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Using a Microphone

Many beginners experience difficulty when they try to use a simple microphone for home-broadcasting purposes. They find that the speech is distorted, or that a bad feed-back occurs, giving rise to a howl which, apparently, cannot be prevented. Furthermore, a number of amateurs are now building small public-address equipments for relaying band programmes in dance halls, and find that the distribution of sound is very difficult. All of these points have been met with by those who are experienced in public-address work, and it has been found that there is a definite technique which has to be followed, not only in the circuit and wiring arrangements which are employed, but also in the method of arranging the accessories and of using them. In this issue, the whole subject is treated extensively, and with the aid of the details given no difficulty should be experienced either in arranging for a small home broadcast, or in relaying the performance of a dance band over a large hall. The different types of microphone are explained and circuits are given showing the method of connecting the mike end of arranging the various incidental circuits.

Reorganisation in Denmark

From the beginning of this month broadcasting in Denmark passed under the control of a new Director-General. He is Mr. F. K. Jensen, an ex-Government official who has been a popular figure for a long time in Danish broadcasting headquarters.

Six Stations for Norway

Six 150-watt transmitters are to be erected on the coast of Norway, to operate on a wavelength between 80 and 200 metres. The stations are to be used for the benefit of shipping and will utilise both telephony and telegraphy. The contract for building these stations has been placed with Philips Radio.

Midday Television

It is stated that the B.B.C. will shortly commence a television programme of one hour's duration commencing at 11 a.m. Representations have been made to the Corporation by the Radio Manufacturers' Association in order that manufacturers and others may have additional programme matters with which to carry out tests and demonstrations.

Philco Balloons

With reference to the recent note concerning the release of balloons from the Philco factory, we are informed that cards are now being received by Philco from various parts of the world. The first to be received was from St. Albans, but they are slowly arriving from various remote parts of England and the continent. So far, several have come from France and the Rhine Valley, and letters accompanying them describe the scenes of excitement which took place as the balloons descended in villages and hen coops. They also tell of children climbing trees in order to retrieve them.

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The programme will run from 10.15 p.m. until 1 a.m., and will begin in London. After a quarter of an hour, listeners will be switched over to a band in another part of the country, then back to London, and so on throughout the session. Each of the bands will represent a part of the United Kingdom, and will be on the air for approximately a quarter of an hour.

Eric Maschwitz Back Soon

The B.B.C. Director of Variety is expected to return next week after a visit to a Californian ranch, where he has been recuperating. His immediate concern when he returns will be the final preparations for the elaborate Coronation Variety programmes for which his department will be responsible. We hope to give the full details of these programmes next week.

Don Rico's Ladies' Band

The main item in the Variety broadcast from the Coventry Hippodrome in the Midland programme on April 29th will be Don Rico and his Ladies' Band. Apart from its original tone colour, this is one of the very few bands composed entirely of the "weaker" sex touring the halls.

Shetland Islands and Radio Communication

ERTH ship-owners have complained to the Postmaster-General about the absence of communication with the Shetland Islands. They suggest that Lerwick should be brought into communication with the mainland by means of radio. Serious delays have been caused by the absence of communication during recent gales when steamers ran into Lerwick for shelter.

New Prague Podebrady Call-signs

Make a note of the call-signs and wavelengths allotted to the Czech short-wave transmitters: OLR6A, 12.08 m. (22.94 mc/s); OLR6B, 19.58 m. (15.32 mc/s); OLR5A, 19.69 m. (15.23 mc/s); OLR5C, 19.79 m. (15.16 mc/s); OLR4D, 25.21 m. (11.90 mc/s); OLR4C, 25.26 m. (11.875 mc/s); OLR4A, 25.34 m. (11.84 mc/s); OLR4B, 25.51 m. (11.76 mc/s); OLR3A, 31.64 m. (9.55 mc/s); OLR2B, 31.57 m. (9.504 mc/s); OLR2B, 49.75 m. (6.03 mc/s); and OLR2C, 49.92 m. (6.01 mc/s).
ROUND the WORLD of WIRELESS (Continued)

Island Radio

RATHLIX ISLAND, which faces the Atlantic about six miles off the North Antrim coast, is now equipped with an up-to-date short-wave wireless installation working on a wavelength of 79 metres. There are about 400 inhabitants on the island, and before the radio was installed flares were the chief means of communicating with the mainland.

"Favourites" for Coronation Party

W. M. W. Thomas will speak for the employers' side and George Jones for Labour. Another speaker has yet to be chosen.

Concert from Bath

THE Bath Pump Room Orchestra, led by Norman Rouse and conducted by Maurice Miles, will broadcast a concert from the Pump Room, Bath, on April 22th.

Music-hall Music

On April 30th William Pethers will conduct the Coventry Hippodrome Orchestra in an evening concert of music-hall music. This broadcast is arranged to illustrate various features such as acrobats, the Chinese conjurer, and dancers of various kinds.

Dance Interlude

In a Dance Interlude on April 26th, listeners to the Western programme will hear Reginald Williams and his "Futurists" Dance Band, with Francis Crayman, Leonari Elliott and the Three Majors.

African Natives to Hear Coronation Broadcasts

It has just been announced in London that the General Electric Company has received orders for the installation of wireless equipment that will form a network over a very large part of British West Africa. It will be completed in time for hundreds of thousands of natives to hear the Coronation broadcasts. The chief feature of this installation will be a permanent radio relay service that will provide the British Government with a powerful means of propaganda among the native peoples.

The service will operate, through 5,250 loudspeakers, from seven centres. Installations at Lagos, Accra, Cape Coast, Sekondi and Freetown have already been completed, and those at Kofoiridas and Kumasi, as well as other towns, are in course of construction.

Town Tour

John Betjemane is revisiting Plymouth, and on April 26th, in the series entitled "Town Tour," he will broadcast from there his opinions about its architectural amenities.

Concert from Torquay

A NOTHER popular concert by the Torquay Municipal Orchestra will be broadcast from the Pavilion, Torquay, on April 27th. Laurence Holmes (baritone) will be the vocalist.

Glyndebourne Opera Broadcasts

We are informed that arrangements have been completed to broadcast the following operas of Mozart from Glyndebourne during the coming season:—

May 19th: Don Giovanni (Act 2)
May 27th: The Magic Flute (Act 1)
June 3rd: Figaro (Act 3)

Two further broadcasts from Glyndebourne will take place later in the season, details of which will be announced in due course.

Mendip Cave Crawl

An interesting broadcast will be given in the Western programme on May 1st, when an attempt will be made to descend with microphones into Swildon's Hole.

LISTENERS will be taken through 400ft. of narrow tunnels and "squeezes" through which only a small man can pass, with occasional deep streams, waterfalls and caves, all hundreds of feet below ground. Besides being a thrilling sport, speleology has its practical aspects for archaeologists in their search for caves which have been inhabited, and for those who follow the courses of streams.

SOLVE THIS!

**PROBLEM NO. 240**

Temple built a simple 2-valve of the R.F. Pendule Detector, Pendule type, using a 2-gang condenser and a 2-gang coil unit having a wave-change switch mounted in the base. Reception was satisfactory on the long-wave band, but only after a weak signal from the local station could be picked up on the medium-wave band. What was the probable cause of the low M.W. sensitivity? Three looks will be required for the first three correct solutions offered. Address your solutions to the Editor, PRACTICAL AND AMATEUR WIRELESS, Geo. Newnes, Ltd., Tower House, Southwark Street, Strand, London, W.C.2. Envelopes must be marked Problem No. 240 in the top left-hand corner and must be posted to reach this office not later than the first post on Monday, April 26th, 1937.

**Solution to Problem No. 239**

The cathode socket of the outside valve-holder was touching the metal chassis, thereby short-circuiting the bias resistor.

The following three readers successfully solved Problem No. 239, and their books are accordingly being forwarded to them: G. A. Dickenson, 102, Sideup Hill, Airth, Kent; E. Browne, The Shrubbery, Totnes, 8, Heaton, A. E. Royse, 23, Worthington Road, Chingford, E.4.
The built-in loudspeakers (of the balanced input to each room. On the rear of the chassis two Bulgin Single Open Circuit jacks. These are wired in parallel, one side being connected to earth and the other to the condenser. The arrangement is shown in the theoretical and pictorial form in Fig. 1. The built-in loudspeakers (of the balanced pair type) are provided with a short lead to the end of which a standard plug is fitted and this is normally inserted into one of the jacks, the other being reserved for the lead to the extension listening points, a standard plug being fitted to the lead for the purpose. It will thus be seen that either the built-in or the extension speakers may be used singly or together, and to ensure correct matching the extension speakers are of the type provided with a ready-matching transformer.

Input Arrangements

On the input side, the pick-up terminals on the chassis are connected to a jack mounted on the motor-board of the receiver (which is, of course, of the radiogram type) and this jack is arranged close to the pick-up which is in normal use. The jack employed in this position is one of the Intrinsic components which, unfortunately, is not now easily obtained, and is of the type in which opposite pairs of contacts are normally joined together, but the insertion of a plug opens these contacts and enables the component connected to the plug to be joined to one pair of contacts. The arrangement is shown in Fig. 2. It will thus be seen that when the plug is withdrawn from the jack the pick-up is connected to the receiver, but upon inserting the plug into the jack any other component may be joined in place of the pick-up. Alternative makes of jack of this pattern may, of course, be utilised.

How the Arrangement is Used

This plug and jack scheme permits of rapid changes of pick-ups to be made for test purposes and also enables a microphone to be used in place of the pick-up. For use in the room-to-room communication scheme, the microphone and associated battery are connected permanently to the plug and kept on the motor-board and when required the plug is inserted into the jack, with the result that one can speak via the extension leads to any room in which a speaker is connected. To reply, the speaker is employed as a microphone, and the sensitivity of the average moving-coil speaker is such that speech may be heard from the remotest corners of the room without raising the voice, although naturally not of the very high quality associated with a properly-designed microphone. The extension plug at the receiver is therefore removed from the socket and changed with the mike plug on the motor-board, the leads being sufficiently long to permit of this and the change being carried out in a second. The person at the distant point naturally waits a moment or so before replying, although this slight defect could easily be obviated by fitting a double-pole change-over switch. I do not think this is necessary, however, and rely upon the simpler scheme of changing plugs. I have found this plug and jack arrangement possesses many other advantages, and have also employed it for the home-recording arrangements recently described in these pages. The pick-up plug is inserted into the extension speaker socket, leaving the existing speaker in circuit to act as a guide to the volume being obtained, and the microphone or an additional pick-up from another record being plugged into the pick-up jack. By connecting a mixer circuit one is thus able to blend speech with recorded music in making a record to any desired arrangement, and, additionally, the plug may be withdrawn, or the radiogram switch operated so that the radio programme may be recorded.

Advantages of the System

It will thus be seen that this simple arrangement has unlimited possibilities and is at the same time exceedingly simple to fit up. No unwanted or lengthy leads have to be accounted for (which would probably be the case if switches were employed for the various changes); rapid changes for test purposes may be made on the input or the output side; and the wiring to the receiver does not need altering for any of the tests, thus preventing difficulties which sometimes arise when connections are being continually changed or altered.

No doubt further modifications to the basic scheme will occur to the keen experimenter.
Constructional Details of "Practical Wireless" Receivers—

One of the first receivers described in this paper was the Long Range Express Three, and this was published in both a battery and a mains form. The circuit was the conventional H.F., Detector and Pentole arrangement, but the coils and switch mechanism which were specified are no longer on the market.

Fortunately, however, the circuit lends itself to conversion for the use of modern and up-to-date coils, and the blueprint for the battery receiver which is still available will hold good for the modern components. The Bulgin type C.6 and C.8 coils will be found quite suitable, and two Bulgin baseboard toggle switches, type S.80B, with an appropriate shaft may be used for wavechanging. To accommodate the switches the wiring will require only slight modification, the original receiver utilising switches arranged side by side, and in the new form they will be one behind the other. The circuit diagram is attached with terminal reference numbers for the coils, and also a sketch showing the wiring to the switches. These are operated by a rod which is also obtainable from Bulgin.

Constructional Notes

An all-steel chassis is specified and this may still be obtained from E. Parousi, of 10, Featherstone Buildings, London, W.C.1. It is 12 in. by 13 in., and a metal panel 12 in. by 8 in. is also employed. The two parts are ready assembled when obtained from the maker, and if specified for this receiver will be supplied ready drilled. A standard metalised wooden chassis could be used if desired, with an ebonite or wooden panel. The standard Otx valveholders are employed and should be mounted first, after which the coils should be screwed to the chassis. Connection to these is simplified if lengths of flex are first soldered to the projecting tags on the bottom of these coils, and the holes in the chassis should be numbered or a large hole drilled for clearance of all of the tags. The aerial coil is provided with a flexible red lead with a soldering tag at the end, and this is attached to the aerial terminal on the rear runner of the chassis. The remaining connections are shown on the attached sketch. It should be noted that a screened lead is employed to the grid of V1, and this is attached to the chassis by means of a small clip, or a lead may be soldered to it and attached to a convenient earth point.

A Precaution

Separate tuning condensers are employed.

(Continued on page 137)

The Long Range Express Three

List of Components for the Long Range Express Three

Two pair tuning coils, types C6 and C8 (Bulgin).
2. Special screened H.F. choke (Wearite).
3. 0.001 mfd, type S fixed condensers (T.C.C.).
4. 1/2 mfd, ditto (T.C.C.).
5. 1 mfd. (T.C.C.).
6. 30,000 ohm 1 watt fixed resistor (Dublier).
7. 10,000 ohm ditto (Dublier).
8. 2 mica grid leak (Dublier).
9. 4 pin chassis-mounting valveholders (Clix).
11. 16 henry 15 m.A.L.F. choke (Wearite).
12. S.80B toggle switches, and operating rod (Bulgin).
13. 1000 mfd, reaction condenser (Polar).
14. 1 point on-off switch (Wearite).
15. 50,000 ohm potentiometer (Dublier).
18. 16 gauge metal panel and chassis (see text) (Parousi).
19. 27-way battery cord (Bulgin).
20. Connecting wire, bolts and nuts.

Accessories

1. W.B. Junior Loudspeaker.
2. Dreydix 120 volt H.T. battery.
3. Dreydix G.B. battery.
4. 2 volt L.T. accumulator.
5. Convol valve, 220 VSG (met.), 210 HF (met.), and 220 H.P.
TRANSMITTING TOPICS

In this Article the Operation of a 2½-W. Transmitter on A.C.; A Modified 7½-W. Transmitter; and a Headphone Monitor are dealt with.

By L. ORMOND SPARKS

REPORTS received indicate that the 2½-watt transmitter, recently described in these pages, is proving highly satisfactory, and that it has been the means of many keen amateurs entering the transmitting sphere of radio. There are, however, many who wish to make up an A.C.-operated outfit, but they have come up against the difficulty of securing a B.V.M.A. valve suitable for the design; therefore, the details given below will be of some assistance.

If the 250.0 American valves is examined it will be noted that the 6A6 and the 53 are of the "twin triode amplifier" types, otherwise known as Class B valves. The only difference between these is that the 6A6 has a 6 volt .3 amp. heater, while the 53 requires 2.5 volts at 2 amps. The output, which is given as 8-10 watts, is identical in both cases.

The valves can be obtained in the normal manner from most large retailers, and as their cost is very low, compared with a similar B.V.M.A. type, the whole outfit comes out at a very reasonable figure. The circuit is shown in Fig. 2, while Fig. 1 shows the original battery-operated version, and it will be seen that very little alteration is necessary.

If the 6A6 is used, and I would suggest it in preference to the 53, a small filament transformer can be obtained for a few shillings, thus allowing a standard H.T. arrangement to be used. If a valve rectifier is embodied, 220/0.250 volts at 60 m.A. will be quite suitable, and as that is a widely used output, it is quite possible that the necessary components will be on hand in the spares box.

Batteries or a metal rectifier can, of course, be used according to individual requirements and gear available, but I would not advise batteries from the point of view of economy and falling source of supply.

Method of Keying

The keying circuit has not been shown, but that can be inserted in the same way, with filter, as for the original battery model. There is only one item which calls for a little experimenting, the application of bias, by the usual resistance in the cathode circuit arrangement, but it is not essential for operation though a slightly higher output efficiency can be obtained by applying a small bias. I would suggest 200 ohms and 500 ohms as suitable resistance values to try. While considering this part of the circuit, it should be noted that the grid resistance is much greater than in the original and, bearing in mind that a certain bias is applied by virtue of the grid current flowing through the resistance, various values should be tried.

In spite of the greater output, the 6A6 can be modulated quite satisfactorily with the one triode section if a sensitive carbon "mike" is used with the usual high-ratio step-up transformer.

Aerial

The simple "End-on Hertz" or the "Zepp" types are quite suitable, providing the details previously given are followed, and care taken in the measurements.

The 7½-watt Transmitter

Several constructors have raised the point about "frequency doubling" with the circuit I suggested for the above transmitter, to enable them to operate on more than one wavelength without the trouble or, rather, cost of additional crystals.

It will be remembered that two valves were specified in the transmitter section, a C.O. (crystal-oscillator) and a P.A. (power amplifier), and such an arrangement is not satisfactory, as it stands, for "doubling," so I give below the slight modification necessary.

The circuit shown in Fig. 3 is the original suggestion, while Fig. 4 shows the modified form, embodying another valve and simple switching arrangements to allow other wavebands to be covered.

(Continued overleaf)
TRANSMITTING TOPICS

Operation

If the input to the grid of a valve has sine-wave characteristics, and the valve is adjusted to operate on the straight part of its curve, a similar waveform will be produced in the anode circuit, or, in other words, no distortion will be introduced. Assuming, however, that the valve is so biased that it is operating on the bottom bend of its curve, then the anode variation curve will no longer be a true reproduction of the input; in fact, if the curves are compared, it will be found that the frequency of the anode curve represents a "harmonic," usually the second, of the input or fundamental frequency.

If, in the anode circuit, a coil with variable condenser in parallel is connected, and the arrangement tuned to double the input frequency, a barrier will be presented to the component at the higher frequency, and it will be possible to feed it into the P.A. stage via the usual inter-valve coupling.

It must be appreciated that a valve used for frequency doubling is really operating as a "generator of harmonics" and, as the anode circuit is tuned to a different frequency from that of the grid, it is not likely to act as an oscillator or become unstable, and, therefore, ordinary triodes are quite satisfactory.

Little Gain

While such an arrangement can be looked upon as a "straight amplifier," apart from actual operating conditions, it is not usual to obtain much gain from the stage, in fact, in many instances, no gain at all is obtained, the efficiency falling off as the higher harmonics are reached. For a simple "doubler," i.e., second harmonic, the "driving" power should be two or three times as great as that required for ordinary amplification. It will be obvious, in view of the nature of the circuit requirements, that it is not advisable to use valves in push-pull, owing to the freedom of the second harmonic content in their output; parallel arrangements are quite efficient.

To obtain a large harmonic output, it is necessary to bias the valve right down to the "cut-off" point of the anode current curve, in fact, it is quite usual to apply double the "cut-off" bias, providing the necessary drive in available. The additional bias can be provided by batteries, which have certain advantages in this type of circuit, or by using a rather high-resistance grid leak, for example, the leak should have a value of three to four times the value of that specified for normal operation of the type of valve concerned.

There is one point to watch with "grid-leak" bias arrangements. If the drive or excitation of the "doubler" fails, an excessive anode current will flow, sufficient, in fact, to cause harm to the doubler valve, especially if such anode voltages are being applied. With the battery system, this risk is, of course, not present, and, therefore, as both methods have certain desirable features, it is quite common for a combination of the two to be used, i.e., bias applied from a battery to keep the anode current within safe limits, and a grid leak, connected in series with the battery, to provide the extra bias needed for operating conditions differing normal excitation.

Regarding the anode or "tank" circuit, it is necessary to use a coil capable of tuning to double the input frequency with a variable condenser having rather a low capacity. It is advisable to exceed, say, 50 micromicrofarads, while the valve, for preference, should be of the high amplification factor type.

TELEVISION AND BROADCAST WAVELENGTHS!

Hitherto only those in possession of ultra-short-wave receiving sets within the service range have been able to tune in to the sound section of the Alexandra Palace transmitters. Plans are developing, however, and with materialise shortly, whereby the national and regional transmitters on the medium and long waves will radiate some of the television programmes. The best artists are used whenever possible for television, and although the prime factor is sight, with sound as an essential complement, listeners can enjoy the sound signals. Incidentally, this should prove a valuable advertisement for the television service, and is yet another advantage whereby receiver sales may be stimulated.

In addition, realising the extra quality of the ultra-short-wave sound broadcasts because of the absence of sideband limitation, efforts are being made to radiate ordinary radio programmes on these bands. A low-powered transmitter is installed on the roof of Broadcasting House, and although only rated at 250 watts many special tests have been undertaken, and although many special tests have been undertaken, it seems certain that some form of public service will be possible later on. The benefits accruing from the more faithful reproduction of the audio frequencies will then become apparent, and readers of PRACTICAL AND AMATEUR WIRELESS who have studied the ultra-short-wave section will be in a position to take immediate advantage of any transmissions of this nature.
My Pet Aversions

One or two readers have written to ask if I have any more pet aversions besides crooners. Yes, I have! I simply loathe grown-up girls who talk about their daddy and their mummy. I despise men who wear suede shoes and silk underwear. I execrate those poor nitwits who spend their time writing letters to the Editors of daily papers on every subject under the sun; I hate young men who spend all their spare time dancing. I hate the sporty boys who drive low-built sports cars; I dislike jazz music and, equally, classical music is anathema to me. I do not like people who say soon for soine, or pruen for prune. I could easily add to this list, but that's enough to go on with.

New Wireless Clubs

Last week the Editor published a full page of names and addresses of wireless clubs. This is the complete list ever published, but it is incomplete in that in some cases we are without the names and addresses of the officials. Will you do the necessary if you can help? Mr. H. A. Brown, of 12, Stourport Road, Kidderminster, wishes to form a club in his district. Will local readers get in touch with him? Several of the secretaries of wireless clubs have written me deploring the lack of interest in club life. Mr. J. J. Malin, of The Southall Radio Society, tells me that they have found that at Southall to keep enthusiasm at a high pitch it is essential to have a constant stream of new members. They encourage visitors to meetings, but never ask them to join the society; the approach must come from the visitor. The Secretary of the Smethwick Wireless Society, Mr. E. Fisher, M.A., of 33, Freeth Street, Oldbury, Nr. Birmingham, tells me that his society holds a transmitting licence (G2GX), and for some time have been conducting tests on the 10-metre and 5-metre bands. The Smethwick Wireless Society is a very old one, but has had great difficulty in keeping going, for in spite of their public lectures, demonstrations, advertisements, and practical experiments, the backbone of the society still consists of those diehards who have been members for years, and who regard the society as being something that really belongs to them. He is very pleased to see that this journal is taking an active interest in societies. This journal has without a break since its inception regularly published wireless reports of clubs. Our difficulty has not been to find space for them, but to get secretaries sufficiently interested to take advantage of the free publicity we offer. If a secretary is so lax that he cannot send reports to the wireless papers he must expect the club to die. Local advertisements may be all very well in their way, but a report in a national journal such as P. and A. W. will put every club in touch with the most desirable type of prospective member — the enthusiast.

Poor Components

Herewith a letter from L. B. J., of Weston-super-Mare, which speaks for itself:

"I have taken Practical Wireless since it first came out and also Practical and Amateur Wireless and I have frequently noticed comments by yourself about the poor components which are sold to home constructors.

"I have been constructing now for over ten years, but I won't bother you with details of faulty speakers, valves, fixed and variable condensers, potentiometers, although I have had more than my share of them, but I should like to give you a brief summary of my experiences with coils and to ask you what on earth is the matter with them all.

"1927 or 1928. Built a widely advertised set, my first set. Coils faulty, gave up constructing for some months, except with plug-in coils which never gave any trouble.

1931. Built a set employing a pair of — Coils, had two faulty pairs sent me in succession, scrapped them and returned to plug-in coils, and the firm refunded the money for the Coils.

"1933. Decided to try the iron cored coils and to build a set described in a journal, using a pair of — coils. One coil turned out faulty. I wrote Messrs. — and for some reason they suggested that I exchange them for a pair of ganged coils — for the Ether Searcher in Amateur Wireless, January, 1934. This they offered to do, and charge..."
no extra, these coils being nearer than the pair they were exchanging.

"I did so, and received a pair in which the switch was hopelessly faulty—medium on long-wave, high-

nwave everywhere. I took the coils out and returned them, and the next pair they sent me were con-
nected together the wrong way round. After a week or so trying to make the set go I scrapped the coils, and wrote them down as a dead loss. I finally got the set going with a pair of — coils, but not before I had to return one for a broken connection.

"All those months I had been wearily struggling to get my set finished, continually being held up with the faulty coils and thoroughly fed up, and owing to a growing horror of buying coils I have kept my set as it is ever since 1934.

"But I have a spare small 3-valve set, and I had very similar bother.

"I first built the — and had much switch trouble, changed to — iron-cored type, but the selectivity was so poor I decided to remodel the set and use a pair of — coils. The reaction winding in one of these was shorting and I returned it. Three times it came back to me, and each time in the same condition. I then got wild and wrote to the firm declining to have any more of it and asking for the 10s. back. They were very contrite, said those responsible would be reprimanded, and returned me the 10s. I next bought a pair of Unigen coils, and, wonderful to relate, they were both in order.

"During this last week I have been building another small 3-valve set—Det. and two L.F.—and I sent for another — coil, asking the makers to be sure and test before sending. I roughly tested the coil for continuity, built the set, and then on trying out found the coil was faulty, and on test the terminals were found to be shorting between 2 and 3. I am now held up pending the arrival of another 'faulty' coil.

"What can one do? I have given up dealers because they do not cater for the constructor, and the big London firms take an appalling time to execute orders, often send the wrong or broken component, so I invariably buy straight from the makers.

"I often feel tempted to build sets as set forth in your paper, but I do not feel I can cope with the worry and bother of the coil question.

"I would rather give up wireless than listen to commercial sets, and besides, half the fun is in building but I see no option but to give it up and hang on to my present sets until they fall to pieces.

"I thought my experiences might be of some interest to you."

Sir Thomas Beecham

I READ that Sir Thomas Beecham has been having a slash at the B.B.C. because, in his opinion, three parts of the broadcast matter is non-

sense. That is something I can understand. I think that a very high proportion of the matter broadcast by the B.B.C. is excellent, but I agree that a high proportion of the music is jazz. Sir Thomas Beecham is not in any posi-
tion to judge what wireless listeners want. The B.B.C. is, and because it believes in giving the public what it wants, and not what Sir Thomas Beecham thinks it ought to have, that is a point in its favour. If Sir Thomas Beecham were in charge of the B.B.C. Music Department, I have no doubt that the wails from listeners would be more voluminous than they are to-day about crooning and jazz. We must also remember that there was less interest in the style of music which Sir Thomas Beecham purveys before broadcasting started than there is to-
day, so radio must have done orchestras a bit of good. I do not think that Sir Thomas Beecham, in his efforts to fan the lost cause of promenade concerts and classical music, does his case a lot of good by lashing the B.B.C. in this way. It is not the first occa-
sion on which he has let himself go!

A Challenge

T HE Secretary of the Southend and District Radio and Scientific Society held a Coronation Year Radio Exhibition on April 2nd and 3rd. They produced an excellent pro-
gramme of this, and on page 5 I note the following: "Every important town in England has its Radio Society or Club, founded with the object of enabling those interested in the art and science of Radio Communication to get together, exchange ideas, and improve their knowledge of this vast subject. Some of these are solely 'Short-wave Clubs,' consisting only of the people interested in certain aspects of radio work, others are purely scientific bodies, but, as far as we are aware, ours is the only Society in the country which not only embraces all aspects of Radio and allied scientific studies, but also carries out a comprehensive programme of charitable work. We rely on the generosity of visitors to our exhibitions for the greater part of the funds which are needed to carry on this work."

Everyman's Wireless Book

3/6, by post 4d, helps you to trace that fault!
Those Standards

In many quarters it is a matter of mystery how the standards of definition for the line dissection of television pictures is arrived at. Why choose what is an apparently arbitrary odd number when on the surface any other should suffice? For example, we have a B.B.C. standard of 405 lines interlaced in this country, whereas to the uninformed a figure of 403 or 407 should do just as well. The decision, however, is not so simple as it seems at first sight. First of all, assuming that interlacing is to be preferred to sequential scanning owing to its reduction of flicker, readers will appreciate from the various diagrams published in these pages that an odd number of lines is an advantage, since it ensures a more evenly spaced field in the picture. Even number of scanning lines the time-base generator would be complicated, as it would be essential to shift the scan position bodily up and down each frame (half picture scan) to enable the odd and even lines to intermesh. Secondly, the master oscillator which determines the interlace rate and frame scanning frequencies is locked to the A.C. mains for its prime frequency. This is 50 in this country, and to obtain the required high-definition line frequency, harmonic multiplication takes place, the selection being of the lower order of harmonics because of the higher efficiency of the selecting filter circuits working under those conditions.

There are a whole series of graded numbers which fulfill these conditions and 405 is one of them, so that, briefly, is the reason for the present choice. It is known that the Americans are trying to secure some form of international agreement on standards of definition, picture and frame frequency, and also picture ratio of length to height. In this way it is claimed that the commercial exploitation of television will be extended very considerably. Many of their Press demonstrations have been undertaken on a standard of 441 lines, but more recently the American R.M.A. have recommended to the Federal Communications Commission that this should be changed to 441. Both these figures are based on an interlaced picture and differ from this country because the standard A.C. mains frequency in the States is 60 cycles, and it is frequently that in America there is a desire to avoid any possibility of rapid obsolescence of television receivers due to altered standards, compared with the wish in this country to bring television to a higher state of perfection before initiating any wide scale public service. This is a good policy, but it is a form of conservatism which may result in the United States being left behind by those European countries who have already started experiments. Valuable experience is being gained in England, France, Italy and Germany, and public co-operation, together with unbiased Press criticism, especially when of a constructive nature, keeps the project alive to such an extent that there is little likelihood of a stalemating occurring here.

Breakdowns

It is a matter of regret that there have been one or two breakdowns in the television transmissions from Alexandra Palace. On the last occasion, an evening transmission, a sound programme was radiated by the artists, but this only seemed to emphasise how radiated intelligence depends to such a large extent on the appeal to the eye. Since the B.B.C. as a result of the recent Advisory Committee report, have duplicate radio transmitters, etc., it would seem a better plan to have this equipment always standing by and so preserve a continuity of service which is so essential in the early days.

Cable Tests

The Post Office engineers are determined to make sure that the coaxial cable which is now being laid between some of the principal cities in this country is capable of carrying the wide range of signal frequencies for which it was originally intended. To this end equipment has been bought for the purpose of simulating signals embracing the ultra-high frequencies included in every good quality television signal. In this way a direct comparison between input and output signals can be made and a careful examination made for any form of phase distortion or amplitude mutilation. No doubt the best course for this purpose will be to use a cathode-ray oscillograph and either watch the signal shape on the screen or alternatively make photographic records on a special type of film camera for subsequent enlargement on to a cinema screen. It is stated that the equipment can reproduce signal frequencies considerably in excess of those already present in the B.B.C. television service picture. This is to prepare for the future when improved standards of definition are certain to materialise.

French Progress

A large exhibition is being organised to take place in Paris this year, and it is now learned that a new and powerful television transmitting station is to be erected at the base of the Eiffel Tower so as to be in operation in time for the exhibition. The power is given as 30 kilowatts, but it is not known whether this figure is for the mean irradiation or peak power. The company from whom the equipment has been ordered is Le Matériel Téléphonique, and the aerials will be over one thousand feet above the ground. This should ensure a good service range, and the studios housing the scanning equipment will be built in the Radio building of the Paris exhibition as well as in the P.T.T. broadcasting station. Visitors will thus be able to compare the latest developments and no doubt compare the studio scene itself with the received pictures shown on various sets. It is not yet known what standards of definition will be employed, but no doubt they will be an improvement on the early ones of 190 lines with consecutive scanning.

An Early Portable Camera

With the degree of flexibility and portability associated with the present forms of electron cameras accepted now as a natural part of their function, one is apt to overlook the early efforts made in this connection when the B.B.C. were radiating their low-definition television service. This was brought to light by the recent appearance of Jack Payne and his band at the Alexandra Palace. Although this was the band's initial appearance on high-definition receivers, it was by no means the first occasion on which they were brought face to face with the television camera. In October, 1931, the band inaugurated a series of weekly half-hour television transmissions by the Baird process from the old B.B.C. building at Savoy Hill. A newly-designed portable scanner was installed in one of the studios, and not only was Jack Payne seen conducting and announcing, but several members of the band were seen in concerted numbers. The actual equipment used on this occasion is seen in the accompanying illustration. It consisted of an automatic arc lamp, in front of which was an encased scanning disc driven by a steady speed motor. Two lenses on an adjustable erecting arm enabled extended and close-up scenes to be featured, while portability was ensured by having the whole scanner mounted on a tubular tripod with rubber-tyred wheels. Horizontal panning was allowed for by incorporating a small turntable at the top of the tripod and the results at that time were outstandingly good when the degree of definition was borne in mind. This camera was used for several months together with the associated banks of photo-electric cells, and quite rightly can be regarded as the forerunner of present-day television cameras, although not of the modern electronic form.
In Berlin

Radio executives from most of the important European countries attended Berlin recently for a meeting of the International Broadcasting Union. The conference took place in Berlin’s luxury hotel, The Adlon, and a special television demonstration was witnessed. This was not too impressive as the Germans are still radiating an experimental service with only broadcasting 25 images, 25 pictures per second, and the results were very inferior to where is now possible in this country. This consistent maintenance of one standard by Germany for so many years is difficult to understand, for they were first in the field with a high-definition experimental service, and with Government backing it is hardly possible that progress has not been made beyond this point. Perhaps the authorities are waiting for an opportune moment to inaugurate a service which will be even better than the present B.B.C. one, or alternatively the improved equipment is being retained for Government purposes.

Television Cost

While the B.B.C. television service was first inaugurated it was impossible to arrive at any definite figure for the cost involved. The purchase of equipment, antennas if needed, site, the appointment of staff, etc., were unknown factors in terms of money. Now that the service has been in operation for some months, however, a closer approximation to the sum involved for a year’s operation is possible, and in a recently published report, the estimate of the cost was set at £300,000. This is a large sum, but it seems certain that economies will be effected by using suitable television items as broadcast material on the ordinary medium and long-wave stations. Properly organised, with the requirements of both viewers and listeners adequately catered for, a scheme of this nature is sure to develop, and experiments in this connection will be watched with interest. Viewers are certainly helping in programme compilation by their letters to the B.B.C. and the replies to the Question Time will tell us out recent. One thing is very apparent, however, and that is that it is going to be almost as difficult to satisfy viewers as it is listeners, owing to the wide variety of tastes.

The Coronation Procession.

It is proposed to televe the Coronation procession at Apley Gate, Hyde Park Corner, on the return journey from Westminster Abbey. A running commentary will accompany the broadcast, which will open with crowd scenes and last approximately an hour.

The B.B.C. anticipates using three cameras. One of these, installed on the plinth of Apley Gate, will give overhead views of the advancing procession, while a second camera, operated from the pavement immediately to the north of the Gate, will provide close-ups as the procession passes through the arch. Another camera facing southwards from Apley Gate will show the end of the procession crossing Piccadilly towards the Green Park and Constitution Hill.

Is, of course, insulated by the glass bulb, and is not connected in any way. The bulk of the electrons get "lost" by secondary emission. The electrons in the electron beam impinge on the screen so violently that they knock off electrons from the molecular structure of the screen, which, being free and started off in the downward direction are picked up by the positive electrodes, and the "silver" lining fitted to many tubes. In addition to this a certain amount do actually leak along the inside of the glass, and return to the electrodes by this means.

Interference from an Aeroplane

Reports are coming in of an entirely new form of interference peculiar to television. When an aeroplane passes over or very close between transmitter and receiver, the picture slides all over the place. Serious interference of this nature can be caused by an aeroplane a mile or more away, and with a flight of planes, it has been observed when they are five miles from the receiver. It is evidently not interference from the magnet, but appears to be caused by the plane reflecting a sky wave down on to the receiver aerial, and causing the aerial to pick up transmission in the normal way, but reflected out of phase, resulting in the picture appearing normal on the screen, and then displaced.

Assuming the plane to be travelling along a line between receiver and transmitter, the picture is displaced to the maximum extent for approximately 25ft. of the aeroplane’s travel. As this interference is in no way connected with the electrical apparatus on the machine, it is caused entirely by the mass of metal of which the plane is built, it would seem extremely difficult to foresee how such a form of interference could be cured.

What Happens to the Electrons?

Readers will be familiar with the fact that in a television tube the electron stream impinges upon the fluorescent screen, causing it to glow and form the light parts of the picture. Few, however, stop to wonder what happens to the electrons afterwards. If they remained on the screen, the screen would become so negative after a time that the beam would be deflected away by repulsion. Obviously the electrons cannot flow back to the cathode in the ordinary way, as the screen
BAND-SPREAD TUNING FOR BEGINNERS

The Advantages of Band-spread Tuning as Associated With Short-wave Receiving Apparatus, Cannot be Over Emphasised, and Various Systems which may be Adopted to Suit Individual Requirements are Described in this Article.

By A. W. MANN

Fig. 1, 2, and 3 show various methods of arranging the tuned circuit in order to obtain a spreading of the tuning, or band-spread as it is now called.

Fig. 3 shows a different arrangement in which a tapped coil is used. This is a very adaptable system, especially for specialised amateur reception, but great care in the selection of suitable coils and correct tapping point is most desirable. Condenser F is included for trimming purposes.

A little experiment is necessary in order to find the correct tap position, and once this is ascertained, the trimming adjustment will enable the amount of spread to be adjusted to suit individual requirements within reasonable limits.

Condenser Values

It should be remembered that in dealing with various systems of band-spread, the suggested condenser capacity values will not always hold good. For example, coil design and circuit differences, especially in home-constructed receivers using home-constructed coils, must be taken into account.

If, however, commercially manufactured coils are used in the receiver in which it is desired to incorporate band-spread tuning, the coil manufacturers will be only too willing to advise as to the most suitable values to use in conjunction with their products.

This brings to mind the fact that certain manufacturers of short-wave coils also market specially designed band-setting and spreading variable condensers for use in conjunction with their own particular coils.

Due to careful choice of capacity values and care in design of coils, users of such products are enabled to undertake the inclusion of band-spread tuning, confident of satisfactory results, and a definite spread coverage per coil.

Sufficient spread over various ranges is a very important factor. The user of commercial coils and their associated tuning condensers will, however, experience no difficulties in this respect. Others, using home-made coils and various types of tuning condensers, are less fortunate, and must undertake the necessary spade work, using cut and try methods.

Bearing this in mind, the reasons why some favour band-spread whilst others who have tried it do not, are fairly obvious. The subject is another example of viewing matters from the wrong angle. Not willingly, perhaps, but due to being misled and placing a too literal interpretation on the statement that one form of band-spread consists of a small capacity vernier condenser wired in parallel with the main-tuning condenser. The explanation is simply that unsuitable values of setting and spreading capacities are used in conjunction with a particular coil, and the result is that the wanted bands are put right off the dial in some instances.

(Continued overleaf)
Leaves from a Short-wave Log

PRACTICAL AND AMATEUR WIRELESS

April 24th, 1937

SHORT-WAVE SECTION

(Continued from previous page)

due to too high a value of band-spreader being used.

Problems of this nature can be overcome if a midget type 3001 mf. tuning condenser, which can be dismantled, is to hand.

All that is necessary, when the parallel method is chosen, is to reassemble the midget condenser as a two-fixed and one-moving plate double-speeded condenser, and run a practical test. If it is found that the desired amount of spread is not obtainable, the condenser should be taken out and the fixed plates removed, and a further test carried out, etc.

Generally it will be found that by the adoption of cut and try methods, matters can be so arranged that a useful degree of band-spread is obtainable over various ranges. The popular 15 mmfd. type of band-spreading condenser now available will be found to meet most requirements, and can, if desired, be modified without difficulty to suit special requirements.

Instances come to mind in which experimenters incorporate band-spread tuning, but complain that the amount of spread appears to be very limited. Examination usually discloses that a plain knob that is without calibrated markings is fitted to the band-spreader, and in these circum-

stances it is difficult to determine the exact amount of spread used.

Whether it is desirable to invariably fit slow-motion dials to band-spreaders is a matter of opinion, depending on various other factors, and choice will be said.

Multi-stage Receivers

The application of band-spreading to multi-stage receivers of the T.R. type may appear at sight to be difficult. In the case of receivers incorporating a single detector, S.G., H.F. stage, it is a more or less simple undertaking.

For example, the H.F. stage in a well-designed receiver, will be arranged so that it does not cause, but with more of a volume-control effect, yet not too broad so as to make the set unselective. In this case it will be found that band-spreading need only be applied to the detector stage, because the comparatively small increase in frequency due to the spreading effect of the additional condenser will not have an adverse effect on the tracking of the detector and H.F. stage to any appreciable extent.

The correct method is, of course, to incorporate panged band-spreading condensers according to the number of tuned stages, and the above applies to homeconstructed receivers of the single H.F. type, and is suggested as a compromise.

More Coronation Broadcasts

On May 12th the Schenectady (N.Y.) short-wave stations W2XAD and W2XAK, respectively 19.57 m. (15.23 m/), and 3.48 m. (9.53 m/), will re-broadcast the Coronation ceremonies, and to the station, B.S.T. 12.18 and 18.00. It is expected that the transmission will be picked up by all U.S.A. broadcasting stations.

Both Powerful and Late

One of the lesser known U.S.A. broadcasters is WXOF, of Downer's Grove, entrusted with the relay of the WEK, Chicago, programme. The station is on the air every Sunday from 05.00-06.00 with a power of 10 kilowatts, on 49.18 m. (6.1 m/). It belongs to the N.B.C. network, and uses the standard interval signal (G.E.C) in Schenectady. On signing-off in the morning the call is given out in seven or eight different languages. When experiments are carried out the call letters WXQ are used.

Fiji's New Transmitter

Radio Suva, so far operating on 22.94 m. (13.07 m/), is now trying out a new and more powerful transmitter on 34.44 m. (8.11 m/). Tests have been heard between B.S.T. 12.00-13.00. The programme opens with the song of the Islands and is consequently given of native tribal chants accompanied by the beating of tam-tams. Fijian music, be it said, is for the most part in a minor key. H.T.P., 30, the finish, and closes down with the playing of God Save The King.

A Worth-while Catch

On 33.94 m. (8.84 m/) concerts are broadcast between B.S.T. 08.00-14.00 by the S.W. station, Sydney (N.S.W.) and Wellington (N.Z.). Announcements between items usually include the slogan, The Voice and Ears of Trans Oceania. The programmes consist of music from all parts of the world, and are relayed from the ship's cafeteria and restaurant, and have been so well heard on 30.43 m. (9.86 m/). The transmitter was situated at Aranjuez, some thirty miles distant from the Spanish capital, and at present in a violently contested area.

As a substitute the Spanish Government is now using the 20 kW. EDZ, Vallence, station, and on every Tuesday and Friday between B.S.T. 20.30-22.00, and on Sundays at 21.00, you may hear under the call letters EAQ, "The Voice of Spain", an orchestral concert or "Caned" music, followed by a war news bulletin in the English language. The channel now used is 31.05 m. (9.48 m/).

Re-Allotment of Venezuelan Call-signs

As already reported in these columns, many transmitters in Venezuela have had new call-signs allotted to them following the International prefix (YV) now indicates the district, and thus con-

siderably simplifies identification. It is worth while making a note of the following:

(1) Maracaibo and Valera; (2) San Cristobal; (3) Barquisimeto; (4) Valencia and Maracay; (5) Caracas; (6) Boca de Yuma. The letters following the end letter of the call indicates whether you are listing to an officially recognized broadcaster or to an experimental station. The first is shown by the letter A, and the latter by the final A. YV1RH, Maracaibo, on 46.85 m. (6.39 m/)—formerly YV1VR—may be picked up easily at this period of the year between B.S.T. 00.30-07.00. You will recognise the broadcast by its five or six chimes struck before the announcement and call, which usually includes the words: Emisor Filial. Every Sunday between B.S.T. 05.00-05.30 the studio transmits a special English programme destined to listeners in the United States of America. If you wish to hear this programme you must go to Tokyo for a Japanese news bulletin. The choice of channels has not yet been definitely fixed, as occasionally JZ1, 31.46 m. (9.35 m/), YV1RP, 20.48 m. (7.51 m/), and JZH, 20.56 m. (14.6 m/) are also used. As a rule you will find that an S.B. is given on a different wave-length for identification. The transmissions end with an orchestral rendering of the National Anthem in which you will not fail to recognise a famous reference included in Puccini's opera Madame Butterfly.

The CYCLIST - 2d.

Every Wednesday.
Important Broadcasts of the Week

NATIONAL
Wednesday, April 21st.—Symphony Concert.
Thursday, April 22nd.—"The Quaker Girl," a musical comedy by James Tupper.
Friday, April 23rd.—Speeches following the Luncheon on the occasion of the Annual Shakespeare Birthday Celebration, from the Convention Hall, Stratford-upon-Avon.
Saturday, April 24th.—Final Game in Seen-a-Side: A running commentary from Twickenham.

REGIONAL
Wednesday, April 21st.—Variety programme, from the Palace Theatre, Plymouth.
Thursday, April 22nd.—Midland Parlia-ment: Modern Advertising and Industry, a discussion.
Friday, April 23rd.—Speech at the Royal Society of St. George's Banquet, from the Connaught Rooms.
Saturday, April 24th.—King Arthur, an historical programme by D. G. Bradon, music by Benjamin Britten.

MIDLAND
Wednesday, April 21st.—Midland Football Clubs: Wolverhampton Wanderers—a sketch of the Club's history, policy and players, past and present.
Thursday, April 22nd.—Midland Parliament: Modern Advertising and Industry, a discussion.
Friday, April 23rd.—The International Six Days' Contest: Behind the Scenes in a Midland Motor-Cycle Factory.

Saturday, April 24th.—English Song Writers, Elips: Orchestral concert.

WESTERN AND WELSH
Wednesday, April 21st.—"The Private of Newgate," a play by Frome Tyler.
Thursday, April 22nd.—Pamela Car- marthen: Carnarvon Pavilion—a pro- gramme of some of the memorable events.
Friday, April 23rd.—Oer Carmarthen Bridge: Sound-pictures of Carmarthen Town.
Saturday, April 24th.—Birds of the West Country, a talk.

NORTHERN
Wednesday, April 21st.—Variety programme including excerpts from the Lowry Theatre, Sheffield, the Palace Theatre, Huddersfield, and the Argyle Theatre, Birkenhead.
Thursday, April 22nd.—A Loyd Address: a programme from the Yorkshire village of Thorne.
Friday, April 23rd.—Part of the Arthorope School's Musical Festival, from the Arthorope Methodist Church.
Saturday, April 24th.—Roaming Rhythm: Dance Band programme.

SCOTTISH
Wednesday, April 21st.—Variety pro- gramme from the Empire Playhouse, Glasgow.
Thursday, April 22nd.—Organ recital, from St. John's Church, Aberdeen.
Friday, April 23rd.—Choral recital. Saturday, April 24th.—Choral programme.

Making a Universal Portable
(Continued from page 114)

are not important. It is important, however, that the valve heaters should be wired in the sequence shown, although it is not the most usual one. The method shown suggests that the detector heater is connected directly to the earth line; if this is not the case, hum and instability will probably prove troublesome.

H.T. Supply
Perhaps it would be wise to make reference to the rectifier, because the type indicated is designed to give a maximum output of 150 ma when connected as shown, whereas in this particular circuit the total H.T. current consumption is only about one-half of this. When used at half load, the U.30 provides a voltage output of about 220, for a mains input of approximately 240 volts. This is high enough to allow for a voltage drop across the 24-hour smoothing chokes having a D.C. resistance of not more than 800 ohms. Thus, an adequate anode voltage can be supplied to all the valves to ensure that they operate at a high degree of efficiency.

More care should be taken with the construction of the set than is normally necessary for a portable set, with a battery or A.C. receiver. One important reason is that a considerable amount of heat is developed by the valves and barretter when the set has been running for a short time. This means that the valves should be situated so that there can be no risk of any air passing round them. This is generally arranged by leaving the back of the cabinet partly open, or by covering it with a form of grille, or perforated sheet of fibre. A method which is sometimes better is to leave an opening in the bottom of the cabinet, and to fit the top so that there is an open space through which the warm air can pass. Another method is to make the cabinet as shown in Fig. 1, a design which looks well.

Avoiding Heat
Another point which should be closely watched, on account of the heat which is given off by the valves, is that tubular fixed condensers and transformers and coils should be kept fairly well away from the valves. These parts often have wax in their construction and this might melt, with consequent damage. As far as possible, these parts should be placed on the underside of the chassis, where they are out of range of the rising heat.

ConstrucTional Details of "Practical Wireless" Receivers
(Continued from page 124)

for this receiver, and an important point should be noted in this respect. A metal panel is specified and this is obviously at earth potential. Consequently, the fact of mounting the components on the panel automatically connects them to earth. The tuning condensers have to be earthed, as also does the reaction condenser, but the volume condenser must be mounted in an insulated busbar provided or it will be short-circuited. If, however, a wooden chassis and insulated panel are employed, it will be necessary to connect to earth the moving vanes of the tuning and reaction condensers. A list of components is attached for this particular receiver.
ELECTRADIX BARGAINS
Wade-Hull Societies and Den Set, wood case: £1. 10s. 6d. 7. Engin strain Inducers by Biddle and Elliott, 38s. 6d. Electric Western Union lady’s telephone set, with 3 members. £1. 10s. 6d. Cooler Lid Plates, 17s. 6d. For 110v. T.V., Mr. W. C. Workshop Catalogue on exchanges at returnable price. Lightweight laddar (£1. 6s. 6d. 9d.) Locomotive Smiths Direct Boxers, for 350 amps., 10s. 6d. Wall Type District Switch, fully waterproof. Double Head type, 12 in. watts, 10s. 6d. 55 mm. Predoctor, complete with motor driver and stand. 12s. 6d. Turtle Type room scenery, 8s. 6d. All Over Electric Motor Controller on specially reduced price. 24s. 6d. Rotary Sign Flashers by G.E.C. and Standard Co., motor-driven. 10s. 6d. Metal Tubular Adder, with 3 reels, 10s. 6d. 28. 30. 51. 0. or AC. 220v. to 100v. 1 amp. D.C. K. b. 100 D.C. Industrial Motors. 140 h.p. Type 60, 220v., 14.11. series 1, 750 lb. Motor. 110 watt. Enclosed Dynamo. 12.20v. 12 amps.

The Rotary Socieiy

The Rotary Socieiy’s meeting on Tuesday, April 6th, was devoted to a talk on the design and use of valves by Mr. J. H. Owen Harries, of Harries Thermionic Researches, in a lecture in St. Peter’s Hall, Ledbury Road, S. Croydon, with the Vice-Chairman, Mr. G. A. Hoskins, presiding. The designer was to obtain the most advantageous balance of the relationship existing between the electrodes of a valve. Mr. Harries discussed the theory of the diode valve, and went on to deal with the triode and historical development. The talk became even more interesting when it is reached to the topics of anode space and critical distance. Here he showed the same a valve with a sliding anode, and its experimental results. The results were enough to show By shaking it the anode could be located at any position, while its distance then the characteristic would be described. It had also much to say on the behaviour of electrons and how they were controlled.

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RADIO CLUBS AND SOCIETIES

Club Deportes should not expect 200 words in length and should be received First Post each Monday morning for inclusion in the following week’s issue.

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Tottenham Short-Wave Club

The above was held a series of very interesting meetings during the winter months and recently celebrated its second anniversary, at which the newly-elected President, Mr. J. J. Maling (G5JL), held on the middle week-end in March, during which he succeeded in logging 52 countries.

The club has arranged a programme of Field Days for the summer months at which visitors will be welcomed. It is being arranged for a special 5 metre-section to be active at these, and transmitting members in the locality should take advantage of it if they care to let me know if they will be on the air on these various Field Days.

The club meetings are well attended, and lectures together with annual experiments in transmitting are being given by the secretary. Morse practice is progressing very well, and members are proving quite good at speed tests. The Log Dept. which has been mentioned in our previous reports, has now been collecting valuable data for the last 18 months, and a very comprehensive list of stations and conditions over this period has been obtained.

I wish to thank all those who, for all the help it has given us since the club’s beginning, and for the way in which it has encouraged the club spirit among its readers. All who have taken an interest in the various clubs at home and abroad that have written to me.

Full particulars of membership, fees, meeting nights, etc., can be obtained by writing to the Hon. Secretary, S. Woodhouse 51, Pembury Road, Bruce Grove, Tottenham, N.I.

Southall Radio Society

The Annual General Meeting of the Southall Radio Society was held at the Three Tune Hotel, The Green, Southall, on April 6th. It was announced that a new and more spacious headquarters had been found at the Three Tune Hotel, The Green, Southall. A large hall will be used for the use of the society, and it will not be necessary to make any limitation in membership, a step which seemed likely before, due to the rapid increase in membership by over 20 per cent. in the last three months.

The officers were elected as follows:—


Hon. Secretary: H. F. Reeve, 26, Green Drive, Southall.

Portsmouth Wireless and Television Society

At the sixth annual meeting of the above society, held recently at 1a, Hudson Road, many points were discussed about the coming year’s programme. A library of technical books was started, and small gifts of books were promised. As the society has now four members holding transmitting licences, it is intended to apply for a licence for building and operating a 10-watt transmitter for experimental purposes. The President, Vice-presidents, and honorary members were re-elected. Mr. A. Parsons being elected Vice-president—and an appreciation of the valuable work he had done for the society—Mr. Harold Leigh as Chairman, Mr. Kent, Vice-chairman; Mr. F. L. Moore, Hon. Secretary and Treasurer; and Miss K. D. Woodhouse as Hon. Secretary. The following committee were also elected: Messrs. Leigh, Kent, Moore, Marsh, Batt, Wright, Bull, Bettinson, Evans and Pegler. Hon. Secretary.—H. F. Reeve, 26, Green Drive, Southall.

Exeter and District Wireless Society

At the last meeting of the above society a very interesting and instructive lecture was given by Mr. Bateman, of the local G.P.O. telephones, on Modern Telephony Methods. Mr. Bateman traced the development of telephony from Graham Bell’s first attempts at communication between points connected by wire, and many lantern pictures illustrated the subject. Mr. Bateman was present at the grand opening of the Southend Telephone Exchange, and has been present at the opening of the London Telephone Exchange. Mr. Bateman’s lecture was well received, and many questions were asked of him.

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Wellingborough and District Radio and Television Society

The final lecture of the present winter programme was held at the Midland Hotel, Wellingborough, on Wednesday evening, April 7th, when a large and interested audience listened to a lecture given by Mr. A. Freeman, of Kettering, and entitled “Sound on Film.” Mr. Freeman prefaced his lecture by a
few remarks upon the history and progress of the invention and its contact patents, and mentioned that, strangely enough, the first patent was granted to a lady for such a system that date until recent years very little advance had been made, but with the advent of the possibility of the talking picture, great strides had been made.

The basis of reproduction was the photo-electric cell, universally called the Electric Eye, or more correctly, the light sensitive cell, with its extremely minute sensitivity to changes in the intensity of light, that made the talking picture the model of perfection that it was to-day.

Mr. L. F. Parker (G5 LP), 127, Jubilee Crescent, Wellingborough, Northants.

Nottingham Amateur Radio Society

On Tuesday, April 6th, the above society was given a lecture, illustrated by lantern slides, on "Aerials and Interference." As a result of increasing interest and man-made static this lecture was a welcome enlightenment to the members. New members were welcomed at the society headquarters at 2, Bridford Road, West Bridgford, Nottingham. Hon. Sec.: C. Lambert, 109, Sherwood Street, Nottingham.

Halifax Experimental Radio Society

At the last meeting the members of the above society were entertained to a very interesting and instructive lecture kindly given by Mr. C. Berg, of Alkum Storage Batteries Ltd., Halifax, on "The Alkaline Battery." He described how research work started in Sweden in 1893, required 16 years to produce a practicable and commercial alkaline battery, and developments which have since taken place.

The main type of Alkaline batteries were described and illustrated and their many applications discussed in detail. Particulars were given of both the nickel-iron and the nickel-cadmium battery as used for miscellaneous services, and in this connection the Milnes H.T. Unit, miners' lamp batteries, and some of the largest alkaline batteries made, such as for the sister ship of the "Queen Mary," were described.—J. B. Bedford, Hon. Sec., Oak House, Triangle, N. Halifax.

Morpeth Amateur Radio Society

We wish to extend our heartiest thanks to all readers of Practical and Amateur Wireless who co-operated in our tests announced in these columns a few weeks ago.

The response to our request was unprecedented, and we regret the delay, in some cases, in the despatching of certificates. However, we hope that all our reports will be acknowledged by the time this appears. The majority of reports contained excellent data, many containing temperature and barometer readings, also detailed graphs and charts.

We hope to submit in the near future our conclusions as to the weather effect on short-wave reception from the data now to hand, and this we feel sure will be of interest to our readers.

Meanwhile we wish to express our thanks to the Editor for allowing us space, and also to those readers who so kindly offered the above assistance.—Chas. H. Bland, Hon. Sec., 2, Edward Street, Morpeth, Northumberland.

11 NEW N.T.S. BARGAINS!

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Ormand Slow-moilion Dial R302. List price £1. Bargain Price 10/- to 1/- less. Offered also in 12/6, 15/- and 2/- slow-moilion dial. Ideal as an emergency spare. For all standard p.a. condensers, ideal with high. List Value £1. Bargain Price 10/-.

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Bargain Price is 3/11. Each section rated at 600/600, 400/400, 200/200 and 100/100 watts. Ideal operating conditions: wave band 33,000, 11,000, 1,000 and 100 metres. List Value £4. Bargain Price £3.5. Ideal for the amateur with extra power.
The Editor does not necessarily agree with the opinions expressed by his correspondents. All letters must be accompanied by the name and address of the sender (not necessarily for publication).

Suggested Club for East Sheen

Sir,—A few friends and myself, being interested in S.W. listening and radio generally and who have been readers of Practical and Amateur Wireless for the past eighteen months, would like to get in touch with other S.W.L.'s and amateur transmitters, if any, in this district with the object of forming a local club. As our ages average about 15 years we would rather older readers co-operated with us. Will anyone interested either call at my address between 6.30 and 7.30 p.m., except on Wednesdays, or drop me a line; and also, if possible, forward suggestions as to where a club H.Q. could be held.—N. G. Anslow (35, Gipin Avenue, East Sheen, S.W.14).

Good DX Reception in Forest Gate

Sir,—I have been taking your paper from the first issue, and must congratulate you on the fine articles published, especially the Amateur Transmitter series, which I hope to see continued.

As I have not seen a log from this part of London, I enclose the best DX received here this month. All the stations were between R5-8 and Q5A.

The receiver used is an o-v-1, S.G. det., and pentode, battery-operated.

I enclose a photo showing a corner of my den.

Again thanking you for the fine articles and information and wishing Practical and Amateur Wireless further success.—H. J. Carter, 2BPC (Forest Gate).

[We were very interested in your log, which we use, however, too long to publish.

—Ed.]

Terminals, Plugs and Sockets

Sir,—We have read with great interest the article under the heading: "Terminals, Plugs and Sockets—There's No Connection," appearing in the issue of Practical and Amateur Wireless for April 3rd, 1937, but we are somewhat surprised that a service engineer of such wide experience as the contributor of this article should not be acquainted with the well-known Clix line, which have been consistently advertised in your journal and which meet the various points that were raised by him.

(1) Clix 5 amp. 2-pin Wall Plug ("M" type).

In addition to providing a positively non-collapsible pin with great versatility of fit in varying socket diameters and centres, it has a simple but most effective wiring device holding the wire strands in 100 per cent. vice-like grip.

We may add that we have contracts in hand which will ensure that during the coming season a very large percentage of manufacturers will standardise this plug,

but there is still a very large replacement market unsatisfied. (2) Heavy Duty Master Plug.

This plug, which allows for the use of leads up to 3-16in. diameter, without stripping insulation tape, enables aerial and falls leads to be taken direct to seat. The pin on the other hand being standard in size.—British Mechanical Productions, Ltd. (Westminster, S.W.1).

Our contributor is justified with the excellent Clix components mentioned in this letter, and he stated that the "average" morning was at fault. The split pin in the Clix gasket does definitely overcome the difficulty of fractured wires caused by the locking screw, and provides a definite and certain contact with the mains socket throughout its life. We ourselves have had no trouble whatever with these components, but your letter type of plug can give rise to noises as mentioned in the article.—Ed.]

Received on Our Single-valve

Sir,—I enclose a log of stations received with my single-valve set. It is the one described in your issue for January 23rd, 1937, the only modification being a 20-30-metre dual range (40–50 m.) (Amateurs on 49.185, 49.265, PY2EJ, VEIGI, VE3CK, SVEKE and 20 W stations.

On 30-50 m.: DJN, DJD, DJQ, GSD-F, EQQ, 2RO, CT1AA, W2XAF, W2XAD, W1XAL, W4XRB, W5W9, HAT4, and W3XAL, Belgrade 49.18 m., and several QSL stations on 40 m. All these stations were received at R5-8, and the serial is 30ft. long. (W.E.)—L. Sandoo (Moseley, Birmingham).

Singapore S.W., Station ZHI

Sir,—In your issue of March 13th, 1937, page 761, there was mention made of Singapore Station ZHI on 49.92 m. (6.01 m/c). This station ceased operating at the end of last year. Station ZHL, of the British Malaya Broadcasting Corporation, Ltd., has taken its place. It is on daily for 36 hours a week, Wednesdays, to 10.15 p.m., Saturdays, 12.45 to 2 p.m., and 5 to 11.15 p.m. Sundays, 10.15 a.m. to 2 p.m. and 6.30 p.m. to 10 p.m. local time. Singapore time is 7 hours 20 minutes ahead of GMT.

Chinese, Malay or Tamil music are on from 6 to 7 p.m. daily. The station which is operating on a wavelength of 225 metres serves Singapore Island and South Johore. On March 1st, 1937, the station was opened by His Excellency the Governor, Sir Shenton Thomas.—Tan Bin Hussain (Ipon, Perak, Federated Malay States).

A Good Log from Bedfordshire

Sir,—My short-wave reception results on the Cambus Banker booster may be of interest to other readers of your excellent publication. During the past two months, listening on the amateur bands, over 900 calls were heard. These include 490 North American phones, with many W6 and 7. Among the South Americans are HJ, DR, VPI, 518, L9, 9 EJ, CO, CV, YV, PK, K4, K6, and NY calls. Oceanic phones include VK2, 3, 4 and 5 stations.

In one week, on 28 m/c, over 100 of the above bands, with some DX, such as W6JEY, 6MAF, W7BEJ, 6RQX, ZU6P, ZS6Q, Z6JR, PA4AC, PY4AC, VTP0Z, VTP6G, and L17AZ—S. G. Abbott (Sandy, Bedfordshire).
Leonard was nonplussed. Suddenly he had a bright thought, and took from his pocket a packet of cigarettes which he had bought on the way from the station. "Perhaps you'll believe me now," he said, and produced a cigarette card on which was a picture of himself!

Wynne Ajello

As a child Wynne Ajello's great ambition was to become a dancer, and it was quite by chance that it was discovered that she had a singing voice. While training for the ballet she took singing lessons, and her teacher was so impressed by her ability that she was encouraged to take up the art seriously.

Her first public appearance as a singer was at a competition for children at the seashore, when she carried off the prize, a book entitled "Picturesque Views of the Town." She was the first member of her family — who were all musical — to take up singing professionally, and at first the idea was viewed with disfavour, but her enthusiasm was so great that her parents eventually gave way.

Wynne first broadcast in 1925 and faced a more than usually terrifying ordeal, for she had to sing four coloured airs with orchestra in succession — and she had never had an orchestral accompaniment before! However, she made an immediate success, and was asked to repeat the programme a fortnight later. Wynne was one of the first singers to make a reputation entirely through the microphone. She is possibly unique in being heard on the air five nights in succession.

She decided to develop her scope by combining acting with singing, and in addition to her serious work, she has been the heroine in numerous musical shows and opera.

Returning by train from one of the provincial stations recently, she fell into conversation with a fellow passenger who asked her opinion of "that Wynne Ajello who sings on the air."

She did not reveal her identity, and was gratified to find that her interlocutor considered Wynne was "pretty good." Her hobbies are motoring, swimming and dancing, and her pet aversions are snobs and bridge!

BRIEF RADIO BIOGRAPHIES

By RUTH MASCHWITZ

Leonard Henry

LEONARD HENRY started his career as a budding young scientist working twelve hours a day for a firm of manufacturing chemists. However, an explosion put a stop to his activities, and when he sufficiently recovered he was sent to Southend to complete the cure. Strolling along the front one afternoon he was attracted by the strains of a concert party, and discovered that a friend of his was a member of the company. They chatted together, and Leonard made the suggestion that he should try out on the recorder at the piano for a joke. So he borrowed his father's dress clothes and carried out his plan. Such was his success that the concert party engaged him for the season. Then followed musical comedy engagements, revue and more concert parties. For years he worked under Charlie's management — in fact, he was part-author of Charlie's Hour for the microphone. Now he is busy filming, presenting, writing, and devising new songs and patter.

Leonard is well known for his kindness of heart, and really felt that things were going a little too far when, just as he was going on for the Royal Command performance, an old lady telephoned from Tooting and in a quavering voice asked if he would go down and put her wireless set right as she was having a great deal of trouble with it.

Being in the public eye is not all beer and skittles, but on one occasion it kept Leonard from being marched off to prison! He came home unexpectedly from the country without the keys of the house, and was just trying to climb through the kitchen window when a heavy hand was laid upon his shoulder.

"What are you up to?" asked a gruff voice, and a burly policeman towered in amongst his most menacing manner. "This is my house, and I've just come back unexpectedly," said Leonard.

"Oh, is it?" was the reply. "You're not Mr. Henry! You'd better come along with me!"

REPLIES IN BRIEF

The following replies to queries are given in alphabetical form from the head of each answer in this section for general interest.

T. R. (Southend-on-Sea). We regret that we cannot trace the coils in question and are therefore unable to give you the information required.

G. N. L. (Setup). The I.F. was 110 kva. No details are now available for this receiver, and we have no blueprints of any equivalent type of receiver.

W. J. F. (Nettleton). In addition to the test you have made the trouble must be due to the damping of the long waves.

A. I. M. (Crest. Skipper). The control board should have a spare switch, coil of the extension speaker and should be arranged in the same manner.

L. C. L. (E.2). If your strip off turns the reading on the dial decreases, or in other words you will have to lower your receiver level if you do not alter the condenser setting. To include a high voltage condenser is not recommended, as the reading turns should be added to the coil.

A. J. (Lexe). In the case of diaphragms may be obtained from E. E. R. Corporation, whose advertisement appeared in your last issue, provided they are available, but one winding should have thirty times as many turns as the other.

F. F. (Hoe). The signal strength is to be expected with the aerial, and the large winding the secondary.

B. R. (Liverpool, 5). We regret that we cannot trace any coil of the type mentioned in our records. Are you certain regarding the maker's name?

L. G. J. (Dulwich, S.E.). We are shortly publishing some quality circuits for local-station receivers which will do no meet your requirements.

T. D. B. (Edinburgh). The easiest solution would be to obtain a modern dual-diode coil, preferably with not too many elements to avoid difficulty in wiring this. The coil could then be substituted for the old one in use and would give you the desired improvement.

R. G. (Waybridge). The circuit does not utilise a frame aerial. Valve types are X4 and X1 (Hivox). J. N. (H. S). It is impossible to answer your question without further details. The circuit appears correct, but the set may be unsatisfactory and this fact may be due to the setting of the volume control.
IS YOUR SET PERFECTLY TUNED?

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**465 kc/s I.F. LINER**

Self-contained, consuming but a fraction of a milliamp, this handy gadget will take the place of an expensive modulated test oscillator. Plugged in to any D.C. supply of 200 volts or over—or even two of an A.C. set's own rectified H.T.—it renders both easy and quick the skilled, important job of re-tuning Intermediate Frequency Transformers. A workshop instrument which the Serviceman or Experimenter simply adds to his kit.

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