted by Kühn. In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Economic Notes and Time Signal. 2.50, Programme for Children. 3.15, Review of New English Books. 3.35, Talk on Contemporary Authors. 4.0, Concert of German Chamber Music, with Introductory Talk. 5.20, French Conversation. 5.45, Weather, Time, Economic Notes and Sports Results. 6.0, Talk: Colonies of Rare Animals in Germany. 6.20, Talk: The Exhibition Woman in Berlin. 6.30, Talk: The Purchasing Power of the Employer and Unemployment. 6.56, News. 7.0, The World on Gramophone Records—Grünzig. 7.35, Reading of Modern Austrian Literature. 8.0, Concert of Westphalian Folk Music by Two Choirs and a Peasant Orchestra. Soloist: Paul Schröder (Songs to the Lute) 9.0, News and Sports Notes. 9.20, Serenade and Dance Music, conducted by Eysoldt. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW; and Dresden, 541 kc/s, 519 metres.—12.15 p.m., Classical Music on Gramophone Records, followed by Exchange Quotations. 1.0 p.m., Film Review. 1.30, Talk for the Unemployed. 2.0, A Fairy Story for Children. 2.35, Economic Notes. 3.0, Orchestral Concert, conducted by Theodor Blumer; Soloist: Willy Schmidt (Tenor); Overture, Die Opernpolke (Lortzing); Selection from The Jewels of the Madonna (Wolf-Ferrari); Songs: (a) Willkommen, du Gottes Sonne (Curschmann), (b) Erscheine noch einmal (Curschmann), (c) Auf dem Meere Franz, (d) Die blauen Frühlingsaugen (Franz); Two Pieces from Sonntag auf dem Lande (Gade): (a) Waldesamkeit, (b) Humoresken; Waltz from Bocaccio (Suppé); Songs: (a) Ich denke dein (Weber), (b) Bach, Echo und Kuss (Weber), (c) Der Maikäfer, Op. 64, No. 1 (Loewe); Herz mach auf die Tür, from Der lustige Krieg (Joh. Strauss); Glühend erliche ich dich hier, from Cagliostro aus Wien (Joh. Strauss); Waltz from Mädchen aus Alt Wien (Ziehrer). 4.30 to 4.35, Weather and Time. 4.50, Economic Notes. 5.15, Taxation Notes. 5.30, Spanish Lesson. 5.50, Programme to be announced. 6.0, Wind Instrument Concert, conducted by Ernst Roth; Potpourri, Kriegerleben (Zwieker); Xylophone Solo, Herzklöpfenpolka (Riedel); An der Schlei (Kiesler); Unsere Grenadiere (Blankenburg); Potpourri, Flott, heiter (Wippert). 7.0, The Black Galley—Radio Play (after Wilhelm Raabe's Story, arr. Henrik Herse). 8.10, News. 8.20, Fritz Thiel Concert by the Leipzig Symphony Orchestra, conducted by the Composer; Soloists: Hans Dünschede (Violin) and Georg Winkler (Organ); Prelude; Violin Concerto in D; Moderne Lustspiel-Ouverture. 9.20, News. 9.30 (approx.), Orchestral Concert, conducted by Hilmar Weber; Prelude to Die Abreise (d'Albert); Kamevalminiatüren (von Kaskel); Waltz, Moonlight on the Alster (Petras); Selection from Jadwiga (Bellinger); March (1813), Das getanzte Festmahl (Schettler). 10.30 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Talk on Economics. 6.30, The Letter Box. 7.0, Choral Concert, relayed from Trbovlje. 9.0, Time, News and Light Music.

LWOW

788 kc/s, 381 metres; 16 kW.—6.30 p.m., See Warsaw. 7.0, Concert by the Conservatoire Quartet. 7.45, Concert from Warsaw. 9.35, New York and Old Vienna—Pianoforte Recital by Jasza Berenzon. 9.55, See Warsaw. 10.0, Dance Music from the Bagatela Variety Theatre. 11.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., Radio Gazette for Lyons and the South-East. 7.30, Dramatic Programme: Amours—Play (Paul Nivoix). After the Programme, News Bulletin.

interval at 12.20, Announcements. 1.30, Exchange. 2.0, Agricultural Prices and Exchange. 2.30, Programme for Young People. 3.0, Reading of Letters from Goethe's Mother to Bettina von Arnim. 3.30, Concert by the Small Station Orchestra, conducted by Eugen Willeken. 4.45, Talk: Experiences of a German Engineer in Turkey and Persia. 5.15, Agricultural Prices. 5.25, Agricultural Talk. 5.50 (from Danzig), Song and Flute Recital by Friedrich Leopold and Kurt Schlegler: Two Old Songs to the Lute: (a) Feinsilbchen, (b) Von der edlen Musik; East Prussian Dialect Songs for Children: (a) Oedobro, mitt Noime, (b) Schlopp, ein Kinde lunge; Introduction and Variations on ihr Blümlein alle from the Müllerlieder, Op. 160, for Flute and Pianoforte (Schubert); Songs to the Lute: (a) Rosel, wenn du meine wärst, (b) Swedish Fisher Dance. 6.30, English Lesson. 7.0, Spring—A Radio Potpourri, by the Station Choir, the Small Station Orchestra and Soloists. 8.40, Gerhard Eschenhagen reads from his Book, Entscheidung. 9.10, Weather and News.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—11.41 a.m., Concert by the Wireless Orchestra, conducted by Nio Treep; Overture, Mignon (Thomas); Ein Schubert Abend in Alt-Wien (Rafl); Serenade (Brazz); Spring Song (Gounod); Kazak (Bullerian); Szunka (Bullerian); Waltz, Telegramme (Joh. Strauss); Capricieuse (Gillet); Gavotte (Gossec); Selection from Martha (Flotow); Melody (Kálmán); Schöne lachende Frauen (Lehár); Melody (Dauber); Selection from Schön ist die Welt (Lehár). In the intervals, Light Music on Gramophone Records. 1.55 to 2.10, Interval. 2.10, Concert (contd.): Robert Stolz Potpourri (Dostal); Frühlingskinder (Blankenburg). 2.40, Programme for Women. 3.25, Light Music on Gramophone Records. 3.40, Programme for Hospitals. 4.10, Pianoforte Recital by Cobi Rijnke. 4.40, Programme for Children. 5.10, Concert of Light Music by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte. 6.10, Sports Talk. 6.40, An Electoral Address. 7.10, English Lesson. 7.40, Time Signal. 7.45, News Bulletin. 7.45, Popular Music on Gramophone Records. 7.55, Concert by the Concertgebouw Orchestra, conducted by the Concertgebouw, Amsterdam. Conductor: Dr. Willem Mengelberg; Suite in D (Bach); Cantata, Non sa che sia dolore (Bach); Symphony, No. 4 (Mahler). 10.10, Variety Music on Gramophone Records. 10.40, News Bulletin. 10.50, Concert of Light Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—11.40 a.m. to 1.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 11.40, Police Announcements. 11.55, Orchestral Concert: Rakoczy March (Liszt); Overture, An printemps de la vie (Monton); Suite, Walzerflut (Fétras); Two Icelandic Melodies (Svendson); Selection from Rose Marie (Friml); Gramophone Records; Overture, Le Roi l'a dit (Delibes); Selection from Die Meistersinger von Berlin (Lincke); Promenade de plage (Zeilbeck); Selection from Casanova (Strauss). 1.40 till Close Down, Programme of the Christian Radio Society (N.C.R.V.). 1.40, Lesson in Handicrafts. 2.40, Talk for Women. 3.10, Interval. 3.40, Bible Reading, Songs and Organ Solo. 4.40, Harmonium Recital by P. W. Emmelot; Prelude and Fugue in E (Bach); Choral (Bach); Andante molto, Andante, Allegro moderato and Largamente from Heures mystiques (Boillmann); Gramophone Records; Offertoire in E. C. Franck; Fugue in A Flat (Bach); Prelude in B Minor (Bach); Choral Herzlich tut mich verlangen (Bach). 5.25, Talk, Handwork for Young People. 5.55, Talk. 6.25, Dressmaking Lesson. 6.40, Talk. 7.10, Police Announcements. 7.25, The St. Matthew Passion—Oratorio (Bach), relayed from Haarlem. In the interval, News. 10.40, Popular Music on Gramophone Records. 11.10 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,202 kc/s, 249.6 metres; 0.8 kW.—7.30 p.m., Concert. 8.0, Weather, Racing Results and News. 8.15, Radio Concert. 10.0, Tourist Talk in German. 11.0 to 12 midnight, Programme in English by the I.B.C. 12 midnight (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.0 p.m., Sports Talk. 6.15, Announcements and Popular Music on Gramophone Records. 6.25, Boy Scouts' Report. 6.30, See Warsaw. 8.30, The Burgomaster's Daughter—Radio Play (Morcinek). 9.20, See Warsaw. 9.35, Dance Music. 10.0, Dance Music from the Café Monopol.

Yon? Night shall be Filled with Music. 11.0, Tchaikovsky Concert: Chant sans paroles in A Minor; Andante cantabile from the Quartet in D; Hungarian Dance from The Swan Lake; Violin Solo: The Lark; Trio: Chant sans paroles; Waltz from The Sleeping Beauty; Third Movement from the Pianoforte Concerto in B Flat Minor; Valse des fleurs. 11.30, Vocal Concert: My Ain Folk; Silver Threads among the Gold; Three Fishers went sailing; Quartet: Molly on the Shore; On the Banks of Allan Water; Love's Old Sweet Song; Caller Herrin'; Quartet: Cherry Ripe. 12 Midnight, Club Concert for Seaham Harbour and Neighbouring Towns. Part I: Variety Music: The Golden Bird; Dreamy Southern Nest; Peter Perkins at the Races; Old Dutch Home; Daddy's Boy; Here Comes Emily Brown. Part II: Vocal Duets: When I wore my Daddy's Brown Derby; Pasadena Rose; Liza Lee; Orchestral Interlude: Rhapsody Party; When the Rest of the Crowd goes Home; Hawaiian Stars are Gleaming; My Baby just cares for Me. 1.0 a.m. (Friday), Organ Recital: Stein Song (Vallée); The Kiss Waltz (Dubin); It happened in Monterey (Wayne); Rhapsody in Blue (Gershwin); Ah! Sweet Mystery of Life (Herbert); Moonlight reminds me of You (Kahn); Roses of Yesterday (Berlin). 1.30, Songs and Pianoforte Duets: Songs: (a) The first Week-end in June (Ellis), (b) I'm in the Market for You (Hanley), (c) Sweet Temptation (Young); Pianoforte Duet: Bow Bells (Sullivan); Songs: (a) I fell for You (Walker), (b) Just like in a Story Book (Hanley), (c) Who Cares? (Huckworth); Pianoforte Duet: Air from The Cat and the Fiddle (Kern). 2.0, Variety Music. Two Little Blue Little Eyes; That's When I learned to Love You; I Love You, Believe Me, I Love You; Gipsy Dream Rose; My Heart belongs to the Girl who belongs to Somebody Else; The Moon is Low; Beside an Open Fireplace; Kitty from Kansas City; Reuniscing; My Cigarette Lady; I still Remember; It must be You; Mary I Love You; If I had a Girl like You. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; and Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—4.0 p.m., Beethoven Concert by the Darmstadt Municipal Academy of Music, relayed from Darmstadt; Soloist: Elsie Gohr (Pianoforte); Overture, Egmont; Pianoforte Concerto No. 1 in C, Op. 15. 5.15, Economic Quotations. 5.25, Talk by Hans Rosband; Max Reger. 5.50, Talk: Advertising as an Aid to Industrial Revival. 6.15, Time, Programme Announcements, Weather, and Exchange. 6.30, Hans Heyck discusses his own Works. 6.45, Talk: The Observance of Sundays and Holidays in Prussia. 7.0, See Stuttgart. 8.0, Max Reger Memorial Concert, relayed from the Friedenskirche; Helmut Walcha (Organ) and Ely Schaefer-Ratazzi (Soprano); Organ Sonata in D Minor, Op. 60; Sacred Songs, Op. 137: (a) Dein Wille, Herr, geschehe, (b) Bistt um einen seligen Tod, (c) O Jesu Christ, wir warten dein; Fantasia on the Choral, Wachtet auf, ruft uns die Stimme. 9.0, Time, News, Weather, and Sports Notes.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENDA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m. (from Hanover), Health Talk. 6.25, Weather Report. 6.30 (from Bremen), Song and Pianoforte Recital by Andreas Boehm and Reinhold Krug; Caro mio ben (Giordano); Ultima Canzone (Tosti); Madrigal (Simonetti); Nocturne (Sgambati); Don Carlos' Monologue and Aria from The Force for Destiny (Verdi); Aria from André Chénier (Giordano); Drinking Song from Hamlet (Thomas). 7.0, Variety Programme for Choir and Orchestra. 8.0, Symphony Concert, conducted by Prof. Havemann. 9.0, Time and News. 9.20, Topical Talk. 9.30, Orchestral Concert, relayed from the Kaiser Café, Altona: Homage March from Sigurd Jorsalfar (Grieg); Overture, Nebuchadnezzar (Verdi); Melody from Lohengrin (Wagner); March, Semper Talis (Knoeh); Comedy Overture (Bohm); Hochzeit-zug des Maharadscha (Stork); Spanish Waltz, La Serenade (Metra); Victoria-Marsch (v. Blon); Vilja's Song from The Merry Widow (Lehár); Potpourri. Lassst den Kopf nicht hängen (Lincke); March (Rumohr).

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.; and Danzig, 453.2 metres.—12.5 p.m., Gramophone Concert of Variety Music. In an

PARIS

POSTE PARISIEN, 914 kc/s, 328.2 metres; 60 kW.—6.0 p.m., Programme for Children. 6.30, Popular Music on Gramophone Records. 7.0, Agricultural Talk. 7.15, Interval. 7.30, Le Prof d'anglais—Comedy in Three Acts (Regis Gignoux). 9.30, News.

PARIS

RADIO PARIS (C.F.R.), 174 kc/s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 6.30, Weather and Physical Culture. 6.45, Norwegian Dances (Grieg) on Gramophone Records. 7.0, Press Review and Weather. 7.10, Protestant Address. 11.30, Orchestral Concert: Jeux d'enfants (Bizet); En voyage (Gabriel Marie); Orchestral Suite, Le Roi Pansole (Honegger); Intermezzo from Arsene Lupin Baupier (Lattes); Lover come back to me from New Moon (Romberg); Selection from Trois jeunes filles nues (Mozart); Entr'acte from Passionnément (Messager); Selection from Oh Kay (Gershwin). In the intervals at 12 Noon, Exchange, News, and Weather, and at 12.30 p.m., Exchange. 1.0, Exchange. 2.45, Exchange and Market Prices. 4.45, Agricultural Report. 5.0, Protestant Sermon by the Reverend Marc Bougnier, relayed from the Reformed Church. 5.30, Market Prices. 6.0, Dialogue: Literature and the Theatre. 6.20, Orchestral Concert: Suite Miniature (Copland); Hommage à Rameau (Debussy); March from Sigurd Jorsalfar (Grieg). 6.45, German Press Review. 7.0, Love—Comedy (Kistemaker). In the interval at 7.30, News and Weather. At 7.40, Review by Bonnard. 8.15, Press Review and News. 9.0, Gramophone Concert: The Whistler and his Dog (Pryor); Piece, A la pâtisseries du coin (Chapier); Le Cancion del Olvido (Serrano); Consultation Scene from Le Médecin malgré lui (Molière); La vengeance du vain vert (Bétove); Cradle Song (Zimmermann); Piece, the Flight of the Bumble Bee (Rimsky-Korsakov); La ronde des lutins (Bazzini); Les arènes de lutte (Bontemps); Polka, The Doll (Wacek); Humorous Sketch, Gens à la queue, Cupid on the Cake.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 980 kc/s, 306 metres; 25 kW. Relay by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, Ballroom Promenade. 9.30, Weather Report. 9.32, Market Reports. 9.45, Blue Ridge Buddies. 9.57, David Lawrence Dispatch. 10.0, Programme to be Announced. 10.15, Dick Daving, from New York. 10.30, Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Our Daily Food George Reator's Cooking School, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45, Today's News by Lowell Thomas, from New York. 12 Midnight, Pepsodent Amos 'n' Andy, from New York. 12.15 a.m. (Friday), Concert Footlights. 12.45, The Townsend Murder Mystery. 1.0 to 4.1, New York Relay. 1.0, Captain Diamond's Adventures. 1.30, Time Signal and Rin-Tin-Tin Thrillers. 1.45, Thurston, the Magician. 2.0, Death Valley Days. 2.30, Wayne King's Orchestra, with Lady Esther. 3.0, Carson Robinson's Pioneers. 3.15, Vic and Sade. 3.30, Homay Bailey and Orchestra. 3.45, Prof. McLallen, Sara and Sassafras. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News Flashes. 4.20, Bertha Schmid (Soprano). 4.30, Josef Lhevinne (Concert Pianist), from New York. 5.0, Smith Ballou and his Orchestra. 5.15, KDKA Artist Bulletin. 5.17, Time Signal and Good-night.

PORSGRUND.—See Oslo.

POZAN

397 kc/s, 335 metres; 1.9 kW.—6.28 a.m., Time Signal. 6.30, See Warsaw. 7.0, Mezzo-Soprano Song Recital. 7.30, Duet from The Bartered Bride (Smetana). 7.45, Weinen und Klagen Cantata (Bach). In the intervals, Theatre Guide and Announcements and Press Review from Warsaw. 8.30, Dramatic Programme from Katowice (733 kc/s, 408 metres). 9.15, Talk. 9.30, Time, Sports and Police Report. 9.45 (approx.). Close Down.

PRAGUE

114 kc/s, 488.6 metres; 120 kW.—3.10 p.m., See Brno. 4.10, Talk on Economics. 4.20, See Brno. 4.50, Variety Music on Gramophone Records. 5.5, Talk for Gardeners. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Review of New Books and Agricultural Report. 6.0, Chimes. 6.1, News. 6.10, English Lesson. 6.25, Concert by the Slav Vocal Octet. Russian Folk Songs and Songs by Gustav Fechar. 6.55, Talk on the following Transmission. 7.0, Marriage—Comedy in Three Acts (Gogol). Translation by B. Mathesius. In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.1, News Bulletin. 9.15, Organ Recital by Professor B. Wiedemann, relayed from the Beranek Cinema. Invitation to the Waltz (Weber); Two Melodies (Moszkovsky); Rustle of Spring (Sinding); Spring Song (Mendelssohn); Waltz, Frühlingstimmen (Joh. Strauss); Nocturne (Mendelssohn). 10.0 (approx.), Close Down.

APRIL 6th

THURSDAY

continued

RABAT

721.1 kc/s, 416 metres; 6 kW.—12.30 p.m., Concert. 2.0 to 2.30, Interval. 3.30, Talk for Children. 4.0, Light Music on Gramophone Records. 5.0 to 7.0, Interval. 7.0, Arab Programme: News and Gramophone Records. 7.45, Weather and News. 8.0, Concert: Overture. To the Story of the Lovely Melusina (Mendelssohn); Waltz (Widor); Scherzo (Mussorgsky-Salabert); Nedda's Ballad from I Pagliacci (Leoncavallo); Selection from The Bartered Bride (Smetana); Violin Solo: Grave (Friedemann Bach); Song (Debussy); Suite from Agnes Dame galante (Février-Mouton); La Procession (César Franck); Feuille d'Album (Chabrier-Garnett); Seville (Albeniz-Salabert); Les Saisons (Mascé); Danse macabre (Saint Saëns-Mouton). 10.0, Relay or Light Music on Gramophone Records.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; lausanno, 442 kc/s, 680 metres; and Geneva, 395 kc/s, 760 metres.—5.0 p.m. (from Geneva), Sports Talk. 5.20 (from Geneva), Esperanto Lesson. 5.35 (from Lausanne), Italian Lesson. 6.0 (from Lausanne), Weather, News and Announcements. 6.30 (from Lausanne), Theatre Notes. 7.0 to 9.0 (from Geneva), Bach Memorial Programme. 7.0, Pieces for Harpsichord and Viola: (a) Prelude and Fugue in B Minor, (b) Sonata in G Minor for Viola. 7.25, Introductory Talk to the following Concert. 7.40, Concert by the Jean Sebastian Bach Society and the Station Orchestra, relayed from the Conservatoire: Missa brevis in F; Cantata, Meine Seele ruhm und preist; Cantata, No. 208. 9.0, News and Weather. 9.15 (approx.). Close Down.

REYKJAVIK

250 kc/s, 1,200 metres; 21 kW.—8.30 p.m., Weather Report. 8.40, Musical Programme and Announcements. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Concert by the Station Quartet, followed by Arias and Popular Music on Gramophone Records.

RIGA

572 kc/s, 525 metres; 15 kW.—6.5 p.m., Viennese Concert. 7.0, News. 7.20, Concert of Latvian Songs by a Students' Choir, relayed from the University. 8.0, Weather and News. 8.15, Viennese Concert (contd.): Donauweibchen (Joh. Strauss); Waltz, Tales from the Vienna Woods (Joh. Strauss). 8.30, Popular Music. 9.30 (approx.). Close Down.

SALZBERG.—See Vienna.

ROME

680 kc/s, 441 metres; 50 kW. Relay by Naples, 941 kc/s, 319 metres, and 2R0, 11,810 kc/s, 25.4 metres.—6.45 a.m., Gymnastics. 7.15 to 7.30, Giornale radio and Announcements. 11.30, Weather and Popular Music on Gramophone Records. 12 Noon, Time and Announcements. 12.5 to 1.15 p.m., Orchestral Concert. In the interval at 12.30, Giornale radio and Exchange. 3.45, Children's Radio Review. 4.10, Announcements. 4.15, Exchange and Giornale radio. 4.30, Orchestral Concert: Selection from Alessandro Stradella (Flotow); Festa tziakana (Ricciardi); Selection from Mephistopheles (Boito); Fucchi fatini (Giordano); French Ronde (Boellmann); Eau courante (Mascenet); Melody (Cassal); Radio One-step (Fiorello). 5.15 to 5.45, Interval. 5.45 (from Naples), Shipping and Sports Notes. 5.55, Agricultural Report and Dopolavoro Notes. 6.15, Giornale radio. 6.30, Address. 7.0, Time and Announcements. 7.2, Reading. 7.15, Variety Music on Gramophone Records. 7.30, Sports Notes and Tourist Report. 7.45, Symphony Concert, conducted by Vittorio Gui. In the interval, Literary and Art Notes. 9.55, News.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 790 kc/s, 379.5 metres; 50 kW. Relay at intervals by W2AF on 31.48 metres, and by W2XAD on 19.56 metres.—12 Midnight, Southern Jubilee Quartet. 12.15 a.m. (Friday), Stock Reports. 12.30, Gold Medal Band. 12.35, Robert Rissling (Baritone). 12.45 till Close Down. New York Relay. 12.45, The Goldbergs. 1.0, Fleischmann Hour. 2.0, Capt. Henry's Show Boat. 3.0, Lucky Strike Dance Hour.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 40 kW.; Basle, 1,229 kc/s, 244.1 metres; and Berne, 1,220 kc/s, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Basle), Jazz Music and Sound Film Music on Gramophone Records. 12.35 p.m., Weather and Exchange. 12.45 to 2.30, Interval. 2.30 (from Berne), Talk for Housewives. 3.0 (from Berne), Light Music on Gramophone Records. 3.45 (from Berne), Literary Talk. 4.0 (from Berne), Cinema Organ Recital on Gramophone Records. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from Basle), Talk: Hiking and Hostels for

Young People. 6.0, Time, Weather, and Traffic Report. 6.15 (from Basle), Elementary Italian Lesson. 7.3 (from Zurich), Introductory Talk to the following Relay. 7.15 (from Zurich), Concert of Chamber Music, conducted by A. Schachtel; Soloists: Alice Frey (songs) and Richard Sturzenegger (Cello). 8.10 (approx.), In an interval, Weather and News. 9.0 (from Basle), Gramophone Concert of Old and New Popular Music. 9.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relay by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.5 p.m., Talk on Advent and Palm Sunday. 4.30, Programme for Children. 4.45, Popular Music on Gramophone Records. 5.45, Elementary English Lesson. 6.15, Weather and News. 6.30 (from Göteborg), Political Talk. 7.0, Concert by the Stockholm Students' Choral Society. Soloist: Martin Ohman. 8.25, Talk by Prince Carl. 8.45, Weather and News. 9.0, Orchestral Concert of Russian Music: Extracts from the Suite, Camerian Sketches (Ippolitov-Ivanov); Valse des fleurs (Tchaikovsky); Spanish Serenade (Glazunov); Prelude in C Sharp Minor (Rachmaninov); Potpourri of Russian Gipsy Melodies (Artemiev); Vocal Tango (Spoliansky); Waltz (Dukinsky); Overture, A Life for the Czar (Glinka). 10.0 (approx.), Close Down.

STRASBOURG

PTT, 869 kc/s, 345 metres; 11.5 kW.—10.30 a.m., Oscar Straus Memorial Concert on Gramophone Records. 11.0, Orchestral Concert, conducted by Maurice de Villers. Soloists: M. Roskam (Cello) and M. Caron (Oboe). Part I: Overture, Raymond (Thomas); Romance for Cello and Piano (Dunias); Orchestral Suite, Monsieur de Bourcenaque (Bastide); La Vamma (Bastide). 11.45, News. 12 Noon, Time and Exchange. 12.5 p.m., Orchestral Concert: Part I: Benjamin Godard Music: Legendary Symphony; Symphonic suite; Scottish Scenes for Oboe and Orchestra; Dance Suite. 1.0, Programme for Children. 2.0 to 3.15, Interval. 3.15, French Elocution Lesson. 3.30, Programme for Children, relayed from Bordeaux-Lafayette. 5.0, Talk in German: The Cause of France's Unity. 5.15, Talk in French for Women. 5.30, Orchestral Concert of Jazz Music, conducted by Roskam. 6.30, Time and News. 6.45, Variety Music on Gramophone Records. 7.20, Lottery Results. 7.30, Ronsard and Verlaine Programme, relayed from the Hector Berlioz Hall. Soloists: Gabrielle Gills (songs) and Jacques Copeau (Recitations). Part I: Ronsard Programme: Recitation of Sonnets and Lyrics; Songs (Poulenc): (a) Attributs, (b) Le tombeau, (c) A son page, Songs: (a) Chanson (Honegger), (b) Donx fut le trait (Caplet), (c) Ronsard à son âme (Rayel). Part II: Verlaine Programme: Melodies (Fauré): (a) Spleen, (b) En sourdine, (c) Prison, (d) Mandoline. Recitation: Sagesse; Songs (Debussy): (a) Clair de lune, (b) L'éclouement des haies, (c) Extase, (d) Mandoline Recitations. 9.30 (approx.), Close Down.

STUTTART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—2.30 p.m., Programme for Children. 4.0, (from Pforzheim), Concert by the Pforzheim Symphony Orchestra, conducted by Julius Schröder. Soloist: E. Pohl (Trumpet). Overture, Si j'étais Roi (Adam); Selection from La Traviata (Verdi); Concertino for Trumpet (Gréig); Selection from Faust (Gounod); March, Street Boy (Bernads). 5.0, Time, Weather and Agricultural Notes. 5.10, Talk: Old Palm Sunday Customs. 5.35, Talk: The Wanderings and Adventures of a Young Man from Ulm. 6.0, Time, News and Light Music on Gramophone Records. 6.30 (from Freiburg), Talk with Gramophone Records: With the Small Cruiser Cormoran in the South Seas. 7.0 (from Mannheim), Johann Strauss Concert by the Mannheim Philharmonic Orchestra, conducted by Rudolf Borivka; Overture, A Night in Venice; Selection from The Gipsy Baron; Blüthenlese—Potpourri of Strauss Waltzes; Emperor Waltz; Belirien-Walzer; Overture, Die Fledermäus. 8.0, See Langenberg. 9.20, Time, News, Weather and Programme Announcements. 9.40, Brahms Concert by Otto Seyfert (Pianoforte), Georg Beerwald (Violin) and Max Zimolong (French Horn); Four Ballads for Pianoforte: (a) No. 1 in D Minor, (b) No. 2 in D, (c) No. 3 in B Minor, (d) No. 4 in B; Trio in E Flat, Op. 49, for Pianoforte, Violin and French Horn. 10.30 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.30 p.m., Chansonnettes. 6.45, Accordion Music. 7.0, Orchestral Concert. 7.30, Opera Music: Selection from: (a) La Favorita (Donizetti), (b) Hamlet (Thomas),

(c) La Dame blanche (Boieldieu). 7.45, Military Music. 8.0, Extracts from Choulette—Opérette (Hahn). 8.30, Music by a Viennese Orchestra. 9.0, Variety Music. 9.15, North-African News. 9.30, Concert for Listeners in Morocco. In a Monastery Garden (Ketelbey); Song from L'Attente du Moulin (Bruneau); Seven Stars (Sakely); Air from Le Roi Dagobert (Roussan); Clair de lune; Je vous aime (Bonnet); Quand reffleurira le lilas blanc (Godelle). 10.0, Opérette Music. 10.15, Organ Solos. 10.30 to 11.0, Programme in English by the I.B.C.: W. Brown-Constable, announcing. 10.30, Hawaiian Music: My Waikiki Mermaid; Hawaiian skies are gleaming; La Paloma; Pasadena Rose; O sole Mio; Life; Maria Mari; Poor Kid. 10.57, I.B.C. Good night Melody. 11.0, News, Weather and Announcements. 11.5, Dance Music. 11.15, Tangos. 11.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—4.1 p.m. till Close Down. See Turin.

TRONDHEIM.—See Oslo.

TURIN

1,696 kc/s, 273.7 metres; 7 kW. Relay by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 593 kc/s, 500.8 metres.—4.10 p.m., Orchestral Concert. 5.0 to 5.35, Interval. 5.35, Giornale radio. Agricultural Report, and Dopolavoro Announcements. 6.0, Time and Giornale radio. 6.30, Religious Address. 7.0, Announcements, Giornale radio, Weather, and Gramophone Records. 8.0, Mignon—Opera in Four Acts (Thomas), relayed from the Scala, Milan. In the intervals, Talk, Literary Notes, and Giornale radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning) and 5,969 kc/s, 50.26 metres (Evening); 1 kW.—10.0 to 10.15 a.m., Religious Information in French. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relay by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—5.55 p.m., Talk: Seventy Years of the Vienna Music Academy. 6.20, Time, Weather and Programme Announcements. 6.30, Weekly Report. 6.55, Quartet Concert: Minuet (Lamelle); Gavotte (Brandt-Bnyts); Cadelise (Richter); Gavotte, Liebesgymnium (Kozak); Schallböi (Miller); Selection from Jabuka (Joh. Strauss); Polka, Heifer (Karl Kapeller); Viennese Song (Lebens); Gallop, Carrière (Jos. Strauss). 7.35, Talk: Three Years among the Canadian Eskimaux. 8.0, Wagner Concert by the Vienna Symphony Orchestra, conducted by Karl Auerer. Soloist: Albert Lohmann (Baritone); Overture, Tannhäuser; Monologue from The Flying Dutchman; Prelude to Tristan and Isolde; Wotan's Farewell; The Ride of the Valkyries and Fine Magic from The Valkyries; Prelude to The Mastersingers. 9.30, News. 9.45, Snow Report. 9.55, Dance Music from the Café Sacher.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—10.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Popular Music on Gramophone Records. 11.30, Weather Forecast. 11.35, Concert for Schools by the Warsaw Philharmonic Orchestra, conducted by C. Wilkomiński, the Haria Choir, and B. Rutkowski (Organ); Introductory Talk to M. Mayzner; Overture, Epithemia in G (Glück); Air (Bach); Gavotte from the Concerto grosso in D Minor (Händel); Ave verum (Mozart-Tchaikovsky); Organ Solos: (a) Passacaglia in G Minor (Muffat), (b) Choral (Bach), (c) Fugue in D Minor (Bach); Choir: (a) Song (Palestrina), (b) Sepulto Domino (Gorzyrsky), (c) Sacerdos from Missa brevis Pakiel. 1.0 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Light Music on Gramophone Records. 2.35, Talk: Mothercraft Schools. 2.50, Popular Music on Gramophone Records. 3.20, Intermediate French Lesson. 3.40, Talk: The Man in the Iron Mask. 4.0, Light Music on Gramophone Records. In the interval, Announcements. 4.40, Topical Talk. 4.55, Programme Announcements. 5.0, Talk on History. 5.20, News. 5.25, Light Music, relayed from the Café Adria. 6.0, Miscellaneous Items. 6.20, Agricultural Talk. 6.30, Reading. 6.45, Radio Journal. 7.0, Concert by the Station Orchestra, conducted by S. Nawot; Soloists: A. Stromberg (Clarinet) and L. Urstein (Pianoforte); March (Souza); Small Suite No. 1 (Micheli); Serenade (Grünfeld); Clarinet Solos: (a) Concert Piece (Nefzig), (b) Waltzes (Wiedemann); Opérette Potpourri (Kálmán); Clarinet Solos: (a) canzone (Stark), (b) Variations (Berr); Waltz intermezzo from Naïla (Delibes); Intermezzo, Bib et Bob (Denret); Mazurka (Naimy-Slowsky). In the interval, Sports Notes and Radio Journal. 8.30, Dramatic Programme, relayed from Katowice, 734 kc/s (408 metres). 9.15, Dance Music. 9.55, Aviation Weather Report and Police News. 10.0, Dance Music.

ZURICH.—See Schweizerischer Landessender.

FRIDAY

APRIL THE SEVENTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Three plays: "A Visitor from Down Under," from the short story by L. P. Hartley, "The Pyramid," by N. Edwards, and "The Piper," by H. Ferrers. Royal Philharmonic concert from the Queen's Hall.

LONDON REGIONAL

MIDLAND REGIONAL

NORTH REGIONAL

BELFAST

Relay from the Royalty Theatre, Chester.

"The Broadcast Bran-Tub," feature programme.

ABROAD

BRESLAU 8.10 p.m. Extract from Opera: "Abu Hassan" (Weber).

BRUSSELS (No. 1) 7 p.m. The Station Symphony Orchestra, conducted by A. Meulemans.

BUCHAREST 7.20 p.m. The Philharmonic Orchestra, conducted by Perlea.

HAMBURG 7 p.m. Heinrich Kaminski concert, conducted by the composer.

HEILSBERG 8 p.m. The Opera House Orchestra, conducted by L. Leschetizky.

LANGENBERG 7 p.m. Winter Relief concert from Duisberg.

PALERMO 7.45 p.m. Opera: "Mary Magdalene" (Pedrollo).

RADIO-PARIS 7.45 p.m. Concert of chamber music.

TURIN 8 p.m. Symphony concert, conducted by D. Anfiteatrov.

WARSAW 7.20 p.m. European concert, conducted by M. Fitelberg. Also relayed by Brussels No. 2, Budapest, Huizen, Lahti, Vienna, Prague, and other stations.

BERLIN

WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—3.30 p.m., See Leipzig. 4.30, A Discussion on New Books. 4.50, Musical Programme for Children. 5.20, Axel Lühbe reads from his own prose. 5.55, The Witzleben Station informs its listeners. . . . 6.0, Topical Talk. 6.10, Talk: Life in a Beehive. 6.55, Announcement. 7.0, From the Gramophone Archives of the Witzleben Station. A Review of the Month of March. 7.30, Spring Concert by the Koseler Wind Instrument Society and the Erk Male Voice Choir, relayed from the Club Konzerthaus; Conductor: Albert Rossow. 9.0, Weather, News, and Sports Notes. 9.15 (approx.), Orchestral Concert, conducted by Willy Post, relayed from Frankfurt-on-the-Oder: March, Fürs Vaterland, Hurra (Schmelting); Selection from Oberon (Weber); Waltz, Die Werber (Lanner); March from the Suite (Lachner); Hungarian Rhapsody (Schmelting); March, Treu vereint (Linack). 11.0 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—3.10 p.m., See Brno. 3.55, See Prague. 5.25, Sports Review. 5.40, Slovak Lesson for Czechs. 5.55, Talk on Housing. 6.0, See Prague. 6.25, See Moravská-Ostrava. 6.45 till Close Down. See Prague. 9.15 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 1.5 kW.; and Gleiwitz, 1,154 kc/s, 253 metres.—12.5 p.m., Weather Report. 12.10 (approx.), Japan in Opera and Operetta—Gramophone Concert. 12.45, Time, Weather, and Exchange. 1.5, Rondo—Serenade Caprice, a Gramophone Concert. 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Talk for Young People: Film Experiences on the St. Bernard Pass. 3.10, Orchestral Concert, conducted by Franz Marszalek. Soloist: Wilhelm Kiechel (Tenor): Overture, Marinella (Fenek). Two Songs (L. Hess): (a) Vorausbestimmung, (b) Weissst du noch?; Selection from Carmen (Bizet); Songs: (a) Die lyrischen Dichter (b) Drohung, (c) Viel Vögel sind geflogen, (d) Glanz und Dult; Wedding Waltz from Pierrette's Veil (Dohnanyi); Songs: (a) Mit demn blauen Augen, (b) Fromm, (c) Erstes Grün, (d) Ich ging der Liebsten entgegen (Gleisberg); Country Dance (Chabrier); Songs (Wranbler): (a) Andenken, (b) Bitte; Ein Pfänderstündchen mit Delibes (Urbach). 4.30, Market Prices. 4.32, Talk:

The Meteorological Bases of the Future Trans-Atlantic Air Traffic. 5.0, Waldemar Glaser reads from his own works. 5.30, Programme to be announced. 6.0, Talk by Dr. Curt Rosenblatt. 6.30, Weather and Market Prices. 6.35 (approx.), Richard Strauss Concert, conducted by Franz Marszalek. Soloist: Bertha Ebner-Oswald (Soprano). Parademarsch der Königsjäger zu Pferde. Songs: (a) Morgen, (b) Ich trage meine Mühle, (c) Traum durch die Dämmerung, (d) Serenade, (e) Schlechtes Wetter, (f) Cécilie; Waltz from Der Rosenkavalier. 7.15, Dance Suite, from Pianoforte Pieces by François Couperin (arranged for Small Orchestra by Richard Strauss). 8.0, News Bulletin. 8.10, Extracts from Abu Hassan, Comic Opera (Weber). 9.0, Time, Weather, News, Sports Notes, and Programme Announcements. 9.30, Accordion Concert of Light Music. 11.0 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—3.10 p.m., Popular Band Concert. 3.55, Theatre Notes. 4.5, See Prague. 5.5, Talk: Creative Art. 5.15, Talk for Workers. 5.25, German Transmission: News, Sports Report, and Talk on Raphael. 6.0, See Prague. 6.25, See Moravská-Ostrava. 6.45, See Prague. 9.15 (approx.), Close Down.

BRUSSELS (No. 1)

I.N.R., 590 kc/s, 509 metres; 15 kW.—11.0 a.m., Concert by the Small Station Orchestra, conducted by Lecmans. 12.0 Noon, Le Journal Parlé. 12.10 p.m., Gramophone Concert of Light Music. 1.0, Educational Programme. 4.0, Orchestral Concert, conducted by Meulemans; Marche aux flambeaux (Meyerbeer); Selection from Lakmé (Delibes); Basque Rhapsody (Piercé); Buoicque (d'Agrèves); Two Symphonic Pieces (Bernard); Jeux d'enfants (Bizet); A Fête in Aranjuez (Demersmann); Waltz, Le Pont d'Amour (Van Oost). 5.0, Legal Talk. 5.15, Music by the Small Station Orchestra: Suite bergamasque (Debussy); Selection from Dalibor (Smetana). 5.30, Anecdotes about the Art of Dentistry. 5.45, Mozart Pianoforte Recital by Oscar Delvigne; Fantasia in C Minor; Sonata in C. 6.15, Talk. 6.30, Le Journal Parlé. 7.0, Concert by the Station Symphony Orchestra, conducted by Meulemans; Soloists, Mme. Parroux (Soprano) and Mlle. Antrique (Songs); Overture, La Princesse Jeanne (Saint-Saëns); Selection from Madame Butterfly (Puccini); Songs: (a) Prayer from Tosca (Puccini), (b) Aria from Griseldis (Massenet), (c) You are my Heart's Delight (Lohár); Hungarian Serenade (Weber); Divertissement (Lalo). 7.45, Talk on Morality. 8.0, Concert (contd.); Orchestral Suite (Kalkman); Liebestraum (Liszt); Songs: (a) Aria from Samson and Delilah (Saint-Saëns), (b) Morgen (R. Strauss), (c) Canzonetta (Pergolesi); Suite from La Gigale (Massenet); Canzonetta for Clarinet (Piercé); Fenille d'album for Wind Instruments

(Saint-Saëns); Selection from Tzetzyl (Piercé); Waltz, Unter den Linden (Strauss). 9.0, Le Journal Parlé. 9.10, Wireless Notes. 9.25, Light Music on Gramophone Records. 10.0, La Brabançonne.

BRUSSELS (No. 2)

N.I.R., 887 kc/s, 338.2 metres; 15 kW. Programme in Flemish.—11.0 a.m., Gramophone Concert: Selection from L'Elisir d'Amore (Donizetti); Overture, William Tell (Rossini). 12 Noon, Le Journal Parlé. 12.10 p.m., Concert by the Small Orchestra, conducted by P. Lecmans: March, Blonde Hilarantourant (Künneke); Suite, Scènes foraines (Mignan); Toccata for Pianoforte (Bazelaire); Selection from The Dance of the Dragonflies (Lohár); Garden of Love (Wood); Waltz, Dis-moi Darling (Reisfeld-Mariot); Tango, Ich suche Liebe (Büder); Foxtrot, Wie sag ich's meinem Mann (Mackeben). 1.0, Educational Programme. 4.0, Dance Music, relayed from the St. Sauveur Palais de Danse. 5.0, Saxophone Music on Gramophone Records: Rhapsody for Saxophone and Orchestra (Debussy); Schön Rosmarin (Kreiser); Golliwog's Cake Walk (Debussy). 5.15, Talk: The Black-lark and the Lark. 5.30, Quartet Concert: Pianoforte Quartet (Beethoven); Pianoforte Quartet, Op. 87 (Dvorak). 6.15, Talk: The Köstgen Rays. 6.30, Wireless Notes. 7.0, Séptet (Saint-Saëns) on Gramophone Records. 7.17, Introductory Talk to the following Transmission. 7.20, European Concert, relayed from Warsaw. 9.0, Le Journal Parlé. 9.10, Dance Music, relayed from the Saint Sauveur Palais de Danse. 10.0 (approx.), Close Down.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—3.0 p.m., Concert by the Station Orchestra: Overture, Der Waffenschmied (Lortzing); Waltz, Pomona (Waldteufel); The Nutcracker Suite (Tchaikovsky); Intermezzo and Barcarolle (Offenbach); Minuet (Bocherini); Selection from Zigeunerprimas (Kálmán); Polovtsian Dances from Prince Igor (Borodin); March from El Capitán (Souza). In the interval at 4.0, Radio Journal. 4.50, Talk, Religion in Romania. 5.10, Talks on Philosophy and Religion. 6.0, Time Signal. 6.20, Symphony Concert by the Philharmonic Orchestra, conducted by Perlea; Soloist, I. Filonesco (Pianoforte); The Pathetic Symphony (Tchaikovsky); The Lake Symphony (Ottescó); Prelude (Ottescó); Rhapsody in Blue for Pianoforte and Orchestra (Gershwin); L'Apprenti sorcier (Dukas). In the interval at 7.0, Talk. 8.0, News. 8.15, Talk in German on Romanian Art.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW. Also relays on 840 metres from 5.30 to 11.0 p.m.—4.30 p.m., Choral Concert. 5.30, Military Band Concert, conducted by R. Friesay. 6.30, Review of Foreign Politics. 6.45, Humorous Talk. 7.15, European Concert Relay from Warsaw. 9.00, Gypsy Music from the Pannonia Hotel. 9.45, Popular Music on Gramophone Records.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and KALUNDBORG, 260 kc/s, 1,153 metres; 7.5 kW.—2.0 p.m., Instrumental Concert: Soloist: Karen Hjørth (Songs); March, In Trone fest (Teike); Overture, Klods Hans (Brandsholt); Waltz, A Summer Evening (Waldteufel); Selection from Die Fledermans (Joh. Strauss); Minuet (Bolzoni); Tambourin (Gossec); Valse lente (Doll); Songs (Eini Henriques); Two Songs (Heise); Waltz from Zigeunerprimas (Kálmán); Polka, Pepita (Lumby); Selection from The Bird-Fancier (Zeller); Piece (Czibulka); Overture, A Waltz Dream (O. Strauss). 4.0, Reading for Children. 4.40, Exchange and Market Prices. 4.50, Talk: Masterpieces of Danish Literature—Heiberg's Comedy, A Soul after Death. 5.20, German Lesson. 5.50, Weather and News. 6.15, Time Signal. 6.20, Talk by Bertel Dahlgard. 6.50, Item by Per Knutzen. 7.0, Town Hall Chimes. 7.1, Programme for Lower Jutland Day, relayed from the Oddfellow's Hall. 9.0, News Bulletin. 9.15, Trio in E Flat (Brahms) for Pianoforte, Violin, and Bugle Horn, Op. 40 (Brahms). 9.45, Dance Music from the Lorry Establishment. 11.30 (approx.), Close Down.

CORK.—See Athlone.

CRACOW

950 kc/s, 315 metres; 1.5 kW.—6.0 p.m., Talk: Poland's Past and Future. 6.30, See Warsaw. 7.0, Talk in French. 7.15 till Close Down. See Warsaw. 10.0 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., Light Music on Gramophone Records. 11.30, News Bulletin. 11.45, Radio Concert. 5.0 to 6.0, Programme in English by the I.B.C. C. Danvers-Walker, B. McNabb, and F. Lamping announcing. 5.0, Concert for Southampton Listeners. Vocal Duets. That Silver-haired Daddy; In an Old World Garden; Zigeunerweisen (Sarasate); When I was a Boy from the Mountains; Now I'm in Love; Last Night I dreamed of you. 5.20, Concert for Bournemouth Listeners.

ALGIERS
824 kc/s, 364 metres; 18 kW.—7.0 p.m., Financial News. 7.10, Shipping Notes. 7.15, Agricultural Report and Weather Forecast. 7.20, Agricultural Talk. 7.35, Songs from (a) Les Brigands (Offenbach), (b) Nina Rosa (Romberg), (c) Manon Lescaut (Puccini). 7.55, News Bulletin. 8.0, Time Signal. 8.2, Medical Talk. 8.15, Saint-Saëns Concert by the Station Orchestra: Overture, La Princesse Jeanne; Concerto for Cello and Orchestra. 8.45, News Bulletin. 8.50, Saint-Saëns Concert (contd.), Symphonic Poem, Philetos; Romance for Flute and Orchestra; Symphonic Poem, La Jeunesse d'Hercule. 9.30, News Bulletin. 9.45, Light Music. 9.55, News. 10.0 (approx.), Close Down.

ATHLONE
725 kc/s, 413 metres; 60 kW.; and CORK, 1,337 kc/s, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Forecast, Stock Report, and Popular Music on Gramophone Records. 6.0, Variety Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News. 7.30, Time Signal. 7.31, Talk on Gardening. 7.45, Talk: A Hodge School. 8.0, Concert of Light Music, by the Station Orchestra. 8.30, Vocal Duets by Mr. and Mrs. P. J. Duffy. 8.45, Pianoforte Recital by Frau T. Fleischmann. 9.5, Vocal Duets by Mr. and Mrs. P. J. Duffy. 9.20, Station Orchestra. 9.30, Blarney—One-Act Comedy by the Emer Comedy Company. 10.0, Variety Programme. 10.30, Time Signal, News, Weather Report and Close Down.

BARCELONA
RADIO BARCELONA, Call EAJ1, 860 kc/s, 348.8 metres; 8 kW.—6.0 p.m., Trio Concert. 7.0, Dance Music relayed from the Ritz Hotel. 7.30 (in an interval), Exchange Quotations. 8.0, Light Music on Gramophone Records, followed by News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, Messages to Seamen, Exchange Quotations and Market Prices. 9.10, Concert by the Station Orchestra: March (Siede); Bells across the Meadow (Kettelby); Selection from El señor Luis, el Timbón (Barbieri); Overture, The Thieving Magpie (Rossini). 9.30, Song Recital by Raquelita. 10.0, Reading. 10.15, Orchestral Concert, relayed from the Café Español. 11.0 (in an interval), News Bulletin. 12.0 Midnight (approx.), Close Down.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—7.0 p.m., Agricultural Report, Tourist Talk, and Popolavoro Announcements. 7.20, Giornale Radio and Weather Forecast. 7.30, Time Signal and Announcements. 7.35, (approx.), Concert of Opera Music: Selection from Il Guarany (Gomez); Tenor Aria from Mignon (Thomas); Soprano Solo: Salve Regina (Van Westerhout); Selection from Madame Sans-Gêne (Giordano); Tenor Aria from Meffistopheles (Boito); Soprano Aria from Rigoletto (Verdi); Selection from La Bohème (Leoncavallo); Overture, Joan of Arc (Verdi); Tenor Aria from The Pearl Fishers (Bizet); Soprano Solo from La Traviata (Verdi); Selection from La baronessa di Carini (Muller); Tenor Aria from La Bohème (Puccini); Soprano Aria from Tosca (Puccini); Selection from Le Maschere (Masscagn). In the interval: Theatre Notes. 9.30, Concert, relayed from the Grand Hotel Moderno. 9.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—6.0 p.m., Talk for Sokols. 6.30, Radio Play. 7.0, Introductory Talk and European Concert, relayed from Warsaw. 9.0, News Bulletin, followed by Dance Music on Gramophone Records.

BERLIN
KONIGS WUSTERHAUSEN, 183.5 kc/s, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert from Berlin (Witzleben). 2.0, Talk for Girls. 2.30, Weather and Exchange. 2.45, Reading from Wilhelm Lehmann's Book, Weingott. 3.0, Talk: The Village School. 3.30, See Leipzig. 4.10, Talk: The Crisis of 1917 in France after Poincaré's Diaries. 4.30, Talk: Great German Mystics. 5.0, Pianoforte Quartet in E, Op. 6 (Hermann Götz). 5.30, Reading from the Writings of an Unemployed Worker. 5.55, Weather Forecast and Announcements. 6.0, Talk on Colonies. 6.30, A Poem. 6.35, See Breslau. 7.0, See Berlin (Witzleben). 7.30, Popular Concert by Alois Pachernegg and his Orchestra: Overture, Figaro (Mozart); Aquarrelle-Walzer (Joh. Strauss); Minuet (Beethoven); Turkish March (Beethoven); Selection from Der Kuhreigen (Kienzl); Hungarian Dances No. 3, 5 and 6 (Brahms); Prelude to Eva (Lohár); Waltz, Krolle Badklinge (Lumbye); Elegy (Bullerian); Selection from Countess Maritza (Kálmán); Two Viennese Songs: (a) S'leherl von Hernald (Ascher), (b) Wien wird schön erst bei Nacht (Stolz); Comedy Overture, Fahrend Volk (Leuschner). 9.0, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Concert of Old-time Dance Music from Frankfurt. 11.0 (approx.), Close Down.

APRIL 7th

FRIDAY

continued

Tight Orchestral Music; Me and the Man in the Moon; Chinatown my Chinatown; The Woman in the Shoe; Russian Rhapsody; Sleepy Valley; Cheer up, good Times are coming. 5.40, Concert for Weymouth Listeners. The March of the Grenadiers; You will remember Vienna; The Rauger's Song; Selection from Sunny, Song of the Drum; Ol' Man River. 6.0, Radio Gazette. 6.20, News. 6.30, Variety Music on Gramophone Records. 7.0, Agricultural Talk. 7.30, Concert, relayed from La Havre. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0, Dance Music. Looking on the Bright Side; Marta; Please don't mention it; Shadows on the Window; Just hummin' along; Long ago; The King was in the Counting House; Don't tell a Soul; When the Rest of the Crowd goes Home; What makes you so adorable?; By the Fireside; Moonlight on the River; Sing Brothers; Good-night little Girl; Good-night. 11.0, Wagner Concert. Overture, Rienzi; Walter's Prize Song from The Mastersingers; Selection from Tannhäuser; Träume; Pilgrim's Chorus from Tannhäuser; Swan Chorus from Lohengrin; March from Tannhäuser. 11.30, Vocal Concert. Chorus: Come to the Fair (Eustache Martin); Song: Garden of Happiness (Haydn Wood); Orchestra: Demande et Réponse (Coleridge-Taylor); Chorus: Ye Banks and Braes (Traditional); Orchestra: The Dancing Doll (Poldini); Song: Rose in the Bud (Forster); Chorus: The Bells of St. Mary's; Orchestra: Waltz, Trés jolie (Waldteufel). 12.0 Midnight, Club Concert for South Shields, Stockton, and West Hartlepool Listeners. Part I: Variety Music; Music Hall Favourites; Down Stream; The Minstrel Boy; Paradise Alley; The Doll's House; The Irish Washerwoman; Sailor's Harp. 12.30 a.m. (Saturday), Concert. Part II: Popular Songs; My Fate is in your Hands; Melody Divine; Darling Old Mother of mine; Orchestra: Happy Interludes; Mona Lisa; Mother's Smile; I wish I had died in my Cradle. 1.0, Pianoforte Solos. Selection from The King of Jazz (Whitehead); Popular Melodies on a Piano (Rahy); One Night alone with you (Jeffrey); Song: Lazy Louisiana Moon; Selection from Puttin' on the Ritz (Berlin); Song: Blancheoly; Let Love take care of you (Van Phillips). 1.30, Vocal Trios; Bubbling over with Love; Painting the Clouds with Sunshine; A Bench in the Park; Waltz, My Florence; Laughing at the Rain; A Pair of Blue Eyes; I'll always be true; Mazurka, I do Lady. 2.0, Dance Music. On a Little Balcony in Spain; Belle of Barcelona; The One Man Band; Fiesta; How's your Luck?; Carolina Moon; Pardon Madame; I'd like to find the Guy that wrote the Stein Song; Bathing in the Sunshine; Whistling in the Dark; Choo, Choo; You're twice as nice as that girl in my Dreams; Sweet and lovely; How about me? 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW. and CASSEL, 1,220 kc/s, 245.9 metres; and TRIER, 1,157 kc/s, 259.3 metres.—5.25 p.m., Book Review. 5.50, Talk: State Subsidies for the Repair of Dwellings and Premises. 6.15, Time, Programme Announcements, Weather, and Exchange. 6.20, A German Almanac. 6.30, Musical Handwriting—Dialogue between Dr. Reinhold Merten and the Inventor, H. Pfeininger. 7.0, The German Rising in Saxony—Sept Summer sings his own Compositions: Wach auf, du deutsches Land; Denkt daran; Ehelied; Das Lied vom Heiden; Der deutsche Tod; Leb wohl, mein Kamerad; Deutscher, bleib deutsch; Feierliches Gedächtnis; Wir gehen im Schritte. 7.30 to 9.0, See Stuttgart. 9.0, Time, News, Weather, and Sports Notes. 9.45, Concert by the Station Orchestra, conducted by Reinhold Merten: Love Waltz from the Ballet Suite, Op. 130 (Max Reger); Elfenbogen (Klose); Romantique Ballet Suite, Op. 46a. The Glass-Blower's Suite (Aug. Reuss); Three German Marches, Op. 101 (H. Kamm); Classical Waltzes. 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAIMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hannover 530 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—6.0 p.m., Talk for Workers. 6.25, Weather. 6.30, Talk: Some Pictures of the Ruhr Occupation. 7.0, Heinrich Kaminski Concert by the Radio Choir and Orchestra, conducted by the Composer; Soloists: Annemarie Sottmann (Songs), Anton Gründler (Viola), and Gerland Gregor (Organ); Choral Sonata for Organ; Two Extracts from the Geistliche

Chören; Magnificat for Soprano, Viola, Women's Choir, and Orchestra; Two Arias from Geistlichen Chören; Concerto grosso. 8.15, News Bulletin. 8.25, Magic in Hinterhaus—Radio Play (Bruno Mannel and Hans Reinmann). 9.10, News Bulletin. 9.20, Topical Talk. 9.30, Concert of Light Music, conducted by Fritz Gartz.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.; and Danzig, 453.2 metres.—12.5 p.m., Variety Music on Gramophone Records. In an interval at 12.20, Announcements. 1.30, Concert arranged by the Post Office, with Gramophone Records. 2.0, Agricultural Prices and Exchange. 2.30, Talk for Women. 3.0, Charlotte Wüstendörfer reads from her own Works. 3.30, Concert by the Small Station Orchestra, conducted by Eugen Wilken. Overture, The Mikado (Sullivan); Le Pas des fleurs from Natha (Debussy); Selection from Robert le diable (Meyerbeer); Suite Dance Scenes (Richter); Waltz, An rauschenden Wassern (Naef); Selection from Das Pensionat (Suppe); Overture, Consuelo (Azzoni). 4.45 (from Danzig), Talk on Forestry. 5.15, Agricultural Prices. 5.30, Organ Recital by Josef Siergmann; Fantasia, Op. 56 (Schubert); Passacaglia in E Minor, Op. 8 (Weber); Sonata, Op. 89 (Rödingen). 6.0, Talk: National Socialism and the East Mark. 6.30 (from Danzig), French Lesson. 6.55, Weather and News. 7.0, Die Löwin und der General (The Lioness and the General)—Radio Play (Eduard Reinecker). 8.0, Concert by the Opera House Orchestra, conducted by Ludwig Leschetizky. Overture, The Barber of Baghdad (Comelius); Prelude, Vasantasena (Chernmann); Symphonic Poem, The Water Sprite (Dvorak); Four Tone Poems from the Böcklin Suite (Reger): (a) Der geizige Eremit, (b) Im Spiel der Wellen, (c) Die Toteninsel, (d) Barcelona. 9.20, Weather, News, and Sports Notes.

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—11.40 a.m. to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Oudrop (A.V.R.O.).—11.40, Time signal. 11.41, Light Music on Gramophone Records. 12.10 p.m., Concert by the Wireless Orchestra, conducted by Nico Treep, with Gramophone Interludes. In the interval at 1.40, Talk on Sweden. 2.40, Popular Music on Gramophone Records. 3.40 to 7.40, Programme of the Workers' Radio Society (V.A.R.A.). 3.40, Concert by the Little V.A.R.A. Orchestra, conducted by P. Duchant. Overture, The Nurnberg Doll (Adam); Suite, Kinderlieder (Blech); Funeral March of a Marionette (Gounod); Betendes Kind (Schumann); Kinderszenen (Schumann); Im Spielwarenladen (Jesse); Knabenraus (Klarke); Kinderliedermarsch (Lindemann). 4.30, Programme for Children. 5.10, Concert (cont.): The Diplomat (Sousa); Japanese Puppet Play (Yoshitomo); Serenade (Rachmaninov); Selection from The Belle of New York (Kerker); Selection from Gri Gri (Lincke). 5.40, Light Music on Gramophone Records. 5.50, Organ Solos by Johan Jong. In the interval at 6.20, Talk: Soviet Russia. 6.55, Extracts from Carmen—Opera (Bizet) on Gramophone Records. 7.40 to 10.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 7.40, Religious Address. 8.10, Pianoforte and Organ Recital by C. Stevens and M. J. Stotijn. In the interval at 8.40, Talk. 9.40, News Bulletin. 9.55, Religious Address. 10.25, Gramophone Records. 10.40 till Close Down, V.A.R.A. Programme. 10.40, Variety Concert by J. Carlquist (Banjo and Guitar), E. Charmon (Songs), G. Steyn (Organ), and J. Vogel (Celest and Pianoforte). 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW. 11.40 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 11.40 Police Announcements. 11.55, Orchestral Concert: Hornstein March (Fucik); Overture, Nell Gwynn (Gernand); Waltz, Les Saxones (Waldteufel); Selection from La Wally (Catalani); Dance of the Merry Mascots (Ketilbey); Mummeludes Lüftchen (Jensen); Gramophone Records; Overture, Norma (Bellini); Selection from The Three Bears (Coates); Erinnerung an Baden (Komzak). 1.20, Pianoforte and Violin Recital by Mme. A. Verbeek-Haak and M. G. Robert; Sonata No. 15 in B Flat (Mozart); Gramophone Records; Sonata, Op. 39, in G Minor (Sjögren). 2.10, Sacred Song Recital. In the interval, Talk. 3.30, Popular Music on Gramophone Records. 3.40, Topical Talk. 4.10, Recitations. In the interval at 4.40, Gramophone Records of Variety Music. 5.25, Popular Music on Gramophone Records. In the interval at 5.40, Talk on Easter. 6.50, Talk on Architecture. 7.10, Police Announcements. 7.25, European Concert, relayed from Warsaw. 9.0, News. 9.5, Variety Music on Gramophone Records. 9.10, Or

chestral Concert of Light Music. 10.40, News. 10.45, Light Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,202 kc/s, 249.6 metres; 0.8 kW.—7.15 p.m., Esperanto. Lesson. 7.20, Radio Concert. 8.0, Weather, Racing Results and News. 8.15, Dance Music from the Palais de la Méditerranée, Nice. 11.0 to 12 Midnight, Programme in English by the I.B.C.: H. K. Hitchcock announcing. 12 Midnight (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—6.0 p.m., Talk: Feminine Cooper as the Friend and Defender of Poland. 6.15, Announcements and Gramophone Records. 6.25, Sports Notes. 6.30, See Warsaw. 10.0, Answers to Correspondence in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 10 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.5 p.m., Concert by the Helsinki Municipal Orchestra conducted by Georg Schuevoigt, relayed from the University. Soloist: Hjalmar Byrding (Songs). First Symphony (Beethoven); Aria from Prince Igor (Borodin); Aria from The Czar's Bride (Rimsky-Korsakov); Dance macabre for Choir and Orchestra (Pingou); Cantata for Choir and Orchestra (Poulson). 8.0, News in Swedish. 8.15, Part Relay of the European Concert from Warsaw.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Concert, conducted by Eysoldt. Soloist: Erich Raueh (Baritone). In the interval at 1.0 p.m., News. 1.30, Sponsored Programme with Gramophone Records. 2.30, Exchange and Time Signal. 3.20, Programme for Young People. 4.0, Orchestral Concert. 5.15, Talk: Nameless Inventors. 5.45, Weather, Time, Exchange and Sports Notes. 5.50, Talk: The Art of Speaking Naturally. 6.10, Legal Talk. 6.30, Talk: Handicrafts in West Germany—Handicrafts in Anecdotes and Popular Humour. 6.55, First General News. 7.0, Public Variety Programme in Aid of the Station Winter Relief Fund, relayed from the Tonhalle, Duisburg. The Small Station Orchestra, The Four from the Opera House, Duisburg, and Soloists. 9.30, News and Sports Notes. 9.45, Programme to be announced. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and DRESDEN, 941 kc/s, 319 metres.—3.30 p.m., Orchestral Concert, conducted by Gustav Mannebeck, relayed from Dessau. Norwegian Fantasia, In the Mountains (Selmer); Dramatic Overture (Ries); Kleine Lustspielsuite (Wunsch); Waltz, Lustige Lieder (Vollstedt). 4.30, Book Review. 4.50, Economic Notes, Weather and Time. 5.0, Talk by Dr. Otto v. Wessendonk; Richard Wagner and the Wessendonk Family. 5.25, English Lesson. 5.50, Talk: Spring Navigation on the Elbe. 6.0, Talk: The Significance and Achievements of the University Self-Help Organisation. 6.30, Reading (Jeremias Gotthelf). 7.0, The Gipsy Princess. Opera in Three Acts (Kálmán), relayed from the New Theatre. In the intervals at 8.0 and 9.5 (approx.), News. 10.0 (approx.), Gramophone Concert. Internuzzo, Puppenstücke (Lederer); Waltz, Traurige Augen (Romberg); Erinnerung an Potsdam (Nonck); Die lustigen Leut' (Krongger); Fischermarsch (Fischer); Lampenputzer Galopp (Herbel); Stiefelputzer-Marsch (Girich); In Träne allezeit (Pöhlend, Jnr.). 11.0 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW. 6.0 p.m., French Lesson. 6.30, Talk on Geology. 7.0, Concert of Chamber Music. 8.3, Concert, relayed from the Café Zvezda. 9.0, Time, News and Light Music on Gramophone Records.

LWOW

788 kc/s, 381 metres; 16 kW.—6.15 p.m., Miscellaneous Items. 6.30, See Warsaw. 10.0 (approx.), Close Down.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., Radio Gazette for Lyons and the South East. 7.30, Instrumental Concert: Trio in E Flat, Op. 7, No. 2 (Beethoven); Violin Solos: Kreisleriana (Schumann); Pianoforte Solos: (a) Sicilienne (Paradis), (b) Gavotte and Musette (Bach), (c) Habanera (Ravel),

(d) Caprice (Hindemith); Trio (Rameau); Jeux (Ibert); La cage de cristal (Ibert); Kaddische (Ravel); Trio (Ropartz). After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAQ), 9,860 kc/s, 30.43 metres; 20 kW.—10.30 p.m., Concert of Light Music. 10.45, Radio Chronicle. 11.0, Concert (cont.). 11.35, Answers to Correspondence. 11.40, Talk. 11.45, Light Music. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2 kW.—7.0 p.m., Chimes, Exchange Quotations, Programme of Musical Novelties and Variety Items by Ramon Gomez de la Serna. 8.15, News Bulletin and Political Review. 8.30 to 9.30, Interval. 9.30, Chimes, Time Signal and Political Review. 9.45 (approx.), Concert of Spanish Music by the Station Symphony Orchestra. 11.45, News Bulletin and Programme Announcements for Listeners Abroad. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—3.10 p.m., See Brno. 3.55, Talk. 4.5, See Prague. 5.5, Technical Talk. 5.15, See Prague. 6.25, Chromatic Accordion Solos. 6.45, Introductory Talk to the following Transmisson. 7.0, Symphony Concert by the Station Orchestra and the National Theatre Orchestra, relayed from the National Theatre; Conductor: Jaroslav Vogl; Faust Overture (Wagner); Concerto in B Minor for Cello and Orchestra (Dvorak); Symphony No. 1V in E Minor (Brahms). 9.0, See Prague. 9.15 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 60 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres, and Nürnberg, 1,256 kc/s, 239 metres.—11.0 a.m., Orchestral Concert, conducted by Erich Kloss; Soloist: Hugo Reker (Violin); Overture, Der Waffenschmied (Lortzing); Scottish Dances (Beethoven); Selection from Il Trovatore (Verdi); Canzonetta, from the Violin Concerto (Tchaikovsky); Norwegian Peasant Dances (Grieg); Adagio cantabile, from the Septet (Beethoven); Ständchen (Schubert); March, Gruss in die Ferne (Döring). 12.15 p.m., Gramophone Concert of Classical Music. 1.0, Time, Weather, Announcements, News, and Exchange. 1.40, Programme arranged by the Post Office, with Gramophone Records. 2.0, Illustrated Talk for Women: Wilhelmine von Brandenburg. 2.50, Weather and Agricultural Notes. 3.0 (from Nürnberg), Folk Songs to the Lute. 3.15, Pianoforte Sonata in C, Op. 55—The Waldstein Sonata (Beethoven), by Helmut Mauler. 3.35, Talk: Physical Training in Girls' Schools. 4.0, Orchestral Concert. 5.5, Talk: The Penny Piece. 5.35 (from Nürnberg), Talk: German Colonies in Foreign Cities. 5.55, Time, Weather, and Agricultural Notes. 6.5, Talk on Piekpockets. 6.25, Concert by the Munich Tramways' Musical and Dramatic Society. 7.40, Talk: Some Dances of Mountaineering. 8.0, Symphony Concert, conducted by Hans Winter; Soloist: Josef Penzlar (Pianoforte); Partita for String Orchestra (Bach); Concerto No. 5 in E flat for Pianoforte and Orchestra (Beethoven); Symphony in D (Mozart). 9.20, Time, Weather, News, and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hama, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 452.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—4.15 p.m., Sponsored Concert on Gramophone Records. 5.0, French Lesson. 5.3, Concert of Popular Music. 6.0, Announcements, Weather, and News. 6.30, English Lesson. 7.0, Time Signal. 7.2, Symphony Concert, conducted by Odd Grønner Hegge, relayed from the Logen Hall; Overture, Seraglio (Mozart); Symphony in C, No. 2 (Beethoven); Les Péchés (Liszt); Variations and Fugue on a Theme by Mozart (Reger). 8.40, Weather and News. 9.0, Topical Talk. 9.15, Recitations. 9.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—7.0 p.m., Dopplavoren Announcements, Tourist Talk, Agricultural Talk, Report of the Royal Geographical Society and Giornale Radio. 7.20, Light Music on Gramophone Records. 7.3 (in an interval), Time Signal and Announcements. 7.45, Mary Magdalene—Opera (Pecorollo). In the intervals: Talk and Announcements. 9.55, News Bulletin.

PARIS

EIFFEL TOWER, (FLE), 207.5 kc/s, 1,445 metres; 13 kW. Time Signals (on

APRIL 7th

FRIDAY

continued

2,650 metres) at 9.26 a.m. and 10.26 p.m. (Preliminary and 6-dot Signals).—5.45 p.m., Talk on the Theatre. 6.0, Le Journal Parlé. 7.20, Weather Forecast. 7.30, Literary and Musical Programme for Young People. 8.15, Symphony Concert, conducted by E. Flament. Soloists: René Bas (Violin) and M. Marchesini (Cello). Serenade (Malats); Alborada Gallega (Veiga); Jardin Sevillano (Millan); Violin Solo; Melody from Miss Desima (Audran); Cello Solo; Langueur d'amour (Flament); Overture, La Dame Blanche (Boieldieu). 9.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 914 kc s, 328.2 metres; 60 kW.—6.0, p.m., Sponsored Talk. 6.10, Light Music on Gramophone Records. 7.0, Talk on Music. 7.15, Interval. 7.30, Concert by the Station Symphony Orchestra: Overture, The Merry Wives of Windsor (Nicolai); Serenade for Flute, Oboe, Horn and Strings (Lacombe); Three Miniatures (Cui); Soirs (Schmitt); Ballet Music from Hamlet (Thomas); Selection from Si j'étais roi (Adam); Le Papillon, for Cello, Strings and Piano (Fauré); Gigue and Finale from Henry VIII (Saint-Saëns); Jota Navarra (Sarasate). 9.30, News.

PARIS

RADIO PARIS (CFR), 174 kc s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 6.30, Weather and Physical Culture (cont'd). 6.45, Gramophone Music: Funny Face (Gershwin); Robots (Mayer); Teddy Bear's Picnic (Bratton). 7.0, Press Review and Weather. 11.0, Talk for Jews. 11.30, Gramophone Concert: Sonatina (Leclair); Eine kleine Nachtmusik (Mozart); Overture, Coriolanus (Beethoven); Trio (Mendelssohn); Hungarian Rhapsody (Liszt); Lanterne magique (Godard); Selection from Pelléas et Mélisande (Fauré); Ballet Music from La Korrigane (Widor). In an interval at 12.30 p.m., Exchange. 1.0, Exchange and News. 2.45, Exchange and Market Prices. 3.30, Elementary English Lesson. 5.10, Talk on Gardening. 5.30, Light Music on Gramophone Records. 5.50, Talk on Insurance. 6.0, Talk: General Joffre. 6.20, Gramophone Music: Morning, Noon and Night (Suppé); Roses of Picardy (Haydn Wood); Bulgarian Suite (Wladigerov); Valse des fleurs (Tchaikovsky). 6.45, Commercial Prices and News. 7.0, Readings. 7.30, News and Weather. 7.40, Gastronomic Review. 7.45, Concert of Chamber Music: Trio for Piano, Clarinet and Cello (d'Indy); Villanelle for Horn and Piano (Dukas); Piano Solo: (a) Second Valse caprice (Fauré); Prelude and Nocturne for the Left Hand only (Scriabin); Fourth Etude (Stravinsky); Septet for Strings, Clarinet, Bassoon and Horn (Beethoven). In an interval at 8.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc s, 306 metres; 25 kW. Relayed by W8XG on 48.86 metres and 25.27 metres.—9.0 p.m., Work-a-day Thoughts. 9.5, Business News. 9.15, S.A.I. Musicale (Carnegie Tech. Chapter). 9.30, Weather Report. 9.32, Market Reports. 9.45, Johnny Muskrat. 9.50, David Lawrence Dispatch. 9.58, Programme Announcements. 10.0, Muskingum College Music Clubs. 10.15, Dick Darling. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Our Daily Food by George Rector and Judge Gordon, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, KDKA Orchestra. 11.45, Today's News, by Lowell Thomas, relayed from New York. 12 Midnight, Pepesodet Amos 'n' Andy, from New York. 12.15 a.m. (Saturday), Adventures of Aunt Lulu, KDKA Players. 12.30 to 3.30, New York Relay. 12.30, Five Star Theatre, Charlie Chan. 1.0, Nestlé's Programme. 1.30, Time Signal and Adventures in Health. 1.45, Howard Thurston, the Magician. 2.0, The First Nighter. 2.30, Armour Programme. 3.0, Dorothy Fields and Jimmy McHugh. 3.15, Vic and Sade. 3.30, Bridge School of the Air, by E. Hall Downes. 3.45, Prof. Jack McLellan, Sara and Sassafras, from New York. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last Minute News Flash. 4.20, Smith Ballow and his Orchestra. 4.58, KDKA Artist Bulletin. 5.0, Cotton Club Orchestra, from New York. 5.30, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—3.10 p.m., See Brno. 3.55, Talk: Geological Research. 4.5, Concert by the Ondricek Quartet: String Quartet No. 2, Op. 8 (Sini); String Quartet in E, Op. 125, No. 2 (Schubert). 5.5, Market Prices. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Two Medical Talks. 6.0, Chimes. 6.1, News Bulletin. 6.10, Talk on Finance. 6.25, See Moravská-Ostrava. 6.45, Reading. 7.0, Introductory Talk and European Concert relayed from Warsaw. In the interval at 8.0, Time Signal. 9.0, Titta Signal. 9.1, News. 9.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; Lausanne, 422 kc/s, 660 metres; and Geneva, 395 kc/s, 760 metres.—5.0 p.m. (from Geneva). Reading. 5.15 (from Geneva). Interview with Young People. 5.30 (from Lausanne). Talk. 6.0 (from Geneva). Weather Forecast, News Bulletin, and Announcements. 6.30 (from Geneva). Talk on Sound Films. 7.0 (from Geneva). Reading by Henri de Ziegler (Author). 7.15 (from Geneva). An Unpublished Sketch (Henri Tannier). 7.30 (from Geneva). Cabaret Programme by the Broadcasting Serenaders and Mlle. Marguerite de Reding. 8.30 (from Geneva). Military Band Concert. 9.0, News Bulletin and Weather Forecast. 9.15 (approx.), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—6.5 p.m., Symphony Concert, conducted by J. Medins; Soloist: Vilza Vronska; First Symphony (Atterberg); Concerto for Piano, Op. 30 (Rimsky-Korsakov); Impresioni del Vero, Part III (Malipiero). In the intervals at 7.0, News, and at 8.0, Weather and News. 8.30, Dance Music. 9.30 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

1RO, 680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and 2RO, 11,810 kc/s, 25.4 metres.—12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Orchestral Concert. In the interval at 12.30 to 12.45, Weather and Exchange. 3.0, Concert of Chamber Music from the Royal Academy of Saint-Cecilia. 6.0 (Naples), Shipping and Sports Notes. 6.20, Giornale Radio and Gramophone Records of Light Music. 7.0, Time and Announcements. 7.5, Report of the International Institute of Agriculture (in Italian, French, English, German and Spanish). 7.30, Sports Notes and Tourist Report. 7.45, Variety Concert. Soloists: Maria Scnes and Anita Ribecova (Soprano), G. Castello (Baritone), and F. Belli (Bass). Quintet in E flat for Piano, two Violins, Viola and Cello (Schumann); Duets for two Sopranos: (a) Song (Mendelssohn), (b) Aria from Figaro (Mozart), (c) Ber valli, per boschi (Blangini), (d) Aria from Lakmé (Delibes); Spanish Rhapsody for Piano and Orchestra (Liszt-Busoni). 8.30, Caroline—Comedy in One Act (Ferenc Herzeg). 9.0 (approx.), Concert (cont'd): Aria for Soprano from the Second Act of La Vestale (Spontini); Baritone Solo and Duet for Bass and Baritone from the Second Act of I Puritani (Bellini); Overture, Linda di Chamounix (Donizetti). News after the Programme.

SALZBERG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 790 kc s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—7.30 p.m. to 12 Midnight, New York Relay. 7.30, Muted Strings. 7.45, Three Shades of Blue. 8.0, Sonata Recital. 8.15, Famous Loves—Dramatic Programme. 12 Midnight, Johnny Johnson's Orchestra. 12.15 a.m. (Saturday), Stock Reports. 12.30, Gold Medal Band. 12.35, Drifting and Dreaming, from New York. 12.45, The Goldbergs, from New York. 1.0, Cities Service Concert. 1.30, WGY Farm Forum. 2.0, Best Foods, from New York. 2.30, Pond's Programme, from New York, followed by Programme Resumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc s, 459 metres; 60 kW.; BASLE, 1,229 kc/s, 244.1 metres; and BERNE, 1,220 kc s, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Berne), Concert of Variety Music by the Karsaal Orchestra, conducted by Urbano Calligaris. 12.35 p.m., Weather and Exchange. 2.30 (from Berne), Concert of Chamber Music. 3.0 (from Berne), Famous Singers on Gramophone Records. 3.30 (from Berne), Programme for Children. 4.0 (from Berne), Light Music on Gramophone Records. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from Berne), Talk: The Entry of the Polish Legion into Switzerland on April 7th, 1833. 6.0, Time, Weather, Market Prices, Tourist Talk, and Sports Notes. 6.15 (from Berne), Folk Music on Gramophone Records. 6.30 (from Berne), Weissholz—Dialogue in Dialect. 7.0 (approx.) (from Berne), Zither Duets by Heinrich and Mizzi Wolf. 7.15 (from Berne), A Microphone Visit. 7.30, Orchestral Concert, relayed from Geneva. 395 kc s (760 metres). 8.30, Weather and News. 8.40 (from Berne), Concert by the Smndig Male Voice Choir, conducted by Ernst Tanner. 9.15 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 244 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Morby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Ostersund, 389 kc/s, 770 metres; and Sundsvall, 554 kc/s, 542 metres.—4.5 p.m., Translation of a Student's English Exercise, relayed from Malmo, 1,301 kc/s, 231 metres. 4.15, Talk for Boy Scouts. 4.35, Songs to the Lute by Belle Nordström. 4.50, Popular Music on Gramophone Records. 5.45, Talk. 6.15, Weather and News. 6.30, Talk. 7.0, Three Fantasias, Op. 11, for Piano (Steinhammer), by Ingemar Liljefors. 7.15, Det bar inkenting hänt—Radio Play (Ove Ekelund). 8.0, Soloist Programme and Reading. 8.45, Weather and News. 9.0, Orchestral Concert: Suite, Bilder aus dem Osten (Schumann); Five Finnish Pictures (Raeasted); Tre färdeminnen (Lindberg); Norwegian Rhapsody No. 1 (Halvorsen). 10.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.30 a.m., Modern Music on Gramophone Records. 11.45, News. 12 Noon, Time and Exchange. 12.5 p.m., Variety Music on Gramophone Records. 1.0 to 3.45, Interval. 3.45, Talk in French on Modern Poetry. 4.0, Orchestral Concert of Jazz Music. 5.0, Trio Concert relayed from Lille, 1,130 kc/s, 265.4 metres. 6.0, Topical Talk in German. 6.15, Popular Music on Gramophone Records. 6.30, Time and News. 6.45, Orchestral Concert, conducted by Roskam; Soloist: Roskam (Cello); March, Kansas City (Benoit); Waltz (Fricik); Cello Solos: (a) Mélodie (Duchêne), (b) Tyrolienne (Duchêne); Overture, Casanova (Lüneke); Selection from Die Fledermaus (Joh. Strauss); March (Rosey). 7.30, Lottery Results. 7.45, Illustrated Talk by Mme. Dissane: Laughter down the Ages, relayed from the Grand Theatre, Besançon. 9.0 (approx.), Close Down.

STUTTGART

MUHLACKER, 832 kc/s, 368.5 metres; 60 kW; and Freiburg, 527 kc/s, 570 metres.—12.30 p.m., Concert from Langenberg. 1.0, Concert arranged by the Post Office. 1.30, Advanced English Lesson. 3.30, Song Recital by Karl Jantz (Tenor) and Karl Jantsch (Baritone); Serenade from Don Pasquale (Donizetti); Credo from Othello (Verdi); Duet from The Force of Destiny (Verdi); Aria, Lakmé ton doux regard se voile from Lakmé (Delibes); Flower Aria from Carmen (Bizet); Duet from The Pearl Fishers (Bizet). 4.0 (from Karlsruhe), Concert by the Academy of Music: Allegro and Andante cantabile from the Violin Concerto in D (Mozart); Recitative and Aria from Fidelio (Beethoven); Scene and Aria from Der Freischütz (Weber); Zueinander, for Four Voices and Piano (Brahms); Allegro from the Piano Concerto in E flat (Beethoven). 5.0, Time, Weather and Agricultural Notes. 5.10, Talk: Proposals for an Easter Excursion. 5.35 (from Freiburg), Talk on Blindness. 6.0, Time, News and Popular Music on Gramophone Records. 6.30, April; Programme of Songs and Recitations. 7.30, Concert by the Philharmonic Orchestra. Conductor: Ferdinand Drost. Soloists: Willy Kleeman (Violin) and Max Zimolong (French Horn). Overture, Euryanthe (Weber); Concerto for French Horn and Orchestra (R. Strauss); Concerto for Violin and Orchestra (Strasser); The Unfinished Symphony (Schubert). 8.20, Adolf Hitler—A Radio Sequence (arranged by Erich Lorenz), Musical arrangement by Ferdinand Drost. 9.0, Time, News, Weather, Programme Announcements and Sports News. 9.30, Old Dance Music by the Radio Orchestra, conducted by Gustav Görllich. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—6.30 p.m., Orchestral Music. 6.45, Operetta Music. 7.0, Accordion Music. 7.15, Extracts from Sound Films. 7.30, Saint-Saëns Concert: Marche héroïque; Danse macabre; Air from Samson and Delilah; Le Cygne; Selection from La Princesse jaune; Le Ronet d'Omphale. 8.0, Chansonnettes, followed by Military Music. 9.30, Music by an Argentine Orchestra. 9.45, Arias from Opera: (a) Si j'étais roi (Adam), (b) Don Quixote (Massenet), (c) L'Attaque du Moulin (Bruneau). 9.0, Operetta Music: Selection from Paganini (Léhar), (d) Elle est à vous (Yvain), (e) The Land of Smiles (Léhar). 9.15, North-African News. 9.30, Concert for Listeners in Morocco. 10.30 to 11.0, Programme in English by the I.B.C. W. Brown Constable announcing. 10.30, If I could be one hour with you; Swingin' the Blues; Shine; When day is done; Wah-de-dah; It's the darndest thing; Sweet Rhythm; Sweetheart I'm dreaming of you. 10.57, I.B.C. Goodnight Melody. 11.0, News, Weather, and Announcements. 11.5, Music by a Viennese Orchestra. 11.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—6.50 p.m., Concert by the 'caffè Dante Orchestra, followed by Programme from Turin. TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 959 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—3.0 p.m., See Rome. 5.35, Giornale Radio, Agricultural Report and Dopolavoro Announcements. 6.0, Time and Gramophone Records. 6.20, Giornale Radio. 6.45, Report of the Royal Geographical Society and Gramophone Records. 7.0, Time, Announcements, Weather, and Gramophone Records. 7.45, Notes on Art. 8.0, Symphony Concert, conducted by Daniele Amfitheatrov; Soloists: Remy Principe (Violin) and Benedetto Mazzacurati (Cello); Talk in the interval. 10.0, Giornale Radio.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—10.0 to 10.15 a.m., Religious Information in German. 7.0 to 7.15 p.m., Religious Information in Italian.

VIENNA

581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,058 kc/s, 283 metres; Klagenfurt, 662 kc/s, 453.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—3.40, Talk: The International Philatelic Exhibition in Vienna, 1933. 3.55, Egon Kornauth Concert by the Weiss-gärber Quartet. Soloist: Erika Rokyta (Soprano). The Composer at the Piano. Four songs to Poems by Clemens Brentano: (a) Abendstündchen, (b) Der Spinnerin Lied, (c) Wiegeliied, (d) Säusle, liebe Myrthe; Clarinet Quintet in F Sharp Minor, Op. 35; Five Songs to Poems by Eichendorff: (a) Lockung, (b) Treue, (c) Waldeinsamkeit, (d) Nachklänge, (e) Herbst. 4.40, Gramophone Concert: La Campanella (Liszt); Santa Lucia (Liszt); Caprice viennois (Kreisler); Meditation (Massenet); Song, Les filles de Cadix (Delibes); Der Lenz (Hildack); Concert Polka (Sauer); Mazurka (Zurzycki). 5.15, Tourist Report. 5.30, Talk: Easter Walking Tours. 5.45, Sports Report. 5.55, Talk: The Riddle of Dreams. 6.20, A Pleasant Interlude. 6.35, Time, Weather, and Programme Announcements. 6.45, Talk with Gramophone Illustrations: A Visit to the Cave-dwellers of the Canary Islands. 7.15, European Concert from Warsaw. 9.0, News, Weather and Announcements. 9.15, Roads Report. 9.20, Concert by Louis Seidel and his Band. Overture, The Hermit's Bell (Mallart); Waltz, Pas des fleurs (Waldteufel); Second Slav Rhapsody (Friedemann); Serenade (Seidel); Strauss-Milcheker-Suppe Potpourri (Ziehrer); Diner-Walzer (Grünfeld); Overture, Der Waldmeister (Joh. Strauss).

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—10.57 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.20, Weather Forecast. 12.25 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Aviation Report and Anti-Gas Drill. 2.30, Talk: Maritime and Colonial Affairs. 2.35, Review of Periodicals. 2.50, Light Music on Gramophone Records. 3.0, Talk on Polish Literature. 3.40, Talk: Bread the Staff of Life. 4.0, Concert by a Wind Instrument Orchestra, conducted by L. Cymerman. In the interval: Announcements. 4.55, Programme Announcements. 5.0, Biological Talk. 5.20, Talk on Current Events. 5.25, Light Music on Gramophone Records. 5.45, Talk: Joie de vivre. 6.0, Miscellaneous Items. 6.20, Talk on Linen and Wool. 6.30, Literary Talk. 6.45, Radio Journal. 7.0, Introductory Talk in French to the following Transmission. 7.15, European Concert by the Warsaw Philharmonic Orchestra, conducted by G. Fiteberg, relayed from the Philharmonic; Soloists: F. Bandrowska-Turka (Soprano) and Charles Szymanowsky (Piano); Overture, Phys (Aloniuszko); Symphony No. 4 (Szymanowsky), the Composer at the Piano; Sopranos Solos; Three Songs (Szymanowsky); (a) The Nightingale, (b) The Solitary Moon, (c) Dance; Act I of the Ballet, Yndine (Moravsky); Soprano Solos: (a) Song from Lines (Szopsky), (b) My little Nightingale (Zelensky), (c) Two Songs (Aloniuszko), (d) Lithuanian Song (Chopin), (e) Le Désir (Chopin). 9.0, Concerto for Soprano and Orchestra (Kassern) by Mme. Bandrowska-Turka and the Philharmonic Orchestra, relayed from the Philharmonic. 9.40, Sports Notes. 9.45, Radio Journal. 9.55, Aviation Weather Report and Police Notes.

ZAGREB

977 kc/s, 307 metres; 0.75 kW.—6.30 p.m., Announcements. 6.50, Introductory Talk to the following Relay. 7.0, European Concert, relayed from Warsaw. 9.0, News and Weather. 9.10, Jazz Music by the Sever Band, relayed from the Grill Room. 10.0 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

SATURDAY

APRIL THE EIGHTH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL LONDON REGIONAL**
- MIDLAND REGIONAL**
- NORTH REGIONAL**
- WEST REGIONAL**

Choral concert from the Queen's Hall.
"The Piper," a lyric drama by H. Fenters. "The Pyramid," a play by N. Edwards, and "A Visitor from Down Under," by L. F. Hartley.
From the Musical comedies, orchestral programme.
Vaudeville programme.
Orchestral concert from the National Museum of Wales.
Orchestral concert from the Ulster Hall.

ABROAD

- ATHLONE BERO-MUNSTER HILVERSUM**
- KONIGSWUSTERHAUSEN LANGENBERG**
- OSLO PALERMO**
- PITTSBURGH STUTTGART**
- TURIN**
- WARSAW**

8 p.m. Dublin Philharmonic Society.
6.45 p.m. Symphony concert, conducted by Felix Weingartner.
7.40 p.m. Bach's St. Matthew Passion, from Amsterdam.
8.15 p.m. Chamber music, conducted by Lindner.
7.20 p.m. The Münster Municipal Orchestra, conducted by A. Wolf.
9.15 p.m. Orchestral concert of operetta music.
7.45 p.m. Operetta: "Katja the Dancer" (Kalmann).
1.15 a.m. (Sunday). The Boston Symphony Orchestra, from New York.
7.15 p.m. Operetta: "Cagliostro in Wien" (J. Strauss).
7.45 p.m. Operetta: "The Duchess of Hollywood" (Ranzano and Lombardo).
9.5 p.m. Chopin pianoforte recital by A. Michalowski.

BRATISLAVA

1,076 kc/s, 279 metres; 14 kW.—3.10 p.m., Concert of Light Music by the Station Orchestra, conducted by J. Odehazek. 4.10, Talk. 4.25, Marionette Play. 5.15, Harmonium Solos. 5.40, Talk for Housewives. 5.55, Talk on Housing. 6.0, See Prague. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

BREMEN.—See Hamburg.

BRESLAU

923 kc/s, 325 metres; 1.5 kW. and Gleiwitz, 1,184 kc/s, 253 metres.—12.5 p.m., Weather, followed by Gramophone Concert of Variety Music. 12.45, Time, Weather, News, and Exchange. 1.5, Gramophone Concert of Popular Music. 1.45, Programme arranged by the Post Office, with Gramophone Records. 2.10, Agricultural Prices. 2.40, Film Review. 3.0, Talk: Private Schools in Germany. 3.30, See Hamburg. 4.30, Review of Books on Wagner. 4.50, A Review of the Week's Talks and Literary Intelligence. 5.20, Talk: Experiences in Esthonia and Latvia. 5.45, Gramophone Concert of Marches: Old German Fanfare March (Apitius); Old Army March (Homann); Bayrisch Blau (Friedemann); Elfer-Marsch (Reindel); Finnish Cavalry March (arr. Haekenberger); Fehrbelliner Reitermarsch (Hehrlein); Petersburger Marsch; Alter Präsentier-Marsch (Frederick Wilhelm III); Dern Königgrätzer Marsch (Pifke); Fredericianus—the Marches of Frederick the Great. 6.30, Weather and Topical Talk. 7.0, Variety Programme with Ludwig Manfred Lommel, and the Station Orchestra conducted by Franz Marszalek. 9.0, Time, Weather, News, Sports Notes, and Programme Announcements. 9.30 (approx.), Dance Music from Berlin (Witzleben). 11.0 (approx.), Close Down.

BRNO

878 kc/s, 342 metres; 35 kW.—3.10 p.m., See Bratislava. 4.10, Tales of our Grandmother. 4.20, See Prague. 4.50, Esperanto Readings. 5.0, Theatre and Film Review. 5.15, See Prague. 5.25, German Transmission: News and Concert of Light Music. 6.0, See Prague. 9.15, See Moravská-Ostrava. 10.30 (approx.), Close Down.

BRUSSELS (No. 1)

1.N.R., 590 kc/s, 509 metres; 15 kW.—11.0 a.m., Concert by Mickey's Club Jazz Attraction. 12 Noon, Le Journal Parlé. 12.10 p.m., Gramophone Concert: Tiens! voilà Mathieu (Dautzenberg); La Havannaise (Saint-Saëns); Popular Song, Regret à Lisou (Gérard); Ballet Music from Samson and Delilah (Saint-Saëns); Echoes of Alsace (Rucpoy); Florentine Song, Pimpinella (Tchaikovsky); Viennese Waltzes (Korngold); Vieni sul Mar (Tchaikovsky); Selection from The Gipsy Baron (Strauss). 4.0, Concert by the Radio

Orchestra, conducted by Charles Walpot, Soloists: Misson (Violin), Walloon March (Ernotto); Suite of Oriental Dances (Hilfieri); Aphrodite (Jongen); Violin Solos: Cadence and Oriental Dance (Marsick); An Evening in Libripit (berry); Pastoral Suite (Mac-Ramsay); Interlude (Rogister); Bueche (Griffaert). 5.0, Talk: The Walloon District. 5.15, Gramophone Records: Quartet (Frank); Spanish Rhapsody (Rayel). 6.15, Report on the Walloon Movement. 6.30, Le Journal Parlé. 7.0, Walloon Programme, relayed from the Palais des Beaux Arts. In the intervals, Orchestral Music. 9.0, Le Journal Parlé. 9.10, Walloon Programme (cont'd). 10.0, Gramophone Concert of Variety Music.

BRUSSELS (No. 2)

1.N.R., 887 kc/s, 338.2 metres; 15 kW.—Programme in Flemish.—11.0 a.m., Gramophone Concert. Overture, Fra Diavolo (Auber); Lusinga (de Curtis); Liebeslied (Schubert); Xopia Opnia (Woodford-Finden); Valse caprice (Bazin); Popular Polish Dance, Szajerek; Selection from Les Erynnies (Massenet). 12 Noon, Le Journal Parlé. 12.10 p.m., Concert by Mickey's Club Jazz Attraction. 4.0, Mozart Concert on Gramophone Records. Overture, Idomeneo-Song, Deh vieni non tardar; Concerto in E Flat for Violin and Orchestra; Song from Il Re Pastore; Waltz in B Flat; Waltz in F; Symphony No. in G Minor. 5.0, Peter Benoit Pianoforte Recital by Jef Van Hoof. Deloende Kludde; Nachtylinders; Ziesbegeestering. 5.15, Talk on History: Philip the Good. 5.30, Light Music on Gramophone Records. 6.0, Song Recital by Mlle. Fernande Lettany. 6.15, Talk: Travel in Norway. 6.30, Agricultural and Horticultural Report. 7.0, Concert by the Radio Orchestra, conducted by Charles Walpot, Soloists: MM. Rubens (Tenor) and Gans (Bass) and Mlle. Baritza (Soprano). Florentine March (Enick); Overture, Si j'étais Roi (Adam); Waltz, Toujours on jamaïs (Waldteufel); Songs for Tenor; Violin Solo; Ziemerweisen (Saracate); Songs for Soprano; Perpetuum mobile (Joh. Strauss). 7.45, Talk. 8.0, Concert (cont'd). Tenor and Bass Duets: Flemish Songs (Walpot); Waltz Potpourri, Was die Donau erzählt (Morena); Songs for Tenor; Hoiki-kooits (Mireille); Japanese Bell Dance (Yoshitomo); Selection from White Horse Inn (Benatzky). 9.0, Le Journal Parlé. 9.10, Light Music on Gramophone Records. 9.45, Orchestral Concert, relayed from the Ancienne Belgique.

BUCHAREST

761 kc/s, 394 metres; 12 kW.—3.0 p.m., Light Music and Romanian Music by the Sibicchio Orchestra. In the interval at 4.0, Radio Journal. 5.0, Talk: Romanian Influence Abroad. 5.20, Talks on Hygiene, Sport, and the Tourist Traffic. 6.0, Sacred Songs and

Popular Romanian Songs by the Carmen Choir, relayed from the Romanian Athenaeum. 7.45, Radio Journal.

BUDAPEST

545 kc/s, 550 metres; 18.5 kW.—Also relays on 840 metres from 6.0 (approx.), till Close Down. 4.30 p.m., Concert by the Nador-Sovanka Gypsy Band. 5.30, Answers to Correspondents. 6.0, Popular Music on Gramophone Records. 7.0, Reading. 7.30, Readings by Aranka Várady. 8.10, Concert of Light Music by the Opera House Orchestra. 9.40, Concert by the Georg Hutterberg Jazz Band, relayed from the Café Ostende.

CASSEL.—See Frankfurt.

COPENHAGEN

1,067 kc/s, 281 metres; 0.75 kW.; and KALUNDBORG, 260 kc/s, 1,153 metres; 7.5 kW.—11.0 a.m., Town Hall Chimes. 11.2 to 1.0 p.m., Concert from the Bellevue Grand-hotel. 1.30, Gramophone Records. 2.0, Reading for Children. 2.30, Orchestral Concert, conducted by Lanny Gröndahl, Soloist: Johannes Viggo-Pedersen (Pianoforte). Overture, The Siege of Corinth (Rossini); Waltz, Donauwellen (Ivanovic); March and Dance from Belshazzar (Sibelius); Selection from Hansel and Gretel (Humperdinck); Dance from Maskarade (Carl Nielsen); Pianoforte Solos: (a) Toccata and Fugue in D Minor (Bach-Tausig), (b) Impromptu in E Minor (Schubert), (c) Rhapsody in E Flat (Brahms); Concert Overture, Til vædets (N. W. Gade); Selection from Sysselskabet (J. P. E. Hartmann); March from Maryskirken (J. P. E. Hartmann); Two Pieces from Václav Smet (Henriques); Two Pieces from Laekmi (Ludolf Nielsen). 4.0, Exchange and Market Prices. 4.50, Reading in English from Three Men on the Bench (Jerome K. Jerome). 5.20, French Lesson. 5.50, Weather and News. 6.15, Time Signal. 6.30, Talk: The Situation in the East of China. 7.0, Town Hall Chimes. 7.1, Kvan Comedy in Five Acts (Dumas). 9.0, News Bulletin. 9.15, Mandoline Concert. Minuet in G (Beethoven); Nocturne, Op. 7, No. 2 (Chopin); Gavotte, Stephanie (Zybilka); Waltz in E Flat (Durand); Two Russian Folk Dances; Tarantella (Grazianni Walter). 9.45, Dance Music from the Løberg Restaurant. In the interval at 11.0, Town Hall Chimes. 11.15 (approx.), Close Down.

CORK.—See Athlone.

CRACOW

950 kc/s, 312.8 metres; 1.5 kW.—6.30 to 10.0 p.m., See Warsaw. 10.0, Light Music and Dance Music from the Pavilion Restaurant. 10.50, Talk. 11.0, Fanfare from Notre Dame.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

FECAMP

1,328 kc/s, 225.9 metres; 10 kW.—11.0 a.m., Popular Music on Gramophone Records. 11.30, News. 11.45, Radio Concert. 12.0 to 6.0, Programme in English by the I.B.C., C. Danvers-Walker, R. McNabb, and F. Lamping announce. 5.0, Song Recital for Isle of Thanet Listeners: A Brown Bird Singing; Dance away the Night; I love the Moon; Let me dream in your Arms, gain; Rollin' down the River; Let me sing and I'm happy. 5.20, Concert for Dover Listeners: Military Band Music; Cupid's Army (Sievier); Down South (Myddleton); The Mad Major (Alford); In the Sudan (Sibek); Selection from Floradora (Sigmund). 5.40, Concert for Folkestone Listeners: Light Music; That tiny Teashop; Song, Tell me to-night; Argentina Amor; Bells across the Meadow; Song, La Danza (Rossini); The clock is playing. 6.0, Radio Gazette. 6.20, News and Popular Music on Gramophone Records. 6.45, Answers to Correspondence and News. 8.0, Organ Recital by M. Devrigny. 11.0 p.m., till Close Down, Programme in English by the I.B.C. 11.0, International Broadcasting Club Concert of Special Request Items: Eleven more Months and Ten more Days; Valencia; Absent; He played his Ukelele as the Ship went down; A Waltz of Long Ago; Ole Man River; Love's Dream after the Ball; Toasts. 12 Midnight, Club Concert for Sunderland Listeners: Part I, Variety Music; Mason's Apron; I've got one Arm round Mary; She's too good for me; Silvery Moonbeams; Rakes of Channel; You've got to laugh at Care; The Tilted Dutchman; The Police Station; Part II, Songs: Love is a Dreamer; I'm following you; Mona; Hawaiian Trio; Aloma; For the likes of you and me; Would you? My Fate is in your Hands; Hawaiian Trio; Julien. 1.0 a.m. (Sunday), Accordion Solos: Blue Bells (Beaton); La Jaja de Donoume (Padilla); Marche joyeuse (Cuvelier); Medley of English Airs; Prince Charlie (Beaton); The Skaters' Waltz (Waldteufel); Annette (Phyllis); Medley of Scottish Airs. 1.30, Songs: The Night you sang "Sweet Genevieve"; That dear old Song; Forge me not; Old Pal; We live and we love; Little Boy Blue; My old Irish Cottage; Lay my Head beneath a Rose. 2.0, Light Music: Lights of Paris; It always starts to rain; It happened in Monterey; Just a little closer; Linda; I don't mind walking in the Rain; Little Painted Doll; Got the Bench, got the Park; The Waltz you saved for me;

ALGIERS
824 kc/s, 364 metres; 13 kW.—7.10 p.m., Shipping Notes. 7.15, Agricultural Report and Weather Forecast. 7.20, Concert by a Gypsy Band. 7.40, Light Music. 7.55, News Bulletin. 8.0, Time Signal. 8.2, Concert of Variety Music by the Station Orchestra and Soloists. 8.30, News Bulletin. 8.35, Concert (cont'd). 9.35, Dance Music, relayed from the Hotel Aletti. 10.25, News Bulletin. 10.30 (approx.), Close Down.

ATHLONE
725 kc/s, 413 metres; 60 kW., and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather, Stock Report and Popular Music on Gramophone Records. 6.15, Light Music on Gramophone Records. 7.20, News. 7.30, Time. 7.34, Talk on Allotments. 7.45, Gaelic Talk. 8.0, Concert by the Dublin Philharmonic Society, relayed from McIntyre Hall; Conductor: Turner Inggard. 10.0, Lecture Recital by Carl Hardsbeck. 10.30, Time Signal, News, Weather and Close Down.

BARCELONA
RADIO BARCELONA, Call EAJ1, 860 kc/s, 348.8 metres; 8 kW., 6.0 p.m., Programme for Children. 7.0, Request Gramophone Records. 7.30, Exchange Quotations and Catalan Grammar Lesson. 8.0, Light Music on Gramophone Records and News Bulletin. 9.0, Chimes from the Cathedral, Weather Forecast, Exchange Quotations and Market Prices. 9.5, Concert by the Station Orchestra; March (Bayer); Danza mora (Fernández); Valse triste (Sibelius); Polonaise from Eugene Onegin (Tchaikovsky). 9.30, A Musical Comedy, relayed from Madrid (EAJ7). 11.0 (in an interval), News Bulletin.

BARI
1,112 kc/s, 269.8 metres; 20 kW.—7.0 p.m., Agricultural Notes, Tourist Talk, and Popolavoro Announcements. 7.20, Giornale Radio and Weather Forecast. 7.30, Time Signal and Announcements. 7.35 (approx.), Concert of Operetta Music and Songs. In the interval, Art Notes. 9.30, Popular Music on Gramophone Records. 9.55, News Bulletin.

BASLE.—See Schweizerischer Landessender.

BELGRADE
697 kc/s, 430.4 metres; 2.8 kW.—6.0 p.m., Wireless Talk. 6.30, Cello Recital by Jovan Mokranjatz. 7.10, Concert by the Station Orchestra. Soloist: Mme. Nadezda Stajic (Songs). Overture, Romeo and Juliet (Gounod); Two Songs; Selection from Halka (Moniuszko); Songs: (a) Hindu Song (Rimsky-Korsakov), (b) Italian Song (Debussy); Selection from The Duchess of Chicago (Kálmán); Songs: (a) Ninon (Tosti), (b) Song (Krtic). 8.30, News Bulletin and Relay of European Stations.

BERLIN
KONIGS WUSTERHAUSEN, 183.5 kc/s, 1,635 metres; 60 kW.—12.45 p.m., News Bulletin. 1.0, Gramophone Concert from Berlin (Witzleben). 2.0, Programme for Children. 2.30, Weather and Exchange. 2.45, Alfred Hein reads from his own Works. 3.0, Talk: Experiences on the Anglo-German Border Expedition. 3.30, See Hamburg. 4.10, Review of the Week. 5.0, Folk Song Recital by Margarete Roll; Da droben auf jenem Berge; All meine Gedanken; Die Sonne scheint nicht mehr; In einem kühlen Grunde; Kommt ihr G'spielen; Der schwere Traum; Herzlich tut mich erfreuen; In stiller Nacht; Wach auf, meine Herzensschöne; Tanzen und springen. 5.30, A Dialogue on Danzig. 5.55, Weather Forecast and Announcement. 6.0, Talk: Religion and Life. 6.30, A Poem. 6.35, String Quartet in E Minor, Op. 58 (Beethoven), by the Klingler Quartet. 7.15, Des tollen Bonaperts Kumpanei—a Humorous Ghost Play from Old Westphalia (Ernst Keienburg). 8.15, Variety Programme from Breslau. 9.10, Weather, News, and Sports Notes. 9.45, Weather Report for Shipping. 10.0, Serenade from Munich. 11.0 (approx.), Close Down.

BERLIN
WITZLEBEN, 715 kc/s, 419.5 metres; 1.5 kW.—3.0 p.m., Concert by the German Symphony Orchestra, conducted by Manfred Gurlitt; Overture, Der Schauspielerdirektor (Mozart); Ballet Music (Gluck-Mottl); Overture, Alessandro Stradella (Flotow); Six Country Dances (Beethoven); Pösther-Walzer (Lanner); Prelude to Der Hühnerhäuter (Siegfried Wagner); Overture, Die Heirat wider Willen (Humperdinck); Waldwanderung (Bleich); Overture, William Tell (Rossini); Military March (Schubert). 5.0, Topical Talk. 5.25, Erwin Guido Kolbenheyer reads from his own Works. 5.55, The Witzleben Station informs its Listeners. 6.0, Topical Talk. 6.10, Hugo Wolf—a Radio Picture (Erich Portner). 6.55, Announcement. 7.0, Opera Potpourri, by the Station Choir and Orchestra, Maria Schulz-Dornburg, Gertrud Baumann, Hans Heinz Bollmann, Rudolph Galena-Ruckert, and Georg Hölzger. 8.40, A Political Dialogue. 9.5, Weather, News and Sports Notes. 9.15 (approx.), Radio Report. 9.30 (approx.), Dance Music. 11.30 (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.
BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.
BODO.—See Oslo.

APRIL 8th

SATURDAY

continued

Smile, darn ya, smile; Carry on; My Cradle is the Desert; With my Guitar and you; Lazy Day. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

1,157 kc/s, 259.3 metres; 17 kW.; Cassel, 1,220 kc/s, 245.9 metres; and Trier, 1,157 kc/s, 259.3 metres.—2.30 p.m., Programme for Children. 3.50, Economic Notes. 4.0, See Stuttgart. 5.15, Exchange Quotations. 5.25, Talk: The Reclamation of Waste Land under the State Employment Schemes and the National Memorial Trust. 5.50, Dialogue: Philosophical Outlook and Race in Germany. 6.15, Time, Programme Announcements. Weather and Exchange. 6.30, See Stuttgart. 7.15, Cagliostro in Wien—Operetta in Three Acts (Joh. Strauss). 9.20, Time, News, Weather and Sports Notes. 9.45, See Munich. 11.0 (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 806 kc/s, 372 metres; 1.5 kW. Relayed by Bremen, 1,112 kc/s, 269.8 metres; Flensburg, 1,319 kc/s, 227.4 metres; Hanover, 590 kc/s, 566 metres; and Kiel, 1,292 kc/s, 232.2 metres.—3.30 p.m. (from Bremen), Orchestral Concert, conducted by Vincent Heran. March, Götterfunken (Rumohr); Overture, Militärbehelf (Schmidt); Two Arias from Lohengrin (Wagner); Potpourri, Military Memories (Reckling); Trumpet Solo, Oh du mich liebste, from Naktirs Hochzeit (Lincke); March, Bayerngruss (Kraft); Dehlermarsch (Faust); March from The Huguenots (Meyerbeer). 4.30, Dialogue: Revolutions and Revolutions. 4.55 (from Hanover), Variety Programme. 6.0, Talk: Labour Policies in Australia. 6.25, Weather. 6.30 (from Kiel), Concert by the Kiel Zither Club, conducted by Albert Richter. Concert Overture, No. 3 (Kollmanek); Minuet from the Sonata in A Minor (Kollmanek); Intermezzo, Am Märchenbrunnen (Kollmanek); Two Little Tone Pieces (Pugh); (a) Liebesgruss, (b) Mairöschchen; Gavotte, Frühlingstraum (Schneider). 7.0, Dramatic Programme. 9.15, Time, Weather, Political Review and Sports Notes. 9.35, Topical Talk. 9.45, Benefit Programme for Hamburg Authors, relayed from the Uhlenbüsch Fährhaus.

HANOVER.—See Hamburg.

HEILSBURG

1,085 kc/s, 276.5 metres; 60 kW.; and Danzig, 459.2 metres.—12.5 p.m., Gramophone Concert: Selection from The Tales of Hoffmann (Offenbach); Wien bei Nacht (Komzak); Salut d'amour (Elgar); Serenade to a Kiss (Elgar); Hochzeitszug in Liliput (Translatour); Intermezzo, Sefra (Siede); Auf der Wanderschaft (Manfred); Waltz, Dorfschwalben aus Festerreich (Jos. Strauss); Moonlight on the Alster (Fétras); The Clock (Loewe); Tom, the Rhymer (Loewe); Wenn man recht verliebt ist (Schmidt-Gentner); Nur Hu (Schmidt-Gentner); O Deutschland hoch in Ehren (Lindemann); The Russian Pedlar (Farraris); In the Bird Shop (Lake); Potpourri, Extravaganzen (Morena); March, Dolores (Penc); Alter Präsentiermarsch (Friedrich Wilhelm III). In an interval at 12.20, Announcements. 1.30, Programme arranged by the Post Office, with Gramophone Records. 2.0, Agricultural Prices and Exchange. 2.30, Programme for Children. 3.0, Concert by the Small Station Orchestra. Overture, Hungaria (Nagypal); Suite, Ein Schubert-Abend in Wien (Ralf); In the Mystic Land of Egypt (Kettelbey); In a Persian Market (Kettelbey); Selection from The Hermit's Bell (Maillart); Waltz, Marienkönig (Jos. Strauss); Lehár Potpourri (Hrby); Two old Dutch Dances (Heykens); Zu Grossmütterchen's Geburtstug (Heykens); Potpourri, Vom Rhein zur Donau (Rhode). 5.0, Programme Announcements. 5.10, Programme Announcements in Esperanto. 5.15, Agricultural Prices. 5.25, World Market Prices. 5.40, Talk. 6.0, Talk: The Tourist Agency. 6.20, Musical Pictures of Towns—Pianoforte Recital by Julius Dahlke. Berlin (Wohle); Hamburg (Niemann). 6.50, Weather and News. 7.0 till Close Down, Programme from Berlin (Witzleben).

HILVERSUM

1,013 kc/s, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). 11.40 a.m. to 7.40 p.m., Programme of the Workers' Radio Society (V.A.R.A.). 11.40, Concert by the V.A.R.A. Mandoline Band, conducted by J. B. Kok. 12.10 p.m., Music by Mac's Four. 12.30, Organ Recital by J. Jong Barcarolle (Offenbach); Aubade d'automne (Lacôme); Serenade (Waldau). 12.45, Music by Mac's Four (contd.). 1.5, Organ Recital (contd.).

Wir schlagen ein. 1.50, Music by Mac's Four, (contd.). 1.40 to 1.55, Interval. 1.55, Light Music on Gramophone Records. 2.30, Concert by De Notenkrakers. Soloist: Mlle. Elly Krasser (Soprano). Waltz, Accelerationen (Strauss); Das Lied vom hübschen Mädel (Reinhardt); Czardas from Countess Maritza (Kadman); Three Viennese Songs, Gramophone Records. Songs with Orchestral Accompaniment: (a) Two Swabian Dances (Urbach), (b) La Paloma (Yradler), (c) Ins blaue Leben (Erwin). Songs with Accompaniment on Two Pianofortes: Three Airs from Ball in Savoy (Abraham). 3.10, Illustrated Talk on Music. 4.0, Concert by the V.A.R.A. Children's Choir. In the interval at 4.10, Talk. 4.40, Concert by De Flieduiters, conducted by H. de Groot. Soloist: Mlle. E. Philippse (Songs). 5.20, Literary Talk. 5.40, Concert by the V.A.R.A. Orchestra, conducted by de Groot. March, El Picador (Oscheit); Romantic Suite (Armandola); Harvest Festival in the Ukraine (Kubat); Crescendo (Lassen); Salome's Vision (Archibald); A Wedding Day on Troldhaugen (Greig); Gern hab' ich die Frau geküsst (Lehár). Gramophone Records, Polka (Balling); Prima Ballerina (Translatour); Rossini Potpourri (Tavan). 7.10, Talk on the Elections. 7.40 till Close Down, Programme of the Allgemeine Vereinigung Radio Omrope (A.V.R.O.). 7.40, Time Signal. 7.41, The St. Matthew Passion (Bach) relayed from the concertgebouw, Amsterdam. Conductor: Dr. W. Mengelberg. In the interval: Popular Music on Gramophone Records. 10.40, News Bulletin. 10.50, Light Music on Gramophone Records. 11.40, (approx.) Close Down.

HORBY.—See Stockholm.

HUIZEN

160 kc/s, 1,875 metres; 8.5 kW.—Programme of the Catholic Radio Society (K.R.O.). 11.55 a.m., Concert by the Wim Metselaar Trio. March (Gray); Waltz, Wine, Woman and Song (Joh. Strauss); Extase (Ganne); Arabesque (Debussy); Andante from the Concerto for Violin in E (Mendelssohn). Selection from Viktoria and her Hussar (Abraham). Gramophone Records, Marionettenbraut (Rathke); Zwei schwarze Augen, zwei Gitarren (arr. Weninger); Ich suche Liebe (Buder); Johnnie (Holländer); Selection from The Love Parade (Schertziinger). 1.25 p.m., Interval. 1.40, Programme for Young People. 2.10, Programme for Children. 3.40, Popular Music on Gramophone Records. 4.10, Concert by the K.R.O. Orchestra, conducted by van 't Woud. March, The Stars and Stripes (Souza); Overture The Daughter of the Regiment (Donizetti); Waltz, Paysage d'automne (Waldteufel); Sang und Klang aus dem Osten (Eberle); Suite, In a Fairy Realm (Kettelbey); Waltz, Golden Rain (Waldteufel); March, San Lorenzo (de Silva). 5.10, Esperanto Lesson. 5.25, Orchestral Concert (contd.). Virginia (Wood); The Blue Pavilion (Armandola); Waltz, Carmen Sylva (Ivanovici); Dance of the Marionettes (Gillet); March, The Liberty Bell (Souza); Ballet Music from Coppélia (Delibes); March, The Diplomat (Souza). In an interval at 6.0, Press Review. 6.50, Scientific Talk. 7.10, Police Report. 7.25, Sports Notes. 7.40, Variety Concert by the K.R.O. Boys and the Doeke Stunrop Ensemble, with Songs to the Lute by Geert Bils. 10.10, Popular Music on Gramophone Records. 10.40, News. 10.45, Light Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

JUAN-LES-PINS

1,202 kc/s, 249.6 metres; 0.7 kW. 7.30 p.m., Radio Concert. 8.0, Weather, Racing Results and News. 8.15, Radio Concert. 11.0 to 12 Midnight, Programme in English, by the I.B.C. H. K. Hitchcock announcing. 12 Midnight (approx.), Close Down.

KALUNDBORG.—See Copenhagen.

KATOWICE

734 kc/s, 408 metres; 16 kW.—6.0 p.m., Announcements and Gramophone Records. 6.10, Joseph Alexander Galuszka reads his own Poems. 6.30, See Warsaw. 10.30, Dance Music.

KAUNAS

165 kc/s, 1,935 metres; 7 kW.—7.20 p.m., Popular Programme. 7.40, Talk: Societies for the Study of Economics. 8.0, Concert. 8.30, Sports Notes. 8.40, Concert. 9.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

167 kc/s, 1,796 metres; 40 kW.; and Helsinki, 815 kc/s, 368.1 metres.—6.25 p.m., Herrä Tarkastaja—Play (Helarintta). 6.45, Dance Music. 7.45, News in Finnish. 8.0, News in Swedish. 8.15, Dance Music by a Military Band. 10.0 (approx.), Close Down.

LANGENBERG

635 kc/s, 473 metres; 60 kW.—12 Noon, Orchestral Concert. Overture, Banditenstrelche (Suppe); Banern-Suite (Albilot); Selection from Martha (Flotow); The Butterfly Chase (Keter-Bela); Waltz, Traumdeale (Fueik); Potpourri, Musikalische Seifenblasen (Urbach); Spring Serenade (Lacombe); Gallop, Durchs Ziel (Translatour). In the interval at 1.0 p.m., News. 1.35, Week-end Concert on Gramophone Records. 2.30, Exchange and Time Signal. 2.50, Programme for Children. 3.10, Talk: The Art of Spaking Naturally. 3.30, Reading in English. 4.0, Baritone and Pianoforte Recital. Pianoforte Solo: Kinderszenen (Schumann); Baritone Solos: Songs from Die schöne Müllerin (Schubert): (a) Wohin, (b) Halt, (c) Der Neugierige, (d) Pause, (e) Eifersucht und Stolz, (f) Die liebe Farbe, (g) Die böse Farbe, (h) Trocken Blumen. Pianoforte Solos: (a) Thirty-two Variations (Schubert), (b) Tarantella from Venezia e Napoli (Liszt). 5.15, The World on Gramophone Records—Sunny Days in Dalmatia. 5.40, Weather, Time, Exchange and Sports Notes. 5.50, Talk: Shipping on the Rhine. 6.10, Talk: Man and Society. 6.30, Talk: The Significance of Technical Progress. 6.55, First General News. 7.0, Folk Songs to the Lute, by Hermann Munk. 7.20, Concert by the Münster Municipal Orchestra, conducted by Arthur Wolf, with the Bochum Vocal Trio, Karl Marsteller (Harp) and Fritz Rohde (Pianoforte). Overture, The Merry Wives of Windsor (Nicolaï); Selection from Hansel and Gretel (Humperdinck); Piece for Harp and Strings, Harfuers Abendgesang (Kienz); Songs for Trio (Wiltberger): (a) Die innere Stadt; (b) Zwei Schüllein; (c) Bei dir; (d) Tanzliedchen, Festival Overture (Lassen); Second Suite from Peer Gynt (Grieg). Harp Solos: (a) Andante (Schuecker); (b) Wellenspiel (Pesse). Kaiserwalzer Strauss). 9.5, News and Sports Notes. 9.30, Gramophone Report on the World Championships in Billiards, relayed from the Gürzenich, Cologne. 9.50, Serenade, conducted by Eysoldt. 11.0 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

769.9 kc/s, 389.6 metres; 120 kW.; and DRESDEN, 941 kc/s, 319 metres.—12 Noon, News, Weather and Time. 12.15 p.m., German Songs and Dances on Gramophone Records, followed by Exchange Rates. 1.0, Wireless Hints and Notes. 1.30, Programme for Children. 2.15, Chess Lesson. 2.45, Economic Notes. 3.0, Talk on Music, followed by Labour Market Report. 3.30, Concert from Berlin (Witzleben). 5.0, Legal Talk: Monetary Difficulties. 5.30, German for Germans. 5.50, A Modern Dictionary. 6.0, Pianoforte Recital by Walter Petzet, with Introductory Talk: Beethoven and the German Pianoforte Sonata; Sonata in C Minor; Der todkranke und wieder gesunde Hiskias (Kulnau); The Pathetic Sonata in C Minor, Op. 13 (Beethoven). 6.35, Talk: The World of Atoms and Molecules. 7.0, Concert, relayed from the Cathedral, Bantzen. Soloist: Horst Schneider (Organ). Tocata in A (Wenzel); Crucifixus, for Choir, Soprano, Baritone, Organ and Orchestra (Hermann Simon). 7.30, In the Centre of the Reich. 8.10, News. 8.15, The Malice of Objects—a Humorous Sequence. 9.20, News. 9.30 (approx.), Concert by the Station Orchestra, conducted by Theodor Blumer. Serenade, Op. 108 (Thomas); Ballet Suite from Die Liebesprobe (Mozart); Selection from The Miracle (Humperdinck); Overture, Schirin and Gertraude (Graener); Heroic March in G Minor (Schubert); Selection from Rienzi (Wagner); Symphonic Dance (Rabel); German Dances (Reger); Perpetuum mobile (Ries); Schlämmlied (Ries). 11.0 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

522 kc/s, 574.7 metres; 7 kW.—6.0 p.m., Talk on Sociology. 6.30, Philosophical Talk. 7.0, Concert by a Mandoline Sextet. 8.0, Complots. 8.30, Quintet Concert. 9.0, Time, News and Light Music.

LYONS

LA DOUA, 644 kc/s, 465.8 metres; 1.5 kW.—6.30 p.m., Radio Gazette for Lyons and the South East. 7.40, Choral Concert, relayed from the Salle Rameau. After the Concert, News Bulletin.

MADRID

ARANJUEZ (EAO), 9,860 kc/s, 30.43 metres; 20 kW.—6.0 to 8.0 p.m., Programme for Listeners in the Canary Islands, Guinea, and America. 6.0, Concert of Light Music. 7.15, Talk. 7.30, Popular Music. 8.0, Interval.

10.30, See Madrid, EAJ7. In the interval, Radio Chronicle. 12 Midnight (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 707 kc/s, 424.3 metres; 2kW. 7.0 p.m., Chimes, Exchange Quotations and Request Gramophone Records. 8.15, News Bulletin. 8.30 to 9.0, Interval. 9.0, Lingophone English Lesson. 9.30, Chimes, Time Signal and Transmission of a Musical Comedy. 11.45, News Bulletin. 12 Midnight, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

1,137 kc/s, 263.8 metres; 11 kW.—3.10 p.m., See Bratislava. 4.10, See Prague. 4.50, See Brno. 5.0, Music Review. 5.15, See Prague. 5.25, Song Recital by Vera Borska. 6.0, See Prague. 9.15, Radiofilm—Programme of Songs, Instrumental Solo, Dramatic Items and Music by the Station Orchestra, conducted by J. Plichta. 10.30 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

563 kc/s, 533 metres; 1.7 kW. Relayed by Augsburg and Kaiserslautern, 536 kc/s, 560 metres; and Nürnberg, 1,256 kc/s, 239 metres.—12 Noon, Orchestral Concert, conducted by Erich Kloss. 1.0 p.m., Time, Weather, News, Announcements, Exchange and Post Office Announcements. 1.25, Literary and Musical Programme. 2.25 (from Nürnberg), Talk: Castles and Ruins in Switzerland. 2.45, Weather and Agricultural Notes. 3.0, Labour Market Report. 3.10, Concert by the Station Orchestra, conducted by Karl List. 4.20, Programme for Young People. 5.5, Wireless Hints and Notes. 5.20, Concert of Gregorian Chorals by the Cathedral Choir, conducted by Ludwig Berberich; Liturgical Songs for the Blessing of the Palms and the Mass of Palm Sunday; Songs for Holy Week: (a) Christus factus est, (b) Ecce lignum, (c) Ubi caritas. 5.55, Zither Recital; Venezia (Kollmanek); Romance (Bauer); Vögelin in den Zweigen (Obermaier); Waltz, Moss Roses (Bose). 6.15, Talk on South-West Africa. 6.35, Wireless Notes. 6.55, Wind Instrument Concert by Ernst Krug and his Band; March (Bürnkau); Selection from Eva (Lehár); Waltz, La Hussarde (Ganne); Song Potpourri (Franz); The Reservist's Dream (Reeg); March, Erinnerung an Metz (Krug); March, Königs-Übungen (Kreisl); 7.55 (from Nürnberg), Alle Vögelin sind schön da—a Song Sequence. 8.45, Reading in Bavarian Dialect. 9.0, Concert by the Station Choir: Two Songs for Mixed Choir (Schumann); (a) Nicht zieht es nach dem Dörchen hin, (b) Sommerlied; Two Songs for Women's Choir (Brudans); (a) Am Willbach, (b) Märznacht; Two Songs for Male Voice Choir: (a) All mein Gedanken (Rein), (b) Klinge lieblich und suchst (Raphaël); Mixed Choir: Dance Song (Schaeffer). 9.20, Time, Weather, News and Sports Notes. 9.45, Serenade, conducted by Erich Kloss. 11.0 (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

277 kc/s, 1,083 metres; 60 kW. Relayed by Fredriksstad, 820 kc/s, 365.8 metres; Hamar, 522 kc/s, 574.7 metres; Notodden, 671 kc/s, 447.1 metres; Porsgrund, 662 kc/s, 453.2 metres; and Rjukan, 671 kc/s, 447.1 metres.—3.15 p.m., Popular Concert on Gramophone Records. 4.15, Programme for Children. 5.15, Norwegian Music for Hardanger Fiddle and Violin. 5.45, Talk on Economics. 6.0, Announcements, Weather and News. 6.30, Talk. 7.0, Time Signal. 7.2, Literary and Musical Programme arranged by the Norwegian Authors' Society. 8.40, Weather, News and Topical Talk. 9.15, Orchestral Concert of Operetta Music by Kálmán, Strauss, Offenbach, Gilbert, Kollo, and Lehár. 10.0, Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

558 kc/s, 537.6 metres; 3 kW.—7.0 p.m., Dopolaro Announcements, Tourist Talk. Agricultural Talk and Giornale Radio. 7.20, Sports Notes. 7.30, Time Signal and Announcements and Light Music on Gramophone Records. 7.45, Katja the Dancer—Operetta (Kálmán). In the intervals: Book Review and Announcements. 9.58, News Bulletin.

PARIS

EIFFEL TOWER (FLE), 207.6 kc/s, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 9.25 a.m. and 10.26 p.m. (Primary and 6-dot Signals).—5.45 p.m., Talk on the Theatre. 6.0, Le Journal Parlé. 7.20, Weather Forecast. 7.30, Pianoforte Recital by Marie Antoinette Pradier, with Commentary by André Delacour; Melodies (Lully): (a) Air tendre, (b) Gigue; Melodies

APRIL 8th

SATURDAY

continued

(Dagincourt): (a) L'Etourdie. (b) La Montre à vent; Les Tourbillons (Dandrien); Les Fiffres (Dandrien); Sarabande (Destouches); Allegro (Schubert); Gigue (Lœillet); Romance (Marais); Le Vieux (Marais); Le Concert (Daquin); La Victoire (Duply). 8.0, Quartet Concert: Quartet in C Minor, Op. 51 (Brahms); Tango (Albeniz-Kreisler); Spanish Dances (Sarasate): (a) Playera, (b) Zapateado; Caprice for Thirty Violins: Erlkönig (Schubert-Ernst).

PARIS

POSTE PARISIEN, 914 kc s, 328.2 metres; 60 kW.—6.0 p.m., Gramophone Concert of Light Music. 6.30, Answers to Correspondence. 6.35, Gramophone Concert (contd.). 7.0, Review of the Week. 7.5, Theatre Music Notes. 7.15, Interval. 7.30, Chamber Music Concert. 8.0, Interval. 8.10, Dance Music by the Sonora Band. 10.0, News. 10.15, Gramophone Dance Music. 11.0 (approx.), Close Down.

PARIS

RADIO PARIS (CFR), 174 kc s, 1,725 metres; 75 kW.—5.45 a.m., Physical Culture. 6.30, Weather and Physical Culture Records. 6.45, Light Music on Gramophone Records. 7.0, Press Review and Weather. 8.0, Concert by the Conservatoire Concert Society. 11.0, Orchestral Concert: Suite, La douce maison (Lacôme); Impressions matinales (La Tourelle); Rustic Suite (Ludry); Nuages (Georges); Angelus du soir (Andrien); Echos du bocage (Bades); Dans un jardin la nuit (Bernard); Danse villageoise (Chabrier-Rudd); Melody (Beethoven); Le chemin creux (Ladmirault); Le bul du métrolier (Ropartz). In the intervals at 12 Noon, Exchange, News and Weather, and at 12.30 p.m., Exchange, 1.0, Exchange. 2.0, Report on the Football Match between Cannes and the Roubaix Racing Club. 2.45, Exchange and Market Prices. 3.45, Light Music on Gramophone Records. 4.0, Programme for Children. 6.0, Talk on Birds. 6.20, Agricultural Talk. 6.45, Commercial Prices and News. 7.0, Viennese Programme. 7.30, News and Weather. 7.45, Variety Programme. 8.15, Press Review and News. 8.30, Concert of Light Music on Gramophone Records. In the interval at 8.40, Review by Jean Rieux.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 980 kc/s, 306 metres; 25 kW. Relayed by WBXK on 48.86 metres and 25.27 metres. 9.0 p.m., Programme to be announced. 10.0, The United States Government in Pittsburgh—The U.S. Employment Service by S. Caney. 10.15, Hotel Sherman Orchestra, from New York. 10.30, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Ophan Annie, from New York. 11.0, Hotel Lexington Orchestra, from New York. 11.15, Time Signal. 11.16, Weather Report. 11.17, Teaberry Sport Review. 11.22, Press News Reeler. 11.29, Temperature Report. 11.30, A Recipe by Bill and Alex of the Downtown Y.M.C.A. 11.45, Smith Ballou and his Orchestra. 11.59, Time Signal. 12 Midnight, Homey and Old Fashioned Quartet. 12.15 a.m. (Sunday), Adventures of Aunt Lulu—KDKA Players. 12.30, Atkinson String Ensemble. 12.45 to 1.0, New York Relay. 12.45, Townsend Murder Mystery. 1.0, American Taxpayers' League. 1.15, The Boston Symphony Orchestra. 3.15, Salon Singers. 3.30, Cuckoos. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.13, KDKA Artist Bulletin. 4.15, Press Last-minute News. 4.20, Messages to Dwellers of the Far North.

PORSGRUND.—See Oslo.

PRAGUE

614 kc/s, 488.6 metres; 120 kW.—3.10 p.m., See Bratislava. 4.10, Talk on Economics. 4.20, Czech Lesson for Germans and German Lesson for Czechs. 4.50, Variety Music on Gramophone Records. 5.5, Agricultural Report. 5.15, Talk for Workers. 5.25, News in German. 5.30, German Transmission: Scenes from the Munich Passion Plays. 6.0, Chimes. 6.1, News. 6.10, Medical Talk. 6.25, Round the World on Gramophone Records. 7.0, Variety Programme. In the interval at 8.0, Time Signal. 9.0, Time Signal. 9.1, News. 9.15, See Moravska-Ostrava. 10.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 743 kc/s, 403 metres; 25 kW.; Lausanne, 442 kc/s, 680 metres; and Geneva, 395 kc/s, 760 metres.—5.0 p.m. (from Geneva). Talk. 5.30 (from Lausanne). Book Review. 6.0 (from Lausanne). Weather Forecast, News Bulletin, and Announcements. 6.30 (from Lausanne). Talk or Films. 7.0 (from Lausanne). Concert of Light Music relayed from the Bel-air Metropole. 7.30 (from Geneva). Recitation of Fables (La Fontaine). 7.45 (from Geneva), Harp Recital by Joseph Vitta. 8.0, Concert

by the Station Orchestra, conducted by Robert Echeuard. 9.0, News Bulletin and Weather Forecast. 9.10 (from Geneva). Dance Music by the Broadcasting Senders. 10.30 (approx.). Close Down.

REYKJAVIK

260 kc/s, 1,200 metres; 21 kW.—8.30 p.m., Weather Report. 9.0, Chimes. 9.2, News Bulletin. 9.30, Reading. 10.0, Concert by the Station Quartet, followed by Choral Music on Gramophone Records. After the Concert, Dance Music. 1.0 a.m. (Sunday), Close Down.

RIGA

572 kc/s, 525 metres; 15 kW.—5.30 p.m., French Lesson. 6.0, Weather Report. 6.5, Songs from Operettas. 7.0, News. 7.20, Humorous Programme. 7.50, Variety Music on Gramophone Records. 8.30, Dance Music. 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

680 kc/s, 441 metres; 50 kW. Relayed by Naples, 941 kc/s, 319 metres, and 2R0, 11,810 kc/s; 25.4 metres.—12 Noon, Time and Announcements. 12.2 to 1.15 p.m., Orchestral Concert: Almeria (Matty); Voces montana (Montanaro); Italian Caprice (Tchakovsky); Melody (Gilbert); Non più (Cimara); Pulcinella (de Nardis); Selection from Rose Marie (Friml); Saxophone Solo. Klöxy (Königsberger); Children's Games (Burgmeier); Napoli-Paris (Carducci). 3.30, Programme for Children. 4.0, Exchange, Announcements, Report of the Royal Geographical Society and Giornale Radio. 4.5, Reading. 4.30 to 5.15, Orchestral Concert: March, Omnia (Ottaviani); Florentia (Andlovitz); Selection from Adriana Lecouvreur (Cilea); Grottesque (Rust); Melody (Strauss); L'ultimo amore (Culotta); Fanciulle belle (Anzi); Ecco i goliardi (Fiorone). 6.0 (Naples), Shipping and Sports Notes. 6.10, Atmospheric Signals. 6.20, Giornale Radio and Agricultural Notes. 7.0, Time and Announcements. 7.15, Song Recital by Elena Chelli (Soprano). 7.30, Sports Notes and Tourist Report. 7.45, Relay from a Theatre. In the intervals: Review of New Books and Literary Notes. 9.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 790 kc/s, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.55 metres.—12 Midnight, Hotel New Yorker Orchestra, from New York. 12.15 a.m. (Sunday), Stock Report. 12.30, Lady Fingers (Pianists). 12.45 to 1.0, New York Relay. 12.45, The World To-day by James G. McDonald. 1.0, Viennese Programme. 1.30, The Economic World To-day. 2.0, The Blue Danube. 2.30, Musical Programme. 3.0, B. A. Rolfe and his Terraplane Orchestra. 4.0, Programme Resumé.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 653 kc/s, 459 metres; 60 kW.; BASLE, 1,229 kc/s, 244.1 metres; and BERNE, 1,220 kc/s, 245.9 metres.—11.28 a.m., Time Signal from Neuchâtel Observatory. 11.30, Weather and News. 11.40 (from Berne), Variety Music on Gramophone Records. 12.10 p.m. (from Berne), Jazz Music by Jimmy Mack and his Boys. 12.40, Weather and Exchange. 12.45 (from Basle), The Listeners' Quarter-of-an-Hour. 1.0 (from Basle), Book Review. 1.30 (from Basle), Choral Music on Gramophone Records. 2.0 (from Basle), Talk: The Importance of Salt in Food. 2.30 (from Basle), Frieda Brunner reads from her own works. 3.0 (from Basle), Accordion Music. 3.40 (from Basle), Talk on Air Travel. 4.0, Variety Music on Gramophone Records. 4.30, Weather. 4.35 to 5.30, Interval. 5.30 (from Basle), Talk in connection with the Opening of the Exhibition of Contemporary Paris Art at the Kunststalle: Georges Braque and Modern Painting. 6.0 (from Zürich), Chimes from Zürich Churches, followed by Time, Weather and Market Prices. 6.15 (from Basle), Talk: The Development and Achievements of Wireless. 6.45 (from Basle), Introductory Talk to the following Relay. 6.45 (from Basle), Tenth Symphony Concert by the Musikgesellschaft, conducted by Felix Weingartner; Soloists, Frieda Dirolf (Contralto) and Fritz Hirt (Violin). 9.0, Weather and News. 9.10 (from Basle), Dance Music on Gramophone Records. 10.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

689 kc/s, 436 metres; 55 kW. Relayed by Boden, 241 kc/s, 1,229.5 metres; Göteborg, 932 kc/s, 322 metres; Hörby, 1,166 kc/s, 257 metres; Motala, 221.5 kc/s, 1,354.4 metres; Östersund, 399 kc/s, 70 metres; and Sundsvall, 554 kc/s, 542 metres.—3.0 p.m., Concert of Light Music. 4.5 (from Göteborg), Programme for Children. 4.30, Popular Music on Gramophone Records. 5.30, Tipperary—Tea for Two—Mimi—A History of the Popular Song, with illustrations. 6.15, Weather and News. 6.30 (from Göteborg), Old Time Dance Music. 7.15, Talk by Ludvig Norström. 7.45 (from Sundsvall), Concert by Wind Instrument Orchestra: March, Hoch Heidecksburg (Herzen); Waltz, Morgenblätter (Joh. Strauss); Selection from The Desert Song (Romberg); Serenata Italiana (Mignon); Air from Lysistrata (Lincke); Polpouiri (Fritzel). 8.45, Weather and News. 9.0, Dance Music by the Gösta Jönsson Orchestra, relayed from the Savoy. 10.0 (approx.), Close Down.

STRASBOURG

869 kc/s, 345 metres; 11.5 kW.—10.30 a.m., Gramophone Records: The Trout Quintet (Schubert); Fantasia in C Minor (Mozart); Polonaise (Vieuxtemps); Interlude and Dance from La vida breve (Falla). 11.45, News. 12 Noon, Time and Exchange. 12.5 p.m., Light Music on Gramophone Records. 1.0, Dance Music on Gramophone Records. 2.0 to 2.45, Interval. 2.45, Talk: Mendelssohn's Pianoforte Compositions. 3.0, Orchestral Concert, conducted by Maurice de Villers: Overture, The Bartered Bride (Smetana); The Moldau (Smetana); Orchestral Legend, Zorahayda, Op. 11 (Svendson); Norwegian Rhapsody (Svendson); Symphonic Poem, La jeunesse d'Hercule (Saint-Saëns); Symphonic Variations for Cello and Orchestra (Boëllmann); Symphony (Boëllmann). 5.0, Legal Talk in German. 5.15, French Education Lesson. 5.30, Gramophone Concert: In a Clock Store (Orth); In a Toy Shop (Jessop); The Skaters' Waltz (Waldteufel); Waltz, Les sirènes (Waltteufel); Cockshafers' Tea Party (Noack); Parade of the Sparrows (Noack); Envoi de fleurs (Bernard); Petite brunette (Madeleine); Chant du marin (Van Parys); Melody (Dolly-Strauss); Military March (Schubert); Triumphant March from Aida (Verdi). 6.15, Gardening Talk in German. 6.30, Time and News. 6.45, Popular Music on Gramophone Records. 7.15, Lottery Results. 7.30, Four Plays in French: L'Homme à la Valise—One-Act Comedy (Gaston Guillet); Les démaçonnés—One-Act Comedy (Farénot); L'Hourneur—Radio Comedy in One Act (Henri Picard); Le nouveau—Comedy (Stoskopf). 9.0, Orchestral Concert of Jazz Music, conducted by Roskam. 10.0, Wagner Concert on Gramophone Records: Overture, Lohengrin; Selection from Lohengrin; Selection from Tristan and Isolde; Prelude and Death of Isolde. 11.0 (approx.), Close Down.

STUTT GART

MUHLACKER, 832 kc/s, 360.5 metres; 60 kW.; and Freiburg, 527 kc/s, 570 metres.—12.30 p.m., Concert from Langenberg. 1.30, Time, News, Weather and Programme Announcements. 1.45, Italian Tenors on Gramophone Records. 2.30, See Frankfurt. 3.30, Accordion Concert of Light Music. 4.0 (from Freiburg), Orchestral Concert of Operetta Music: Overture, Giroffo-Giroffa (Lecocq); Selection from Boccaccio (Suppé); Operetta Polpouiri, So schön wie's damals war (Zielner); Overture, Indigo (Joh. Strauss); Selection from The Gipsy Baron (Joh. Strauss). 5.0, Time and Sports Notes. 5.15, Talk: Richard Wagner and Friedrich Nietzsche. 5.40 (from Freiburg), Songs and Dances in a Quiet Valley in the Black Forest—a Radio Report. 6.15, Time, News and Weather. 6.30, Spring in the Time of our Fathers—a Literary and Musical Sequence, arranged by Curt Elwenspöck and Gustav Görlich. 7.15, Part Relay of an Operetta from Frankfurt. 9.20, Time, News, Weather and Programme Announcements. 9.45, See Munich. 11.0 (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

779 kc/s, 385 metres; 8 kW.—5.30 p.m., Scènes pittoresques (Massenet) by a Symphony Orchestra. 5.45, Light Music. 6.0, Instrumental Solos. 6.15, Racing Results and News Bulletin. 6.25, Local News. 6.30, Music by a Viennese Orchestra. 7.0, Opera Music: Selection from (a) Aida (Verdi), (b) Norma (Bellini), (c) Faust (Gounod). 7.15, Accordion Music. 7.30, Programme of Balalaika Music and Russian Songs. 7.45, Instrumental Solos: (a) Serenade (Gounod), (b) Extase (Ganne), (c) Rigaudon (Rameau).

8.0, Concert: Part I, Extracts from The Mastersingers—Opera (Wagner); Part II, Opera Music; Part III, Military Music. 9.0, Songs from Sound Films. 9.15, North African News. 9.30, Concert for Listeners in Morocco: Invitation to the Waltz (Weber); Air from La Bohème (Puccini); Melody (Kromberger); La Parlez-moi d'amour (Lenoir); Melody (Carrara); Le Tra (Moutouret). 10.0, Popular Concert. 10.30, 11.0, Programme in English by the I.B.C. W. Brown-Constable announcing. 10.30, Organ Recital: Popular Irish Melody; Sunshine Susie; You are my Heart's Delight; Close your Eyes; I bring a Love Song; Londonderry Air; When It's Night Time in Nevada; Goodnight Sweetheart. 10.45, I.B.C. Goodnight Melody. 11.0, News, Weather, and Announcements. 11.15, Operetta Music. 11.15, Orchestral Music. 11.30 (approx.), Close Down.

TRIESTE

1,211 kc/s, 247.7 metres; 10 kW.—6.50 p.m., Pizzetti Violin Recital by Magda Gusbert, with Explanatory Notes by Ettore Sigoni, followed by Programme from Turin.

TRONDHEIM.—See Oslo.

TURIN

1,096 kc/s, 273.7 metres; 7 kW. Relayed by Milan, 905 kc/s, 331.5 metres; Genoa, 909 kc/s, 312.8 metres; and Florence, 599 kc/s, 500.8 metres.—6.0 p.m., Time Signal and Gramophone Records. 6.20, Giornale Radio. 6.45, Tourist Talk and Giornale Radio. 7.0, Announcements, Giornale Radio, Weather, and Gramophone Records. 7.30, Talk: Events and Problems. 7.45, The Duchess of Hollywood—Operetta in Three Acts (Ranzato and Lombardo). In the intervals, Review of New Books and Miscellaneous Notes. After the Operetta (Florence only), Dance Music from the Chez moi Rajona. 10.30 (approx.), Close Down.

VATICAN CITY

15,120 kc/s, 19.84 metres (Morning), and 5,969 kc/s, 50.26 metres (Evening); 10 kW.—10.9 to 10.15 a.m., Religions Announcements in Various Languages. 7.0 to 7.15 p.m., Religious Information in Italian

VIENNA

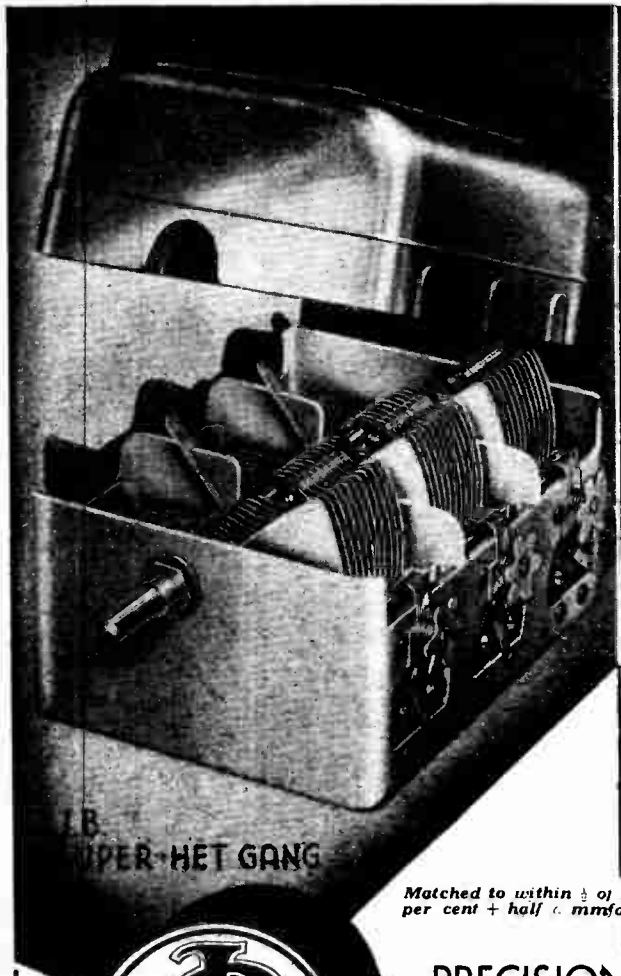
581 kc/s, 517 metres; 15 kW. Relayed by Graz, 852 kc/s, 352.1 metres; Innsbruck, 1,008 kc/s, 283 metres; Klagenfurt, 662 kc/s, 451.2 metres; Linz, 1,220 kc/s, 245.9 metres; and Salzburg, 1,373 kc/s, 218.5 metres.—4.30 p.m., Concert by the Heinz Morawetz Orchestra: Overture, Venus auf Eden (Lincke); Waltz, Märchen aus Wien (Rosenstorfer); Selection from Die Fledermaus (Joh. Strauss); Song from Eine göttliche Nacht (Dostal); Selection from Der Rastelbinder (Lehner); Waltz, Wiener Blut (Joh. Strauss); Polpouiri, Mein Wien (Morawetz); March, Steierbrunn (Kozad). 5.50, Topical Talk. 6.15, The Maxico. 6.20, Time, Weather, Sports Notes and Programme Announcements. 6.30, Concert of Hungarian Songs, relayed from the Musikvereinssaal. 7.0, Recital on Two Pianos by Emerich Spielmann and Georg Job: Largo from Xerxes (Händel); Andante from the Violin Concerto (Mendelssohn); Three Bohemian Dances (Novak). 7.35, Violin Recital by Ludwig Wittels: Selection from (a) The Bartered Bride (Smetana-Ondricek), (b) Schwanda the Piper (Weinberger-Wittels). 8.0, Relay of an Opera from Italy. In an interval, News, Weather, and Announcements.

WARSAW

212.5 kc/s, 1,411 metres; 120 kW.—10.7 a.m., Time Signal and Fanfare from St. Mary's Church, Cracow. 11.5, Programme Announcements. 11.10, Light Music on Gramophone Records. 12.10 p.m., Weather Forecast. 12.15, Programme for Schools, relayed from Lwow, 788 kc/s (381 metres). 12.55 to 2.10, Interval. 2.10, Announcements. 2.15, Economic Notes. 2.25, Military Correspondence. 2.35, Programme for Children. 3.0, Light Music on Gramophone Records. 3.20, Talk on History. 3.40, Talk on the Economist, Bertrand Russell, relayed from Lwow. 4.0, Programme for Invalids, relayed from Lwow. 4.30, Announcements. 4.40, Topical Talk. 4.55, Programme Announcements. 5.0, Biological Talk. 5.20, Talk on Current Events. 5.25, Light Music, relayed from the Café Italia. 6.0, Miscellaneous Items. 6.20, Agricultural Report. 6.30, Topical Talk. 6.45, Radio Journal. 7.0, Concert of Light Music by the Station Orchestra, conducted by S. Navrot; Soloists: Mme. Terné (Songs) and L. Budnicki (Mouth Organ). 7.55, Sports Talk. 8.0, Radio Journal. 8.5, Concert of Light Music (contd.). 9.5, Chopin Pianoforte Recital by Alexandre Michalowski. 9.40, Talk: The Zoological Gardens in Spring. 9.55, Weather Forecast and Police Notes. 10.0, Dance Music. In the interval: News for Members of the Polish Polar Expedition.

ZURICH.—See Schweizerischer Landessender.

**YOU NEED THIS PRECISION
FOR SINGLE-DIAL CONTROL**



Matched to within $\frac{1}{2}$ of 1 per cent + half a mmfd.



**PRECISION
INSTRUMENTS**

..... a standard of precision that will meet efficiently the requirements of modern superhet circuits with single-dial control. The general construction follows that of the J. B. NUGANG, with the exception of one section which has vanes specially shaped to ensure accurate tracking of the oscillator. Rigid one-piece chassis. Robust construction. Easily adjustable trimmers to each stage operated by external star-wheels. Special rotor bearings which ensure permanent accuracy. Capacity 0005.

J.B. SUPER-HET GANG

Fully-screened	-	3-gang	-	25/6
as illustrated	-	4-gang	-	33/-
Semi-screened	-	3-gang	-	23/-
(without lid)	-	4-gang	-	30/-

Advertisement of Jackson Bros. (London) Ltd., 72, St. Thomas' Street, London, S.E.1. Telephone: Hop 1837.



DETECTION

To-day & Tomorrow!

The design of radio receivers has passed through many changes in the last few years, but one element has remained common to all—the detector; and this portion of a receiver is of first importance.

Normally, the present methods of detection give poor quality and selectivity, but certain modifications have allowed the use of a diode or duo-diode valve, which has met with considerable success. But valves require both heater and anode current, and the anode circuit must be efficiently decoupled.

The advent of the new WESTECTOR, however, brings the ideal detector a step nearer. This



development of the well-known Westinghouse Metal Rectifier enables the rectification of radio-frequency currents to be obtained by the use of a robust copper-oxide detector, which requires no anode or filament current, and which is no bigger than a grid leak.

The Westector is a great advance on previous linear detectors; and, as it retains the inherent qualities of long life and distortionless output associated with the Westinghouse Metal Rectifier, it is undoubtedly the detector of the future. The attached coupon will bring you full particulars.

**THE WESTINGHOUSE
WESTECTOR
HIGH FREQUENCY METAL DETECTOR**

THE WESTINGHOUSE BRAKE & SAXBY SIGNAL CO., LTD.,
82, York Road, King's Cross, London, N.1.

POST COUPON FOR FULL PARTICULARS

Please send me full details of, and circuits for use with, the new Westector.

NAME

ADDRESS

W.W.1433

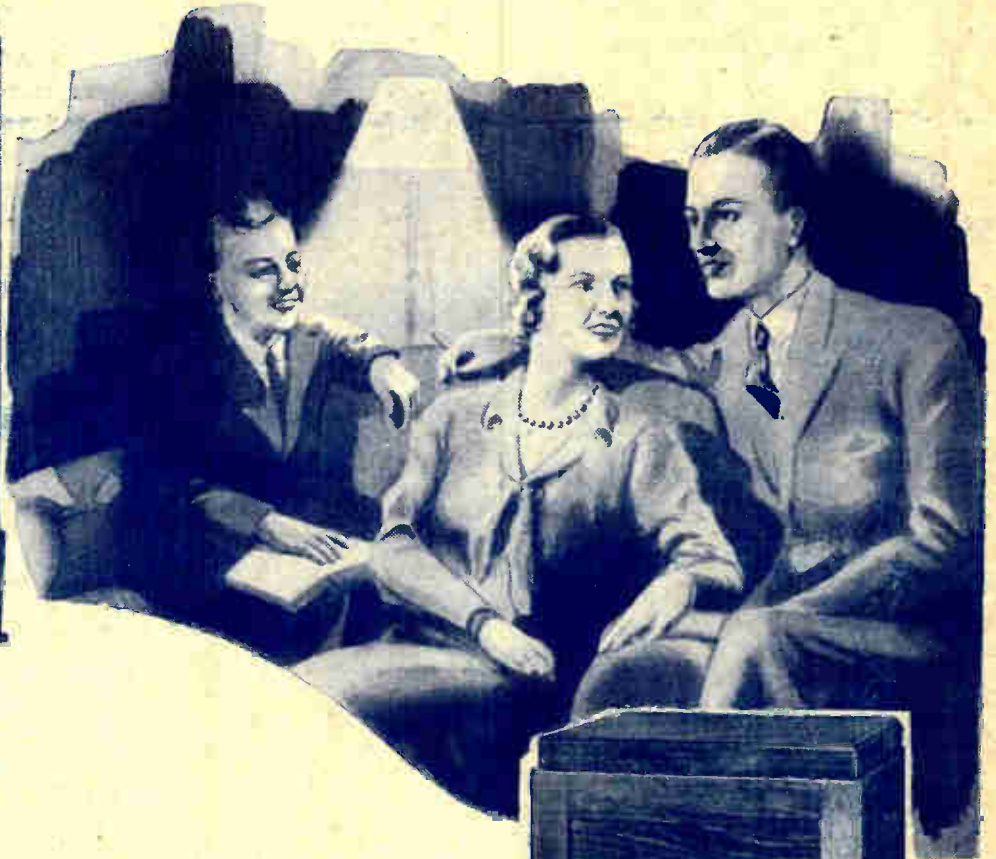
**"I'm glad you waited for
an R.G.D. dad"**



Model 901. (A.C. or D.C.)
9-valve Supersonic Radio
Gramophone.

IN OAK **80 gns.**

Also available with
Automatic Record Changer.



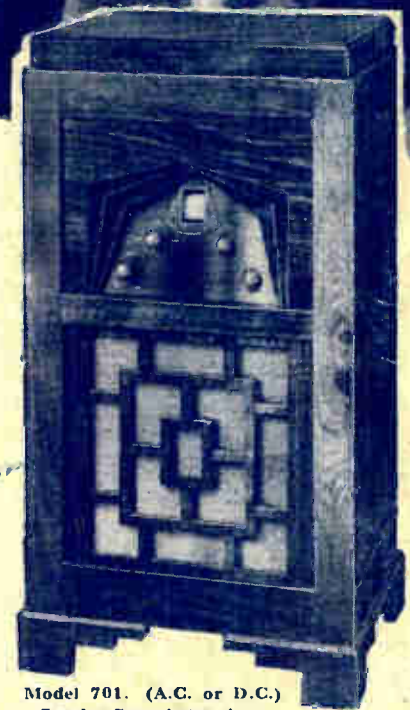
The ultimate acquisition of an R.G.D. was a "wait" worth waiting for, and a tribute to "dad's" fine sense of values. You may search where you like, and make every possible comparison, but nowhere will you find an instrument which combines all the enviable qualities of an R.G.D. Radio Gramophone. Amazing selectivity and freedom from interference; a high degree of sensitivity and a tonal beauty that beggars description. The R.G.D. Radio Gramophone is the instrument not only for to-day, but for the days to come when the average present-day receiver will be obsolete.

Write for literature which fully describes Model 901 (fitted with two balanced speakers) and Model 701, which is "little brother" to the famous 901.

R.G.D.
*the Hall Mark
of Perfect Reproduction*

RADIO GRAMPHONE DEVELOPMENT CO., LTD.,
17-20, FREDERICK ST., BIRMINGHAM.

Manchester : 17, Bridge Street. London : 40, Doughty Street, W.C.1.



Model 701. (A.C. or D.C.)
7-valve Superheterodyne.
Radio Gramophone.

IN WALNUT **48 gns.**

Also available with
Automatic Record Changer.

Holdens

THE R.G.D. WAS OLYMPIA'S PRIZEWINNER FOR TWO CONSECUTIVE YEARS