

Friday, December 12, 1924.

WIRELESS WEEKLY

Make this a Radio Christmas



A radio gift will bring a radiant smile of appreciation. Here are some ideas which will guide you aright in selecting your Christmas presents, each one backed by the name of United Distributors Limited. You can get them at these prices from any Radio Dealer.



"SIGNAL" Audio Frequency Transformer

ensures loud tone, free from distortion. As good as the most expensive imported Transformers, 21/-



"SIGNAL" Home Assembly Sets.

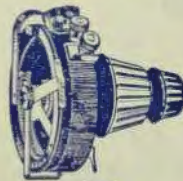
Available in one, two, three, or four valve sizes. Mission or polished finish Cabinets. Can be put together quickly with a screw-driver and a pair of pliers. They cost 5 to 11 guineas. Do not accept inferior substitutes

Your Dealer has them at these prices.



"PICO" Headphones

Strong and sensitive. Light and comfortable — and fully guaranteed. 25/-



No. 610

FROST RADIO

Rheostats, Potentiometers, etc., etc., See advertisement on Page 6.



"Astrophone"

The Super Crystal Set £4
 Metro Crystal Set complete . . £3/15/-
 Wizard Crystal Set 20/-
 Fortevox Crystal Set 16/-

United Distributors Limited
 (Wholesale Only)

72 CLARENCE STREET, SYDNEY.
 592 BOURKE STREET, MELBOURNE
 and at Brisbane, Perth, Adelaide.

THIS IS
The Volmax V.
SUPREME

"THE ROLLS ROYCE OF RADIO"

WHAT THE VOLMAX V. WILL DO

It will receive on loud speaker the following stations:

2FC — Farmers, Sydney.
2BL — Broadcasters (Sydney).
3LO — Melbourne.

and under favorable conditions KGO (America)

Instal a quality set and get long distance and efficient results.



Also see our other High-Grade Models in 3 and 4 Valves

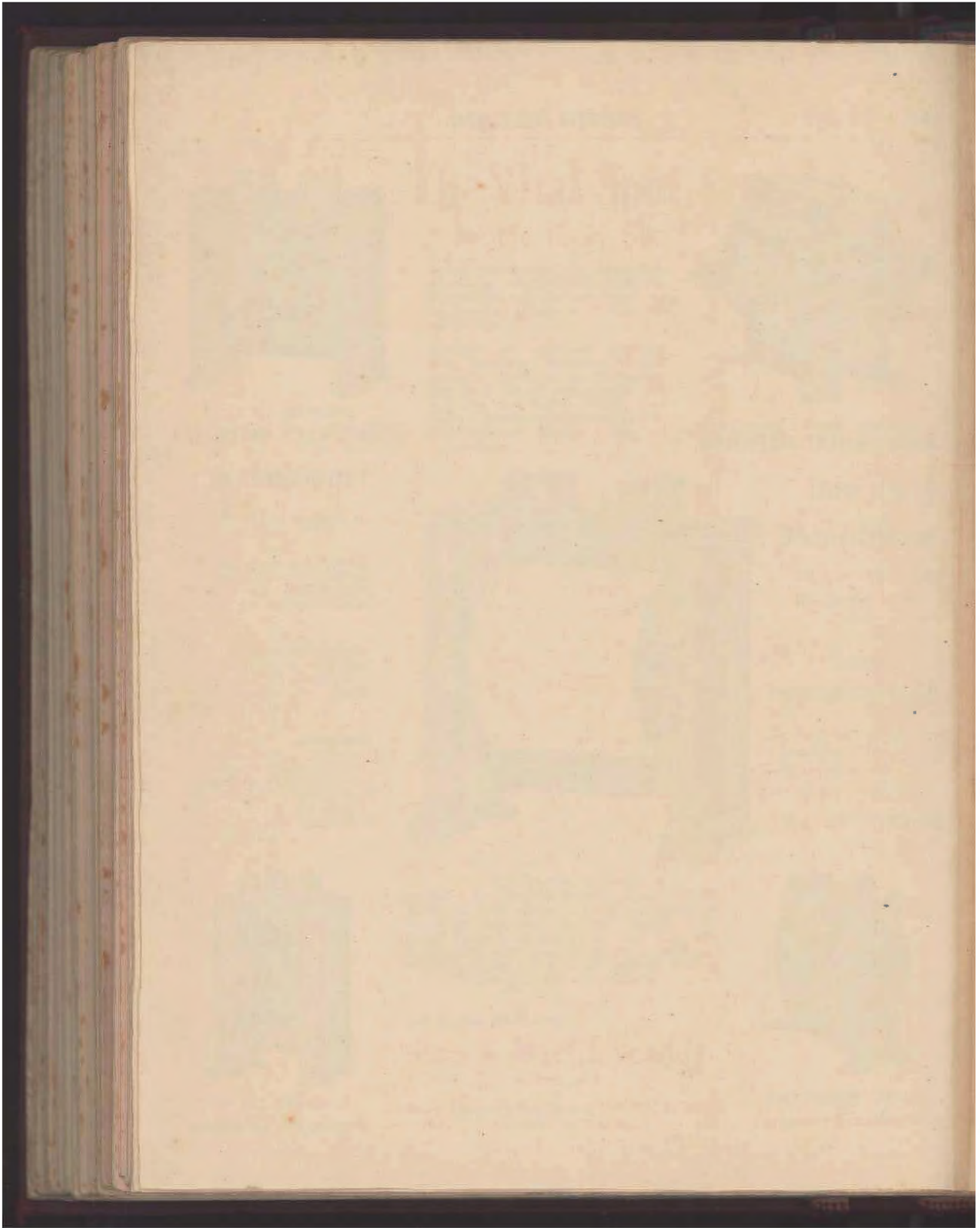
OBTAINABLE FROM

WIRELESS SUPPLIES LTD.

Manufacturers and Designers of only High-Grade Radio Equipment

21 ROYAL ARCADE & 329A GEORGE STREET, SYDNEY

PHONE M3378



Page Two WIRELESS WEEKLY Friday, December 11, 1924

*The Cream of the
Radio Industry*

Ormond



**ENGLISH
CONDENSER
WITH THE
MONEY-BACK
GUARANTEE.**

**THEY GIVE THE SERVICE WHICH
IS BUILT INTO THEM.**

Look at these prices—all complete with Knob and Dial

.0002—without Vernier	9/6
.0005—without Vernier	10/6
.0015—without Vernier	11/8
.0075—without Vernier	13/4
.001—without Vernier	14/-
.0003—with Vernier	14/-
.0005—with Vernier	16/-
.001—with Vernier	18/-
Two Anode (Bainseed)	25/-

Aerial Strain Insulators 2/6 doz.
English Barrel Detectors, highly finished
mounted on polished Ebonite Bases,
3/6 and 4/6 each.
Perlean Detectors, complete on bases,
with 2 Crystals 4/6 each

Friday, December 11, 1924 WIRELESS WEEKLY Page Three

The World's Masterpiece

As used throughout the French Army, Navy and Air Force
and at Eiffel Tower.

Brunet

When you think of Headphones - think of BRUNET

Brunet Headphones are built to Laboratory Standards in one of the greatest
French Engineering Workshops.

Every pair backed with a Money-Back Guarantee
BRUNET—The Lifetime 'Phone

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D. Type—Brunet Phonos 4000 ohms	34 6
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**& Co. Pty. Ltd.
HAYMARKET, SYDNEY
CHAS. R. GABB & CO**

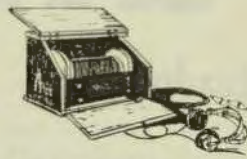
SYDNEY
MELBOURNE
NEW YORK
CHICAGO
LONDON



This special P. & M.
Valve Holder with
Red Anode
2/- each.
Everywhere

*The Different
Christmas Gift*

WIRELESS



An Excellent Present The "Comet" Crystal Set Complete 63s.

The "Comet Crystal Set is complete—sembled ready for installation. It comprises, crystal set in oak, cabinet headphones, insulators and 100 feet aerial wire. It has a receiving range of approximately 25 miles. Obtainable only at David Jones'. Price, complete 63/-

Parts Supplied! One Valve Amplifier for Crystal Set

All parts supplied for one valve amplifier for Crystal Set—simple circuit and full instructions supplied with each order.

- 1 Valve, Phillips DV using 4 volt accumulator. Price 18/6
- or Phillips B 11 using dry cells. Price £1/7/6
- 1 Rheostat UNXLD for use with B 11. Price 5/-
- or Remler for use with DV. Price 3/6
- 1 Panel 6 x 7 x 1/8 at 1d square inch. Price 3/6
- 1 V.T. socket for B 11. Price 2/6
- or V.T. socket for DV. Price 3/-
- 1 Transformer Jefferson star. Price £1/2/6
- or Advance. Price £1
- 2 Lengths Tinned Bus Wire. Price 6d.

Prices for Batteries given on application.

DAVID JONES'

For Radio Service
252 YORK STREET, SYDNEY

WALNART CONDENSERS

Are Standard Tuning Equipment in NOCK & KIRBY'S Sets, with one of which Mr. Garnet Nock has created quite a furore in receiving

3LO & 6WF Regularly & Continuously

without any interference of any kind, proving conclusively that WALNART Apparatus is—

- 1.—RELIABLE 2.—STURDY 3.—SELECTIVE 4.—ACCURATE

Inspect all the
WALNART and
ACME
Lines at your
Dealer's



Walnut Condensers
Plain and Vernier
Types are now
available in all
Capacities
from 3 plate to 43
plate.

Wholesale
Only

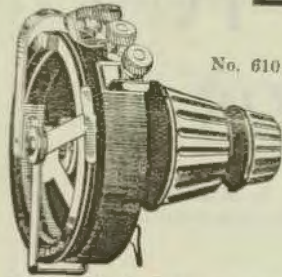
P. H. CLARK LTD.

38-44 CARRINGTON ST. SYDNEY

Phone: City 8469
Box 914, G.P.O.

Frost Guaranteed Parts

make Ideal Xmas Gifts
to anyone who owns a wireless set



No. 610

FROST-RADIO Bakelite Tube Control Unit.

Made of maroon bakelite. Combines in one unit rheostat with vernier, and potentiometer, with two-knob control. All controls work with extreme smoothness. A valuable addition to any set.
No. 607, 6 ohm Vernier and 200 ohm Potentiometer 17/6
No. 610, 35 ohm Vernier Rheostat and 400 ohm Potentiometer 17/6

FROST-RADIO Rheostats and Potentiometers.

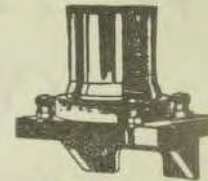
Precision adjustment. Pieces of apparatus that reflect quality.
Nos. 650-2. Maroon Bakelite 6 and 35 ohm Rheostats 7/3
Nos. 651-3. Same with Vernier 9/6
No. 654. Maroon Bakelite 400 ohm Potentiometer. 9/6
Nos. 600-2. Metal Frame 6 and 35 ohm Rheostats. 5/6
Nos. 601-4. Same with Vernier. 7/6
Nos. 603-5. Metal Frame 400 and 200 ohm Potentiometers. 5/6



FROST FONES.

Made with watchlike precision to respond to the extremely small electrical currents of radio reception. While remarkably sensitive, they also are sturdy enough for many years of use.

No. 161. Frost Fones, 2,000 ohm, Aluminium Head Pieces 32/6
No. 171. Frost Fones, 3,000 ohm, Aluminium Head Pieces 37/6
No. 172. Frost Fones, 3,200 ohm, Maroon Bakelite Head Pieces 45/-



FROST-RADIO No. 618.

FROST RADIO Sponge Base Sockets.

No. 618. Moulded Bakelite Shock Absorber Socket for standard Base Valves 6/3
No. 617. Same for U.V. 199 Valves 6/3
No. 612. Moulded Bakelite Vacuum Tube Socket, Bakelite Panel, Maroon finish, for U.V. 199 Valves. 5/-
No. 107. Same for Standard Valves 5/-
No. 616. Compact gang of three Shock Absorber Sockets, for panel or table mounting, for U.V. 199 Valves 24/6
No. 619. Same for Standard Valves 24/6

FROST RADIO.

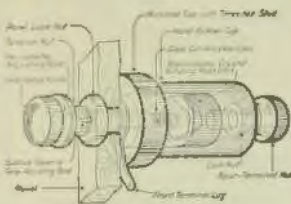
Jacks, all styles. 4/6 to 6/6
Plugs, double & single, 4/6 & 5/-
621. Parallel Switches 5/-
608. Push and Pull Battery Switches 4/-
400. Crystal Loose Couplers 75/-
410. Crystal Tuning Coil Slider 27/6

YOUR DEALER CAN SUPPLY ALL THESE!

UNITED DISTRIBUTORS LTD.

(Wholesale only),
72 CLARENCE ST., SYDNEY; 602 BOURKE ST., MELBOURNE;
and at Adelaide, Perth, Brisbane, Hobart, Wellington.

IMPROVE YOUR CRYSTAL OR REFLEX SET WITH Foote Triple Test Crystals



The Variotector is the result of long and constant research by the radio laboratory. The Variotector's metal case encloses (a) at closed end, Foote Tripletest Extra Loud All Over Crystal; (b) at open end, hexagon-head threaded brass bushing; (c) outside, lock-nut; and (d) at extreme outer end, milled head micrometer screw adjusting rod, with its solid gold spring contact.



The Variotector is especially designed, with its accompanying nut and bolt cup, for mounting back of the panel in tube sets, as its front screw allows the necessary adjustments for reflex circuits. It also fits the standard cup of all crystal sets.

A SOLID GOLD 14-SPOT BRUSH-TIP CAT-WHISKER.

Guaranteed: To vary and select exact tension for maximum loudness. No spot escapes its many contacts. Its flexible stem ends in fourteen very fine points. Highest conductivity. Rustless, non-corrosive.

Testing: Each crystal is thrice tested, including once before and once after mounting, by broadcasting in our laboratories under expert operators. It must pass for super-sensitivity on ITS ENTIRE SURFACE.

ALSO THE "FOOTE" VARIOTENSER MULTIPOINT CATS-WHISKER. SOLID GOLD TONE TRIPLE CATSWHISKER



Mounting: All crystals are hand mounted, best face up, in our low-fusing "Radaley," fitting the standard half-inch cups. Our crystals are flat and project out so that sensitive spots are easily held.

Guarantee: QSA (your signals are strong) ALL OVER the crystal. We replace any "Foote" with a new one on demand. Look for the "F" embossed on the back. APPROVED BY JACK BINNS, TRIBUNE INSTITUTE, "RADIO NEWS," AND PROVEN BEST BY AMERICA'S OLDEST RADIO SCHOOL.

Foote Crystals can be obtained at David Jones Ltd.; Harringtons Ltd.; Ramsay, Sharp & Co. Ltd.; Nock & Kirby Ltd.; E. R. Cullen; Swain & Co. Ltd.; W. Harry Wiles; Mark Foy's Ltd.; and other leading radio dealers. Trade enquiries from Keith Stokes Pty., Montana House, 27-29 King Street, Sydney.

And now—

The GECoVALVE

Made at the Osram Lamp Works



TYPE D.E. 3.
PRICE ... 32/6

Ever since the earliest days of Wireless Valve Manufacture our Principals in England have produced Valves of quality and dependability.

The GECoVALVE is the latest product of years of research at our Laboratories, Wembley, London, and stocks of all types are now available.

We illustrate Type D.E.3, a general purpose dull emitter valve. The filament consumption is so low—only 0.06 amp.—that dry cells can be used for filament heating; three dry cells in series should be employed.

These Valves can be used to operate a medium sized loud speaker, in which case the anode voltage of the valve used for low frequency amplification should be raised to about 90 volts and a negative bias of 3 or 4 volts applied to the grid by means of suitable dry cells. These may conveniently be of the flash lamp type.

As a detector or high frequency amplifier an anode voltage of 45 volts will be found adequate, and should not be exceeded.

Obtainable everywhere.

**BRITISH GENERAL
ELECTRIC CO. LTD.**

154-6 CLARENCE STREET, SYDNEY.

Make it a Radio Christmas



Radioelectric Radio Receivers

Are complete with All Accessories, Radiotron Valves; Batteries and Aerial and are enclosed in Highly Finished Maple Cabinets.

SINGLE VALVE COMPLETE with Headphones	£13 0 0
TWO VALVE COMPLETE with Headphones	£17 10 0
THREE VALVE COMPLETE with Headphones	£24 10 0
THREE VALVE COMPLETE with Headphones, Magnavox Loud Speaker	£30 0 0



All Batteries fit inside the Receiver making the Receiver Ideal & Compact.
Let us demonstrate these Receiving Sets to you.

RADIOELECTRIC

Wireless
Suppliers

10 MARTIN PLACE
(right opp. G.P.O.)
SYDNEY

Wireless
Engineers

Tel. B 2666

Brandes

The Name to Know in Radio.



Result of
16 Years'
Experience

British
Made

Brandes Headphones combine accuracy, utility and comfort. Rough use in no way detracts from their super-sensitiveness, and the easy comfort of the feather-weight headband means that they can be worn in comfort for hours. The "Matched Tone" feature ensures the same degree of tone in each earpiece, and provides unequalled clarity. Ask your usual dealer for Brandes.

PRICE
35/-

SOLE AUSTRALASIAN DISTRIBUTORS

Amalgamated Wireless

(Australasia) Ltd.

97 CLARENCE STREET, SYDNEY

Matched Tone

TRADE MARK

Radio Headphones



RICHARDSON STUDIO



Phones, Redfern 964 and 980.

Official Organ of the New South Wales Division of the Wireless Institute of Australia, with which is incorporated the Affiliated Radio Societies and the Australian Radio Relay League.

VOL. 5. No. 7.

FRIDAY, DECEMBER 12, 1924.

CONTENTS:		Page
EDITORIAL		12
WIRELESS INSTITUTE		11
CORRESPONDENCE		16
WAVEMETERS		20
BRINY REMINISCENCES		24
AMPLIFIERS FOR CRYSTAL SETS		30
A LOW POWER TRANSMITTER AND PORTABLE SINGLE VALVE RECEIVER		34
BELOW THE BROADCAST BANDS		36
INTERSTATE NOTES		38

EDITOR: A. W. WATT The Editor will be glad to consider Technical and Topical Articles of interest to Australian Experimenters. All Manuscripts and Illustrations are sent at the Author's risk, and although the greatest care will be taken to return unsuitable matter (if accompanied by stamps), the Editor cannot accept responsibility for its safe return. Contributions should be addressed to the Editor, "Wireless Weekly," 12/16 Regent Street, Sydney, N.S.W.

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EDITORIAL

The High Power Stations

THE announcement that the tender of the Marconi Company for the construction of the high-power stations in Australia has been accepted will afford great satisfaction to those who have been observing developments in connection with this matter. After all the dilly-dallying and the political obstruction to the furtherance of the scheme which has taken place in England, it is gratifying to learn that a decisive step has now been taken, and it is to be hoped that the work of erection will be proceeded with at an early date. It is a huge undertaking, and one that, when completed, will place Australia not only in closer touch with Europe and America, but also in the foreground so far as wireless communication is concerned.

At the annual meeting of the Empire Press Union, Sir Robert Donald made grave statements concerning the inadequacy of the British Naval Wireless Communications, and emphasised the need for closer co-operation between England and the Dominions with regard to the development of Empire Wireless. Precisely the same sentiments were expressed by many other prominent men long before Sir Robert became interested. The nett result to date has been nil, and it is to be sincerely hoped that the statement concerning the acceptance of the tender of the Marconi Company will presage something much more satisfactory and definite than resulted from the deliberations of the British Wireless Committee, which, by the way, it is significant to note, is not being re-appointed.

The two Australian stations will, it is stated, have a guaranteed capacity of 86,400 words daily—that is to say, one station will maintain duplex working with England and the other with Canada, and it is anticipated that the services will operate 24 hours a day continuously. Whether this volume of traffic or anything like it will be forthcoming it is difficult to say; in the world of wireless anything may happen, but we have only to consider the recent newspaper statement to the effect that the Pacific Cable Board's lines are choked up with traffic to appreciate that at least a reasonable amount of traffic is assured.

The main fact, however, is that, just as France,

Germany, Holland, and America are in direct wireless communication with their overseas possessions, Australia will be in direct touch with England. Cables, as was demonstrated at Fanning and Cocos during the war, are but sport for the attention of enemy cruisers, and while they are of distinct value during peace times, they are too vulnerable to be totally relied upon in the event of war.

Another pleasing aspect of the matter is that the establishment of these stations will create employment for Australians, and will provide an outlet for technical brains, the scope for which is at present somewhat limited.

That Record Back Here

THE last issue of "Q.S.T."—"ole QST," as it is referred to by some of the New Zealanders—to hand devoted a fair amount of space to the record put up by ZAAA in getting through to the States, and, as is characteristic of that journal, hands out praise without stint to those to whom it is due. The boomerang long promised to the first American to work two-way traffic with Australasia goes to 6BCP, Mr. W. B. Magner, of San Pedro, California. Since it seems that those Americans who have been worked from this end of the globe are using anything from one to five kilowatts, and that not more than 250 watts have been used here, it seems to us that 6BCP, 6CGW, and the others put up some pretty good work in the way of reception.

However, since 4AA got over, his record has been broken by 2CM, 2DS, and 3BQ, the latter, of course, standing well out as having been the first to succeed, and at a greater distance than the other two mentioned. Now, having worked both England and America on high power—that is, high power as we call it here after extensive experience on the low power of 10 watts—the next logical step 2CM will take is to reduce his power and try again, eventually decreasing and decreasing until he has it down to a minimum. This is interesting work and the kind of stuff to appeal to 2CM. Naturally 2DS and 3BQ will follow, unless, of course, they elect to try out phone on their present power, and this hardly seems feasible, although it would form the basis of real experiments.

BUY RADIO GIFTS FOR XMAS

We learn that a number of other transmitters in Sydney, no doubt fired by the successes of those we have mentioned, and apparently individually unable to stand the financial strain of a 100-watter, propose to raise between them enough to instal a station of sufficient power to get through to America. A very laudable intention, indeed—if America had not already been worked by others. As it is, if the proposition is finalised, and the station gets over alright, what will have been accomplished? In one word—nothing. The only ground covered will be that already trodden flat by 2DS, 2CM, and 3BQ, and if a hundred stations work U.S.A. henceforth on 100 watts or more, no comment will be excited. Imitation may be a form of flattery, but in this case it would be a waste of time and money. What would arouse comment and place the experimenter concerned in the limelight would be the working of an American with a power of 10 watts. There is a wonderful chance here for the experimenter to do something really good, and a wide field for improving the efficiency of low-power stations.

Already some have attempted the job, and have apparently given it up, but it should be remembered that 2CM worked for months on most of his experiments, and that during the next three months the Americans will enjoy the best possible period for reception.

Broadcasting

2FC (FARMERS)

WAVELENGTH, 1100 METRES.
POWER, 5 KILOWATTS.

Midday Session:

12.55—The chimes of 2FC.

12.58—Time signals from Farmer's master clock.

1. 0—Coastal Farmers' market reports, Stock Exchange information, weather information, "Sydney Morning Herald" news service, Reuter's and Australian Press Association cables, "Evening News" midday news service.

1.30—Close down.

Educational Session:

3. 0—The special Education Session, which has been arranged by the N.S.W. Department of Education, will be held on Mondays,

Tuesdays, Wednesdays, and Thursdays of each week. Friday, musical programme from 3 p.m. to 3.45 p.m.

3. 3—The chimes of 2FC.

3.50—Musical programme. Afternoon Stock Exchange information, late weather information, "Evening News" afternoon news service.

4. 0—Close down.

Early Evening Session:

6.30—The chimes of 2FC.

6.33—Children's hour.

7.10—Dalgety's market reports (wool, wheat, stock), fruit and vegetable markets, late Stock Exchange information, weather news, shipping news, late "Evening News" news service, Reuter's and Australian Press Association cables.

7.20—Close down.

Night Session:

7.55—The chimes of 2FC.

8. 0—Musical programme. The evening entertainment broadcast from Station 2FC is varied, and includes theatrical transmissions from the Theatre Royal, Her Majesty's Theatre, the Criterion Theatre, The Palace Theatre, The Tivoli Theatre, The Haymarket Theatre, and The Prince Edward Theatre. Jazz music provided by the Wentworth Orchestra is also broadcast direct, and highclass musical entertainments provided at the studios of 2FC, in which Sydney's leading artists participate are also features of the programme.

Saturday:

Midday, early evening and evening sessions as on week-days; afternoon session as follows:—

3.15—The chimes of 2FC.

3.18 to 3.45—Late sporting information.

3.45—Close down.

Sunday:

No midday, afternoon, or early evening session. Church services from one of several churches, commencing at hour appointed for Divine service according to the church, and varied by some sacred concert from the studio of 2FC.

10. 0—Close down.

BUY RADIO GIFTS FOR XMAS

HEADQUARTERS
Royal Society's House
5 Elizabeth St.
SYDNEY, N.S.W.

Wireless Institute of Australia

N.S.W.

Div. Inc.



Incorporating the Affiliated Societies and The Australian Radio Relay League

Phil. Renshaw, Hon. Sec.
Box 3120 GPO Sydney
Phone B2235
A.H. Perrett, Publicity Officer

THE "All Experimenters' Club Night," held at the Royal Society's Hall on Tuesday, December 2, was a great success in every way. The attendance proved that the evening was an extremely popular one. In fact there were quite a number who had to stand, and more than one turned away home as they found it impossible to get anywhere, even near the door.

The meeting started punctually at 8 o'clock, when Mr. Renshaw, on behalf of the Wireless Institute, welcomed the visitors with a few well-chosen words and the main business of the evening was proceeded with.

This commenced with a series of films, the first one being merely a scenic effect entitled "The Wind Goddess," followed by the "Mystery Box," which depicted the mysteries of wireless. It introduced the audience to an hitherto well known, but unseen personality in the form of a wireless "bug," showing exactly how his operations are carried on and the result.

A more or less detailed explanation followed, showing the operation of the apparatus employed in broadcasting, and generally speaking gave a very good insight into the wireless transmission of speech. With this introduction the main film of the evening entitled, "The Audion," proved a very attractive and illuminative film. It depicted very clearly the way in which the vacuum tube works showing the action of the electrons inside the valve and the method by which the electron flow is controlled. The whole thing was very well got up and gave a very good idea of some of the obscure points in valve operation.

After having viewed this film the amateur has no excuse whatever for mis-handling his valve, and the production of such a film is an education in valve operation. The projection of films was then closed with a humorous sketch depicting the eccentricities which followed a visit from a man's mother-in-law and the results of her treatment of the wife's first cooking. This set the aud-

ience in a good frame of mind for the discussion which followed.

Mr. Chas. D. McClurcan, President of the Wireless Institute, opened the remarks giving a short address, and questions were asked relating to the operation of the valve and its functioning.

Mr. W. H. Newman proposed a very hearty vote of thanks to the Wireless Institute for their arrangement of the evening's entertainment, and expressed the hope that it would be but the precursor of many more evenings of instructive entertainment.

Monthly General Meeting.

The next monthly general meeting of the Wireless Institute of Australia, N.S.W. Division, will take place in the Royal Society's Hall, 5 Elizabeth Street, Sydney, on Thursday, December 18, when Mr. A. H. Perrett will deliver a paper on "Batteries, their Construction, Care and Maintenance." On account of the difficulty which has been experienced with the postal authorities in the non-delivery of letters containing notices, which matter has not been finally cleared up, all members are asked to note the date and attend the meeting whether they actually receive notices or not. Notices will be sent to every member as usual, and any that do not receive them are asked to notify the Hon. Secretary to that effect.

New Headquarters.

As mentioned in these notes last week, the Institute has settled down in the new headquarters. The move has meant a certain amount of disorganisation in the ordinary routine business of the Institute, and where there has been any apparent neglect on the part of the officials of the Institute it can be definitely stated that such neglect has been unavoidable and unintentional, and will be remedied at the first possible moment.

Welcome Home.

Our old friend, Miss F. V. Wallace, is back again in Sydney. She looks brighter and happier than ever, and made her first public appearance since her return, although perhaps not her first ap-

pearance before the public, at the "All Experimenters' Night" on Tuesday, December 2.
Q.R.M.

The party which visited certain stations on the North Shore line on Friday, November 28, has been carefully deliberating over the results of their investigation. The evening was a very full one and many observations were taken.

At 2DE and 2JI evidence was collected which proved that for two way communication it is necessary to have both a transmitter and receiver, and furthermore that it is essential that both of these instruments must be in thorough working order. After coming to these conclusions the party moved to 2CX. Failure to obtain results at this station was put down by its owner and operator to a short circuit between the antenna and counterpoise. This was soon rectified but still no signals could be obtained. Considering the set was a low loss tuner, this strange phenomenon called for close investigation, and after diligent search the party come to the conclusion that it was essential to have the aerial wire connected to the set before signals could be obtained. While here 2GM attempted to remove the wireless cabin, but he was detected before he got farther than taking some of the white-wash with him. The evening closed with a visit to 2BF and here a phenomena of the most astounding nature was discovered.

When one visits a wireless station, particularly when it is an experimental one, one hardly expects to indulge in the piscatorial art. After a display of gymnastics on the part of 2DE and 2GM, led by 2BF himself, a little angling resulted in very good bites. The bait used was a call sign which has not yet been heard on the air, but whose owner was present and the results were astounding in more ways than one. Further information will gladly be supplied by 2YI and 2JM preferably by radio.

3OT ought to be in the second district. It would be more in keeping with his call, as he was coming in here with great punch, using only 201a's as transmitters.

We have been informed that the fishing at Great Mackerel Beach is good, but it is not necessary to go to this great distance to indulge in this sport.

Why does 2GC studiously avoid the Publicity Officer? Has he been doing deeds which will not stand the light of investigation? 2ED has been very quiet of late. We think he must be preparing a surprise for all the Hams at Xmas, and per-

haps it will be a Xmas Ham!!

Has anybody heard signals on 15 metres. The three conspirators working on this band are still busy.

New Year Resolutions.

With the new year most people make many new resolutions. Some good, a few bad, mostly indifferent. Don't wait until the new year to make your resolutions, but carefully make them at once.

Mr. Radio Experimenter—your first resolution should be: Join the Wireless Institute of Australia, New South Wales Division. This is one of the superlatively good kind, one which you will never regret and one which you will take pleasure in living up to during the coming year.

A. H. PERRETT, Publicity Officer.



MR. H. A. STOWE.

Mr. Stowe was one of the original members of the Wireless Institute of Australia (N.S.W. Division), and has been a member of the Executive Council since its inception.

BUY RADIO GIFTS FOR XMAS

With Our Readers

LIGHTNING ARRESTERS.

(To the Editor.)

Sir,—The criticism of "Ion" on my few general remarks on the above a couple of issues back makes very amusing reading. Abuse and mockery is the prerogative of fools, but lest some of your readers may have been misled by the ignorance and arrogance displayed by "Ion" in his criticism I am compelled to go a little further. Electrical engineers always welcome new light on any of the subjects which continually claim their attention, but the statements of "Ion," being of the destructive criticism order, are but shadows where light is needed. It is regrettable that he should advise users of wireless receiving sets to "defy the lightning" and also ignore the Fire underwriters.

It must be obvious to any intelligent person that a responsible body such as the Fire Underwriters' Association would not issue rules for guarding against possible fire caused by atmospheric discharge without adequate knowledge of the danger arising from this cause, and experts of international reputation have been consulted. For him to refer to lightning as a superstition is ridiculous. Hard-headed Directors of electric lighting power, and Railway schemes would not spend the thousands of pounds of cash they do, on lightning protection if it were only superstition. "Ion" says "No one dreams of 'arresters' on electric lighting wires etc.," I would like to inform him as follows:—All the P.M.G. poles are fitted with lightning conductor wires, and a lightning arrester is part of each telephone subscriber's installation. Then again, all electric supply systems have lightning protection. In the case of the Sydney City Council I believe arresters are fitted every quarter mile. All tramway systems have lightning protection.

Although I had not intended to more than generalize on atmospheric electricity, "Ion" by his statements, shows how much need there is for enlightenment. He suggests that a wireless aerial can be made safe "by a decent tuning coil." Now the most generally accepted piece of apparatus used for lightning arresters on electric lighting and power schemes is the "choke coil" consisting of a coil of wire. This "choke coil" forms an inductance and is connected at right angles to the line leading to the lightning arrester. The end furthest from the line is connected to the apparatus to be

protected. Although the lightning discharge has to jump an air gap to reach earth across the arrester and would have a continuous metallic path (through the choke coil and the apparatus being protected) the choke has sufficient inductance, to make the air gap preferred by the lightning. Photos of discharges through air mentioned by "Ion" have no bearing on my previous remarks which apply to metallic conductors. Lightning varies in intensity between very wide limits and in the most extreme cases of discharge, no adequate protection of property and apparatus has yet been devised. Fortunately, very severe strokes are rare and extremely local in effect, but moderate discharges are of frequent occurrence. To consider for a moment some of the phenomena of atmospheric electricity it may be mentioned that both C. C. Garrard, Ph.D., M.I.E.E. Am. I.E.E., and Steinmetz state that lightning discharges may be of any frequency between 100,000 and 1,000,000 cycles or over per second and also of low frequency and sometimes even aperiodic discharges occur.

Discharges may occur between two clouds, and the resultant charge contained in one cloud then discharges to earth with great violence. Such a discharge may go straight to earth although trees and other objects may be dotted around. The less severe discharges being of more common occurrence and less violence can be more or less effectively dealt with.

Charges of a static nature held in moving clouds may contain quantities of electricity. This may go to earth at any time due to the cloud moving near enough to a suitably low resistance path. Fairly efficient protection has been devised against moderate discharges and the air gap between non arcing metals devised by Wurtz in conjunction with choke coils is perhaps the most favoured. Discharges occurring between two clouds, although not in the severe class first mentioned, may still cause considerable damage if within a short distance of inductive apparatus. It is on record that many a valuable piece of electrical apparatus has been destroyed by purely inductive effects. In such a case a "decent tuning coil" mentioned by "Ion" as sufficient protection, is fed from the aerial by the secondary current inducted by the discharge in the clouds and has a very high potential across it. This potential may become so great as to pierce the insulation of the set and of the phones, and becomes dangerous to life. (The Underwriters' Rules demand that the Radio Arrester shall operate at 500 volts or less).

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It must not be thought that claim to absolute protection is made against the most severe "strokes" but very efficient protection has been devised against direct "strokes" of the secondary class. As previously mentioned severe "strokes" are fortunately rare and always extremely local in effect. I infer that it is "Ion's" wish to reassure the timid regarding the lightning, and am glad to see it. Who was it said "Trust in God and keep your powder dry?" Likewise, if you put up an aerial, attach a good lightning arrester. "Ion" is probably unaware that atmospheric are rarely discharged to his aerial, but induction caused by a discharge in the air. These atmospheric are of different frequency on different days, but seem to be mostly on the higher frequencies and well over a million cycles. Although "Ion" seems to think that the investigation of atmospheric electricity is completed, I consider it hardly begun. The steam contained in a boiler is a fearsome power uncontrolled, and thorough investigation has enabled us to put it to our use in the locomotives and power-houses, and the safety valve prevents it from becoming a danger.

The lightning arrester is the safety valve of the wireless aerial and by its use you provide the necessary protection against fire, shock, and destruction of valuable apparatus. My advice to "Ion" is not to take up the attitude of the ostrich and ignore the danger round him, when that danger can be at least minimised by taking the simple precaution that an efficient arrester affords.

Yours faithfully,

H. E. TAPLIN.

Helen Street, Arlarmon.

To the Editor, "Wireless Weekly."

Dear Sir,—I was interested to notice in a recent issue of your journal that a correspondent who had been in the Riverina was surprised to find that clear, cold nights were often the worst for QRN. My station is situated 250 miles almost due west from Sydney, and my experience here is that the appearance of the atmosphere does not necessarily indicate that wireless reception will be good or bad.

For example, we have just had two days' very heavy rain, thunder, and lightning, and to-day the sky was full of dark, heavy, cumulus clouds, yet the midday transmission from 2FC came through beautifully clear on the loud speaker. While, perhaps, it is not sound theoretically, my experience is that more valves mean more QRN. During the last

three months there were not more than a dozen nights when the loud speaker could be worked on three or four valves, as QRN made it impossible to hear music and speech, but a one valve (3 coil) gave reasonably clear results on phones and was sufficiently strong to be audible twenty feet away from the loud speaker. Generally speaking, strong atmospheric seem to be a precursor of rain, and a short period of good wireless reception generally follows wet weather, in the summer-time.

From April to July, inclusive, trouble from QRN is only moderate here, but for the rest of the year it is extremely bad. It is quite a common thing to get a continual roar from the loud speaker, using four valves strong enough to hear 500 yards away, and the atmospheric are invariably worse after sunset.

During the summer months fading is practically unknown here, but in winter it is awful, specially on the longer waves. Up to about 250 metres it is hardly noticeable, but from 300 to 400 it is very noticeable, and 1100 fades from strong on the loud speaker to inaudible.

If you consider this of sufficient interest to publish, I would like to point out that my wireless experience has been practically confined to the area in which I live, and, therefore, cannot be accepted as the conditions which would prevail in other localities.—Yours faithfully,

"Corran," via Marsden. L. M. WILSON.

(To the Editor)

Sir,—Time is a great healer, and, after a lapse of some years since I last saw it, it was almost with equanimity that I viewed the photograph of the "Bulla" set in the last issue of Wireless Weekly, under the letter from Mr. E. Joseph, which, by the way, interested me greatly. I had thought that the memories of the months during which I had the misfortune to be harnessed to the set on the "Bulla" were buried along with all the other things which one likes to forget, but although Mr. Joseph treads lightly upon ground over which the headstone was long ago erected, I forgive him. I thank your correspondent for his kindness in offering to provide me with the name of the party who designed the set, but, unfortunately, I have long been the victim of a mild form of homicidal mania, and I fear that if the name were disclosed, disastrous results might follow; believe me, I have no wish to dangle at the end of a rope any more than I want to make Mr. Joseph an accessory after the fact.

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Concerning Mr. Joseph's statement that there was a simple adjustment by which the note could be regulated, quite so, there was, but unfortunately, it did not function. In the same way, there was a field resistance which also neglected its duties. If Mr. Joseph will refer to the issue dated November 21st he will notice that I mentioned that the set followed no recognised wireless practise; an adjustment made to-day would not hold good to-morrow—in short, it was not only a freak, but an atrocity which I hope the S.P.C.A. will see is never again perpetrated. May I also add that that set had Government Radio Inspectors in various parts of the world backed up against the wall and breathing hard!

The balanced carborundum receiver was evolved originally by the Marconi Company, London, primarily as a stable receiver and as a so-called static reducer. In the former capacity it worked well, because it was very difficult to "blow" the point while transmitting (a very annoying peculiarity of the ordinary crystal detector) in the latter capacity it also functioned admirably, its only and perhaps unimportant feature being that it also cut signals down to a minimum. Amongst sea-going operators it was the invariable custom to discard the carborundum and hook on a galena detector. The only really good commercial ship type crystal detector which had been evolved at the time of which I wrote, was the one made by Siemens Bros., London; it made possible an almost instantaneous selection of one of seven sensitive crystals and after all was simply a commercial adaptation of ideas which were put into effect by operators in the days when valve receivers were mystical things peculiar to liners like the "Mauretania."

The type of set designed by Mr. Joseph to supersede the "Bulla" type was well known to me and I need hardly say, was a distinct improvement; its only fault being inferior insulation which was continually breaking down. No doubt this was due to the fact that decent materials were very scarce during the war. This particular installation was fitted on some of the steamers built in Australia for the Commonwealth Government Line, and I have noted particularly that the low note emitted was very hard to read through tropical static.

In conclusion it occurs to me that perhaps my former remarks may be misconstrued as a general castigation of Australian-made wireless installations. Such was not my intention, and I have

only to point to the fact that the world's record for long distance ship to shore communication was made on Australian made apparatus, and that almost all the cargo boats and a number of the passenger steamers engaged in the Australasian trade carry Australian made wireless sets with which they maintain consistent communication at distances with which ship stations under other control cannot compare, to show that the locally made installations stand up better than any other.

They are not, and never were, however, evolved by the Randwick workshops, but at the workshops of Amalgamated Wireless A/sia., Ltd.

Yours etc.,

Sydney, 6/12/24.

"BRASSO."

(To the Editor.)

Sir,—Please excuse me for again intruding upon your valuable space but I feel that I would like to say a few words in reference to a letter from Mr. Walmsley which appeared in W.W. recently. Mr. Walmsley says that he had something the same as my results though not in the same degree, as he was using a two-tube set. Quite so! Another thing which played all the part in his case was the fact that his aerial was not earthed. Mine was. Well and truly earthed and four feet away from the nearest point of the set as was the earth lead also. Mr. Walmsley also mentions that, by substituting the earth for the aerial he got good results. This of course is a well known fact. In my opinion his results are quite easily explained. He says that his aerial lead in was swaying about in the vicinity of his inductances—two inches away. As the aerial was not earthed it would naturally accumulate a charge, and having no direct path to earth would by electrostatic action discharge into the inductance as it drew nearer to them. This effect would be exactly the same as having a series condenser, although certainly not an efficient one by any means. Mr. Walmsley suggests that I try taking the set outside and trying for same results away from aerial. "No need for that!" Last Sunday I was erecting a new 70-foot mast, and as it came on to rain I could not get a temporary aerial up. Nevertheless, here is the log for DX only, not including local stations heard:—

N.Z.: 2AC, 2AP, 2AR, 4AA, 4AG, 4AK.

Victoria: 3BQ, 3BD.

N.S.W.: 2HM, 2GQ.

On the 26th November I managed to get a single wire up only 50 feet long, a single strand of 18 gauge, and at 4.15 a.m. on Wednesday morning logged G2OD, England, working A2CM and

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A2DS. During the last three days the following Yanks have been had:—Q.S.A.: 6AHP, 9CG, 9CJC, 8CGW, 4IJ, 1XZ, 4IO, 1CMP, 1PL, 6CGO, 2BRB, 9BCJ, 5UK, 4OA, 6LJ, 2ANM, 6CW, 6BON, 6AWT, 6BO, 6NW, 4CA, 6AO, 3AUV, 3CHG, 6CGR. All these results on one tube low loss. Hoping this may be of interest to Mr. Walmsley and others, and wishing W.W. every success.—Yours faithfully,

THOS. R. ANTHONY.

12 Chestnut Road, Auburn.

The Editor, "Wireless Weekly."

Dear Sir,—I have been much interested in the discussions on Lightning Arresters which have appeared in your recent issues.

Mr. Taplin and "Ion" do not appear to agree as to the need of an arrester, but I, a humble man in the street, who has his house insured against fire, and who owns a receiving set—wants to know what to do.

The radio rules of the fire insurance companies say I must use a protective device, and this is amplified in a note which says the protective device should be an efficient lightning arrester.

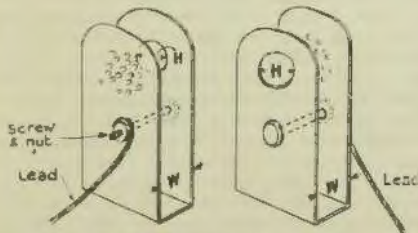
Does "Ion" advise me to disregard these regulations? Well, I'm not having any.

Nero fiddled while Rome was burning; so, profiting by this awful warning, and remembering the results when doctors disagree, I am resolved to fit an arrester and leave the experts to fight it out.—Yours truly,

SIMPLE SIMON.

(To the Editor.)

Sir,—I am sending you herewith a rough sketch showing how a double crystal detector may be made very simply and cheaply. If this is of any value you can publish it for the benefit of your readers.



HOLES H & WIDTHS W MADE TO SUIT SIZE OF CRYSTALS

Two thin pieces of brass and two brass nuts and screws are all the materials required. Cut holes in the brass as shown at one end and at the other, punch holes in the brass so as to form a grip for the crystals; when bending into the shapes shown care must be taken that the roughened side is inside. Take your crystals (Zincite and Bornite for preference) and place one crystal with flat surface against the hole and screw up tightly having first attached lead to screw. Now take the second crystal and place in position with a sharp point projecting through the hole and screw up tightly attaching other lead to screw as before. Insulating tape is now wrapped round one holder, one turn at the bottom. Buzzer and phones now come into use and the crystals are moved about until the best results are obtained. Insulating tape will bind these holders together and if good points have been found there will be no need to bother with this again for months. I gave a friend of mine one of these and he informs me that he is still using it—making eight months general use to say nothing of music.

Yours etc.,

Edward Street, Willoughby. S. P. HINLEY.

(To the Editor)

Sir, — Arrived in Tenterfield about three months ago, with my set trailing along with me. It is a two valve set, employing a stage of audio frequency and detector, using the P1 Circuit.

Wired it up a trifle differently and on listening in last night picked up a strong carrier which I thought might be 3LO. Shoved on the stage of audio and he simply came in like a thunderstorm. Considering my aerial was only twelve feet high this was not such a bad performance, as the air-line from Tenterfield to Melbourne is somewhere about 600 or 700 miles.

However that is merely incidental as the real reason I am writing to you is to see if you can identify a powerful C.W. station on about 2500 metres. He sends in cypher and signs off R.A. Have you any record of this station? On looking through my books I can find no trace of him.

I have also had the experience of hearing music from my set without either phones or loud speaker connected and have often wondered at the cause of this phenomena.

Yours etc.,

"EXPERIMENTER."

The Court House, Tenterfield.

20/11/24.

(Can't place this station.—Editor.)

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Wave-Meters: Their Use and Construction

By H. A. Stowe, M.W.I.A.

TO the serious experimenter there is no more important piece of apparatus than a wavemeter, and there are many who imagine that the possession of such an instrument is beyond their expectation. Of course, there are wavemeters and wavemeters. The construction of such an instrument presents no serious difficulties to the practical experimenter, the only difficulty lying probably in the calibration, and even that is not hard to overcome. A wavemeter may be put to many uses, the principal of which may be "the measurement of wavelengths," "the measurement of resonance," and "the measurement of inductance and capacity."

The latter two uses require a simple addition, which will be mentioned later on. Most of the uses to the average experimenter will come under the first heading, and may include the measurement of the natural wavelength of the aerial, the wavelength of received signals and of transmitted signals, and the calibration of the tuning elements of a receiver. The construction of a wavemeter will now be followed, and here it might be mentioned first that the use of the best materials is essential, and the best workmanship. If cheap material is used the meter will soon become unreliable, and hence useless, as the continual checking is not always available. A wavemeter consists principally of two main parts, a condenser or capacity, and an inductance or coil. These may take any form, but the condenser should be variable, and a few hints as to its selection are here given. By far the best procedure is to purchase a good make right out, and it should have the following points examined:—How the connection is made to the moving plates; this should be positive rather than a frictional contact. The plates should run true, and have no tendency to vary as they move between the fixed ones, as any fault in this direction will affect the calibration and produce a nasty curve. They should be of good solid construction throughout, and one of the straight line variety is a decided advantage. A type of low loss condenser now on the market is an excellent example. If a vernier is desired, it must be of the main control type and not

one of extra plates operated separately. It should not be more than .001 mfd capacity, and should have a low minimum capacity. Having secured or built up a suitable condenser, the next part to consider is the inductance. This may be of many forms, and depends upon the range to be covered. In general it should be of as low a resistance as possible, and have a low self-capacity. In the first place, a coil of high resistance will not tune sharply and causes the wavemeter to possess what is known as "stiffness," so that the wire should be of reasonably large gauge, not less than 24 or 26 at the most. Now let us look at the effect of having coils that have a high self-capacity, say through being covered in shellac or wax, etc. The range of the wavemeter depends upon the minimum of the coil and condenser. We will assume that our condenser is satisfactory and has a low minimum, then when connected with the coil the resultant wavelength will be proportional to its value and that of the coil inductance, but if the coil possesses of itself capacity, it is the same as adding capacity to the condenser, and as this capacity cannot be altered it means that the minimum of the wavemeter has been raised, thus reducing its range.

Possibly, the best coils for this purpose are the honeycomb coils with the open spacing, where several ranges are required. If only one short range is required, an ordinary single layer coil is sufficient. Where more than one coil is to be used, care should be taken that the range of the coils with our condenser overlap. That is, supposing our first coil will tune from 50 to 180 meters, then the next coil should tune from, say, 160 to possibly 350 meters; there should always be at least 20 meters overlap. It will be found when using the wavemeter that when the condenser becomes the greatest factor in the combination—that is, when it is nearing its maximum—the strength of the resonance indication or the effect in the phones decreases, so that it is rather better to use a reasonable-sized condenser, say, not more than .001 mfd and more coils to cover the range required. These coils can have the standard coil mountings on them and be plugged into a proper receptacle on the wavemeter.

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There are several types of wavemeter, and all have their particular methods of use. The principle on which all are based is as shown in Fig. 1, where L is the coil and C the condenser. The particular circuit shown is called an oscillatory circuit, because it is capable of oscillating if excited in the right way, such as bringing it close to a circuit that is oscillating, like a transmitter. This circuit will only oscillate providing that it is in tune with the

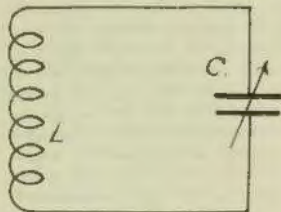


Fig 1.

other circuit, and this is done by varying the condenser until the wavelength of the two circuits correspond. Some means have now to be employed to tell whether the circuit is oscillating, and this can be done in several ways. Where the oscillations on signals that are to be tested are very feeble, a very sensitive indicator has to be employed. This usually takes the form of a crystal detector and a pair of phones connected as shown in Fig. 2, where D is the detector and P the phones. When the circuit is in tune with the other exciting circuit, a click will be heard in the phones in the case of C.W. signals or oscillations, or actual speech or signals in the case of modulated signals. Methods of carrying out these tests will be dealt with later. If the wavemeter is to be used for calibrating a transmitter where the amount of en-

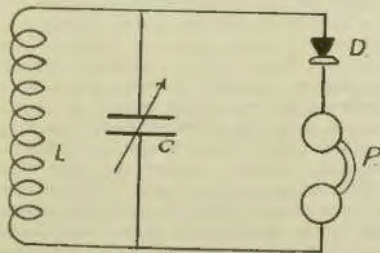


Fig 2.

ergy that can be transferred to the wavemeter is large, a thermo ammeter or thermo galvanometer may be connected as per Fig. 3, where G is the galvo. Resonance is indicated by a maximum reading on the instrument.

In place of the galvo a small flashlight lamp may be used, the resonance point being indicated when the lamp glows with maximum brightness.

Finally, a way will be described later where the wavemeter may be used as it stands in Fig. 1. We may also require our wavemeter to give out signals of known wavelengths for calibrating a receiver, for instance. This may be done by connecting a buzzer as per Fig. 4, where B is the buzzer and B1 the battery, and K a key for operating or starting the buzzer. With the buzzer in operation the wavemeter will oscillate at a wavelength depending upon the value of the coil L and condenser C. These oscillations may be received on a receiving set if the wavemeter is brought close to the tuning coils or some part of the receiver. We may also construct our wavemeter to include all these features, and so be a very useful instrument. It is now proposed to describe the construction of two of these types.

The actual tuning elements, the condenser and coils, are common to all types, and we will deal

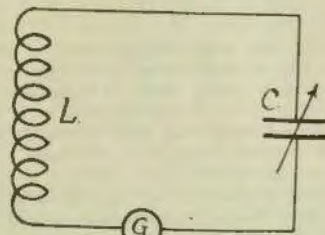


Fig 3.

first with this section. For those who really wish to build a first-class instrument a condenser of the low loss type such as the "Acme" is suitable, and it should not be more than .001 mf capacity. These are straight line condensers—that is, their capacity varies directly as the scale readings; or, to put it another way, if we were to plot on squared paper the capacities against the dial reading, the resultant curve would be a straight line—a very desirable feature in a wavemeter, although not essential. Failing these low loss condensers, any good make will do. The best type of coils to use

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are the honeycomb variety—the open spaced ones for preference. Most of these coils are stamped with the wavelengths they will tune to using a .001 condenser. For example, from a table I have here the following coils are suggested, assuming that our wavemeter is to go from, say, 150 meters to 2000 meters using a .001 mf condenser.

A 25 turn coil will go from 131 to 372 metres.
A 50 turn coil will go from 270 to 1007 metres.
A 200 turn coil will go from 980 to 2870 metres.

It will be noticed that all these ranges overlap and that three coils will cover the desired range. These values are only approximate, and may not refer to the local makes of coils. The dealers will be able to indicate which coils will suit. The next

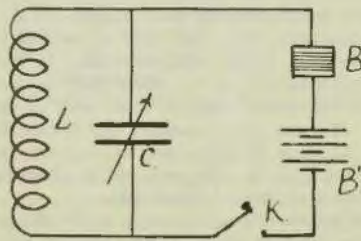


Fig 4.

requirement is a good, reliable make of crystal detector, and a small buzzer preferably with a fairly high note, and it should be adjusted so that it will just work on a minimum battery in order that it may not make much noise outside the wavemeter. It is better to use a low resistance pair of phones, say, about 1000 ohms, but if it is desired to use existing phones which may be 2000 ohms or more they should be shunted by a small fixed condenser of about .001 capacity. Having collected

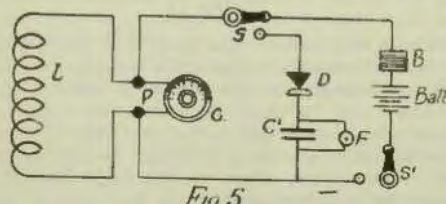


Fig 5

all the parts, they can be mounted in a suitable box to the liking of the constructor, and the connections are as shown in Fig. 5, where C is variable

condenser, L honeycomb coils, P coil plug, D detector, C1 small condenser fixed .001 mf. capacity, F phones, S switch for using either the buzzer B or the crystal detector and phones, S1 is a switch for switching the buzzer on or off. A suggested layout is shown in Fig. 6. A pair of terminals marked B is shown for the battery for the buzzer, but this may be placed inside the set; if a small buzzer is used the batteries may be flashlight cells. The wiring should all be done with stiff wire, and should be as rigid as possible and all joints soldered. The size of the panel will, of course, depend upon the material chosen. The next step is to calibrate it. In this, it is not possible to give any particulars that will enable the meter to be made so that definite results will be given. It will be necessary to borrow another wavemeter and calibrate ours from it. There are several methods, but the most suitable will be mentioned. First, it should be noted that the effect of connecting the buzzer will slightly increase the wavelength of the

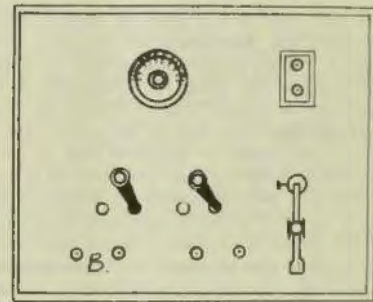


Fig 6.

meter at any setting. The lower the wavelength, of course, the greater will be the error due to the buzzer, so that, for greater accuracy, separate tests should be made when using the buzzer. We will assume that, first of all, the borrowed wavemeter only possesses a detector and no buzzer. We can calibrate our wavemeter both ways from this. Assuming we decide to calibrate with the buzzer first, the coils of both wavemeters should be placed opposite one another about two or three inches apart; then, setting our dial to zero, start the buzzer, and while listening-in on the phones connected to the standard wavemeter, vary its condenser until we hear the maximum buzz in the phones from the other meter; read the wavelength

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of the standard, and the result is the wavelength of our meter with condenser at 0. This result should be plotted on squared paper, marked as per Fig. 7. We will assume the standard reading was 120 meters, then a mark would be placed as shown on the point where the 0 line crosses the 120 meter line. The dial on our meter is now turned to 100, and the standard condenser varied again until maximum buzz is again heard in phones. We will assume the standard then reads 135 meters; this point is then plotted as shown, and so on over the whole range of our condenser. The curve produced should look something like that in Fig. 7. It will be evident from this that any intermediate readings may be taken from the curve. For instance, the wavelength of our meter when dial is set at 46, say, will equal 174 meters, as indicated by the dotted lines. A curve should be taken like this for each coil of our meter, marking suitable values on

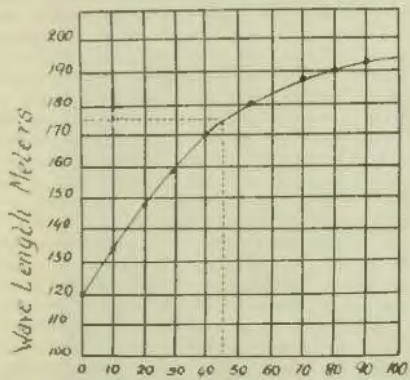


Fig 7 Dial Reading.

the wavelength side of the curve. If now we want to calibrate it, using the detector, we must use a separate source of energy to excite the meters, and the arrangement is as shown in Fig. 8, where A is our wavemeter, C the standard wavemeter, and B the oscillator consisting of any coil and condenser that will tune to a wavelength within the range of the wavemeter with a buzzer and battery connected as shown. This will be similar to the connection of our wavemeter when using the buzzer. Now, proceed as follows: Start the buzzer

going, and listening-in on the standard wavemeter vary its condenser until the maximum buzz is heard; note the wavelength. Now, without shifting or touching the oscillator, listen-in on our wavemeter A, and vary its condenser until maximum buzz is received. It will easily be seen now that both wavemeters are tuned to the same wavelength. This result can be plotted on the same curve sheet as the last test for its respective coil. The difference can then be seen with and without the buzzer—the curve should be drawn with different colours. Slightly vary the oscillator B condenser and again measure the wavelength on the standard, noting the result, and then on the new wavemeter, plotting this result on the curve, and so on over the full range. This method is known as the three wavemeter method, and is very accurate if carefully carried out. The curves should be pasted in the lid of the wavemeter, and suitably protected by a piece of thin, clear celluloid.

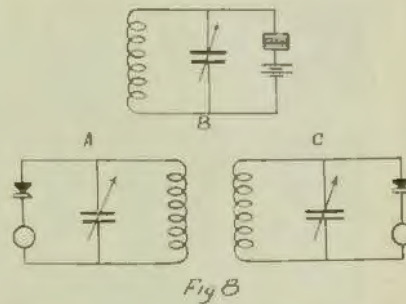


Fig 8

The calibration of the wavemeter shown in Fig. 3 is somewhat more difficult, and requires considerable amount of power from the oscillator or the use of a valve oscillator in place of the oscillator B in Fig. 8. The principle and method of carrying out this calibration will be the subject of another article, in which also methods of using the wavemeter will be described.

In the last issue we published a report that Thos. H. Anthony (Auburn, N.S.W.) had succeeded in copying British amateurs on the detector valve.

Mr. Anthony now writes us asking that we inform those who have written him that until he has finalised certain experiments which he is carrying out details of his set cannot be given.

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BRINY REMINISCENCES

By "BRASSO"

(Continued from last week.)

GENOA, or as it is pronounced ala Italiano, Genova, with the G very soft and the accent on the Gen, happens to be my favourite city; it is, in the expressive parlance of our friends across the pond, some little old burg, and one in which I would like to take up permanent abode. Although the climate in winter, what with the chilly breezes from the snow-clad summits of the Pyrenees and the gusty squalls from the Gulf of Lyons, is somewhat cool, the summer is perfect, and we who boast of sunny New South Wales would be the better for a sojourn in Genova when the grapes are ripening and the Birra Busala factories working overtime. It is the largest port in Italy, and a tremendous amount of shipping is invariably busily engaged loading or discharging cargo in the harbour. Genova is the terminal port for the big Italian steamship companies whose palatial liners trade across to New York, down to South America, and around the Mediterranean; and the White Star Line, which also maintains a passenger service across to the States, has fine offices in the city. The installations on all the steamers sailing under the Italian flag, with the exception of those steamers taken over from Germany and Austria, are all Italian Marconi, and the operators Italians, although at one time the British Marconi Company supplied the men. As operators, the Italians are not exactly speedy, their individuality being entirely lost in the heavy style of sending, common alike to French, Italian, German, Belgian, Dutch, and Greek operators. Even on the large Transatlantic ships, where a vast amount of traffic is handled, the quality of operating is very poor. It may be of interest to digress a little on the question of comparative operating ability of sea-going ops., as this is a matter which is seldom touched upon in the various wireless journals. In a class all by themselves, supreme above all others, are the operators of the British Navy; speedy and accurate, their sending is copper-plate, and sometimes very difficult to distinguish from automatic. Next in order are those operators on the Australasian ships who were formerly engaged on land

lines; next the Japs., who, when not cluttering the ether with the queer code they use between themselves, send some very pretty Morse. Then the English Marconi man, and, in a collective group, Swedes, Italians, French, and so on; and lastly, Yanks, whose Morse generally is putrid. There is nothing more harassing than endeavouring to read indifferent sending, especially through heavy static, and, taken all round, at sea (and in coast stations, for that matter) the standard is not particularly brilliant.

However, back to our Burton Holmes travelogue. The city of Genova is a very ancient one, and a study of its history makes most fascinating reading. Flanked behind by tall hills, it rises in terraces containing palatial homes and wonderful gardens, and the big golden dome of the Righi, at the top of the hills, gazes down over the city and the blue waters of the bay. The Righi is reached by the Funicular, a railway running almost perpendicularly up the hillside. To the left of the Righi is the fortress from which the noonday gun booms, and over the fortress are the aerials of I.C.B. Genova Radio. A road runs right along the brow of the hill, and, lying comfortably on the grass at the roadside, I spent many pleasant hours viewing the scenery at long range and returning the salutations of the humble folk occasionally passing. Dotted around the adjacent coastline are pleasant bays, each sheltering its fishing village. On a hill overlooking the Campo Santo is the Castle MacKenzie, inhabited by a renegade Scot, who, vacating the fishy smells of his native city of Aberdeen, migrated to Italy and cleaned up a tidy fortune out of insurance. A shrewd bunch, these Scots, scattered all over the world, making money where others toe the bread-line. Even down in Punta Arenas the big noise of the village is a Scot.

The Campo Santo is famous as the world's finest cemetery, and its beautiful headstones and lovely flower-bordered paths are too wonderful for words. For the small sum of one lire a guide will take you round and give you the history of everything. At night the glow from the thousands of

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tiny lanterns invests that solemn and glorious place with a fairy-like appearance which could scarcely be described.

The hub of the city is the Piazza De Ferari, off which run the Via Settembre, the main shopping centre, and the other principal avenues. The Piazza is bordered on the one side by the Bourse, and on the other by the imposing building of the Banca D'Italia. Close to this is the Cafe Olympia, considered to be the finest in Europe, and a place altogether too gorgeous to describe. Two orchestras served to chase away the gloom, one playing "heavy" stuff and the other enlivening the proceedings with a little of the product of "Tin Can Alley." It was quite remarkable to note the change in the demeanours of the diners when one orchestra completed a beautiful rendition of "La Boheme" and the other one immediately opened up

I was never privileged to see him in the throes of uncontrollable mirth, but a chuckle from Bill was usually equivalent to a burst of maniacal laughter from anybody else.

Across the way from the Olympia was the Cafe Verdi, and here the Bohemian held sway practically the whole night long—between trays of wine borne by perspiring waiters the denizens hit the Terpsichorean way with great eclat, to the strains of an orchestra located up in the balcony. The products of Italian vineyards flowed ceaselessly, and I shall never forget the humorous spectacle of an old Scotch chief engineer solemnly dancing the Highland Fling while the onlookers shouted "Viva." There is a fair-sized British community in Genoa, but, as is usually the way in those cities, it kept strictly to itself, much like the animal that spits at the Zoo. The American cotton in-



A View of the Port.

with some classic such as "Hug Me, Honey." The business in this place commenced about 9 p.m., and ceased at 4 or 5 a.m., so the hours were ever young, and, surrounded by dark-eyed women and the brilliant uniforms of Italian military and naval officers, there was little chance of being bored.

Big Mac especially enjoyed the environs of the Olympia; he sat for hours with a man-sized grin, while Silent Bill, in the unaccustomed dinner suit, presented a picture of melancholy detachment. Bill was one of those who took his pleasures seriously, and it was always extremely difficult to get a line on his inward thoughts about anything at all.

terests maintain representatives at Genoa, and one or two of these I met in the company of one Walsingham, Italian agent for Raphael Tuck, London, one of the queerest birds I have ever met. On one occasion he considerably embarrassed me by retailing a few tropical stories while we were dining at the Olympia; at the same table were a couple of dowagers solemnly wrestling with spaghetti. Although my friend spoke in English, I was considerably perturbed in case the two ladies understood the language, and my worst fears were realized when they rose from the table and, after explaining at length their opinion of him, vomited without finishing their meal. The manners of the

average Italian are extremely courtly; in fact, somewhat embarrassing to those men who have not been accustomed to being greeted by a raise of the hat and a bow. However, in a very short time one gets used to it, just as the sight of a small boy in a cafe with his parents, climbing outside a large pot of beer, leaves one quite cold. Ziffs are fashionable, and for some peculiar reason Italians insist upon hiding their identity behind a thicket of ferocious black foliage. Somehow or other they always reminded me of the heavy villain in the old-fashioned bellow drammer. The average physique, however, is easily on a par with that of Australians, and the complexions and beauty of the ladies would leave our own tennis enthusiasts gasping with envy; they have a charm and culture which is not acquired, but is the result of evolution. Just about the time of my last visit the Fascist boys were blossoming forth in their new role under Mussolini, and strikes and demonstrations were the order of the day, and proceedings in the Piazza De Ferari were occasionally exceedingly lively when some passionate orator held forth upon a subject which excited the mob to loud "Vivas" and much flag-waving. At one side a group of Bersaglieri, with plumed hats and a machine gun, waited for the reading of the Riot Act, while a gang of comic

tachios, and glaring fiercely about them. They always more or less had me bluffed and I felt that one had only to glance at them sideways to be pinked with a sword.

Italy is over-run with parasites who act in the capacity of guides, but whose real business is akin to that of the gentle grafter. They come aboard elegantly dressed, and after pitching the old yarn concerning an impoverished but noble family, suggest a party to visit some famous spot. If you are not wise you pay a pound and follow your guide like a mob of sheep; at every place visited on the trip there are sub-grafters who, the guide explains with a magnificent wave of the hand, must be tipped. He tips them—with your money. The waiter who serves the lunch must also be tipped, the hundred and one hangers on also hunger for loot, and feeling somewhat like a hunted animal you hand over the splash and look pleasant. At the end of the day, after bidding you an almost tearful farewell, the guide adjourns to his side-kickers and the spoils are divided. I was fortunately never bitten by these sharks, always preferring to conduct a lone handed sight seeing tour, where, far from the bleating of guides and the admiring exclamations of the victims, I could get to grips with a lot of the stuff I used to read and revel in when I was a schoolboy.

Much the same as Colombo and other Eastern ports, the Genoese small trader carries on business by the haggle and barter method. The price of a thing opens up perhaps at 50 lire—after half an hour's strenuous work you depart with it at 25, flushed victorious, but with a certain conviction that you have been robbed. At Genoa, the "Bulla" loaded a part cargo of marble and dried fruits, and as the complete cargo had to be taken on at Naples and Palermo, we departed for the former port after a stay of 21 days.

(To be continued)



Italian Police.

opera cops stood fondling their artillery. In Italy there are two kinds of police, the military and the civil, the former garbed somewhat similarly to the Sydney tram guards, and the latter after the manner of Napoleon. A three cornered cockade hat, gold embroidered and epauletted tunics, gold striped trousers, long sword, and revolver complete the picture of these lads who prance up and down the boulevards twirling their mous-

Low-Capacity Wave-Form Coils

IT is a simple matter to wind effective wave-form coils if one tackles the problem in the right way. These coils are very compact and a tuner that will receive quite high wavelengths can be assembled in a small space.

Obtain a cylindrical piece of wood 3½ c.m. in diameter and about 5 c.m. long. On the periphery

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of the cylinder mark two circles 2 c.m. apart, and mark on each of these 13 equidistant points, in such a manner that corresponding points on each circle are opposite one another; that is, a line joining any two corresponding points in parallel to the longitudinal axis of the cylinder. At these points drive a 2in. nail to just sufficient depth to give

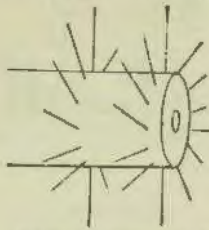


Fig. 1.—Method of Constructing Former.

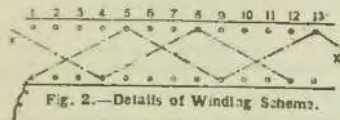


Fig. 2.—Details of Winding Scheme.

them radial rigidity, and at the same time, to enable them to be withdrawn without excessive effort; or, better still, screw in brass spiders 3/16in. diameter about 2 or 3 in. long (see Fig. 1).

The first coil will require 30 turns of No. 22 D.C.C. copper wire for a wavelength of 300 metres, with a 0.0005 condenser in parallel. Proceed to wind as follows. Hold the cylinder ends between the thumb and second finger of the left hand, at

the same time holding down the end of the wire under the thumb. Carry the wire over any one nail, manipulating the winding with the right hand, then over the fifth nail of the opposite circle, thus leaving three blank pairs of spiders between the first and fifth, as shown in Fig. 1. Then continue to wind over the ninth nail of the opposite circle, and so on. The wire should be kept fairly taut, so as to form a compact symmetrical coil. When the requisite number of turns is on the former, fasten off the wire by taking two or three loose turns round one of the spiders; this will hold the coil in position while a light coat of shellac varnish is applied to the outside faces of the coil. When the varnish has set the nails or spiders can be easily removed and the coil slid off the former when a coating of shellac can be applied to the inside surface of the coil to increase its rigidity.

A cardboard collar can be shellac-varnished and inserted in the coil, and a fibre tape band employed to secure it to the usual plug in coil holder.

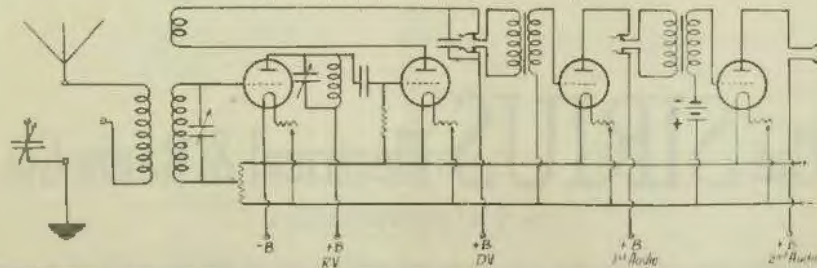
When applying the shellac varnish to the coil, the interspaces should not be filled up with thick varnish, as the large air spaces between turns are a unique feature in the design, producing a coil of maximum inductance with very low capacity.

Other coils having 40, 50, 75, 100 turns and so on can be wound allowing approximately one turn per 10 metres wavelength required.

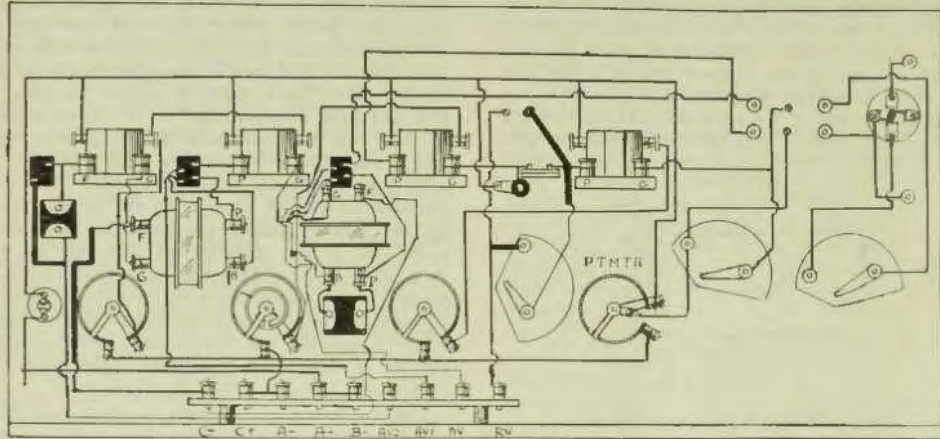
The former made up with 2in. nails will easily take up to 100 turns of No. 22 d.c.c. wire. For larger coils, Nos. 24, 26, or 28 wire can be used, and when the diameter exceeds 3in., each turn will add 15 to 20 metres to its wavelength when used with a .0005 condenser.

AN ALL ROUND FOUR VALVER.

In response to a number of requests, we are glad to publish below a conventional circuit drawing of the set which was described in our issue of November 7th.



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A CORRECTION.

In our issue of November 7th we published an article by "Insulator," an "All Round Four Valver." The drawing illustrating the panel wiring was incomplete. The correct drawing is shown above, the heavy lines showing the portions which were previously omitted.

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AMPLIFIERS FOR CRYSTAL SETS

By C. L. Harris.

IN the first place it is useless to add another crystal detector to the set in the hope that it will increase the range of reception or signal strength, because crystal detectors do not, like valves, amplify, they only rectify, and this latter is only necessary once in the life of a received signal. But it must be added that where one is a good distance from the broadcasting station, and signals are weak on a crystal set, by replacing the crystal for one admittedly less stable but more sensitive it is possible to increase the strength of the signals considerably. For instance, a really sensitive detector consists of a galena crystal with a fine gold wire contact, but it is very tricky to handle and keep in adjustment.

The next step that the earnest seeker of loud speaker signals on a crystal set will take, unless he is warned in time, is to search round for some entrance into the set into which he can pour some local energy from a dry battery in order to help the received signals on their way through the telephones. Such a procedure, however, will not prove wise, nice sensitive crystal detectors will lose their sensitive points very rapidly if a local battery is brought into circuit, even with the help of that mysterious instrument called the potentiometer.

Low Frequency Amplification.

If signals are just audible on your crystal set, and you desire to increase their strength so that several people can listen in comfortably, then a one valve low frequency amplifier should be used. This is connected to the telephone terminals of the crystal set and should, if of good construction, magnify the signals by at least four times.

In cases where signals are comfortably strong, and it is desired to employ a loud speaker, probably a two-valve low frequency amplifier will be required. This may sound a lot, but very loud signals are required for efficient loud-speaker work. As a matter of fact, if your crystal set is providing comfortable signals to everybody who desires to listen in, then bar the loud speaker—you will not consider it worth all the extra initial expense and expense of upkeep. Good telephony on a crystal set in headphones is unsurpassable.

SIGNALS MUST BE AUDIBLE.

The addition of low frequency amplifying panels does not in any way affect the connections of the set, except that the telephones are transferred to the "Output" (phone) terminals of the amplifier, while this latter is connected to the phone terminals of the set. Also it must be added that low frequency amplification does not increase the range of reception of a set to any appreciable extent. In order to do this the valves must be employed in a high-frequency capacity, which merely means that they must amplify the signals before they come to the stage where they are detected. Generally speaking low-frequency amplification is useless except when dealing with audible signals. To bring them into audibility, high-frequency amplification is required, and unfortunately it is not so easy in its application. The awkward part about it is that the amplifying must come between the tuner and the detector. The signals will require tuning in by means of a variable inductance coil and perhaps a variable condenser in the usual way, but immediately they have been tuned in they must be amplified before they pass through the detector.

A More Difficult Stage.

This would sound rather paradoxical without further explanation. It must be understood that even in the case of a humble possessor of a crystal set and an "averagely good" outdoor aerial, signals from distant broadcasting stations will be cutting by in the form of ether waves and inducing small currents of electricity into his aerial. But these currents will be small in every sense of the word, and far too small to actuate his telephone receivers without some very considerable amplification.

We will take a more practical example. Let us presume that you are thirty-five or so miles away from a broadcasting station, and that in ignorance you have purchased a crystal receiver, believing that with it you will be able to comfortably receive the concerts from the broadcasting station. Now there will be comparatively speaking, quite a fair amount of energy induced into your aerial by this broadcasting station, but not enough to actuate the telephone receivers without amplification; fur-

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ther, it will be useless to pass this current through the detector for rectification until it has been strengthened, because amplification cannot be performed with a weak current of electricity so weak that it cannot actuate sensitive wireless phones after it has overcome the resistance of the detector.

It will be judged from the foregoing that although high-frequency amplification is very de-

sirable in certain circumstances, it is rather difficult in its application in the case of the ordinary crystal receiver. Therefore if it is a question of considerably increasing the range of reception there are two alternatives only, and they are firstly to purchase a more suitable and sensitive receiver or to endeavour to graduate out of the "beginner's" stage as soon as possible, and joins the ranks of the "experimenters."



ALL BRITISH WIRELESS EXHIBITION.

The photograph above gives an idea of the very attractive section of Burndipt's display at the recent important Exhibition at the Albert Hall, London.

SOME DX.

R. J. Browne, Toowong, Qld., sends us a remarkably good list of American amateurs logged on one night only. He uses a P1 circuit, with one radio and two audio. All the stations were transmitting on wavelengths between 30 and 90 metres.

2XQ, 4FS, 4KU, 4TU, 4OA, 5AF, 5IN, 5NW, 5QY, 5UK, 5AJH, 6AJ, 6AO, 6CW, 6GG, 6LJ, 6ADT, 6ALK, 6ARB, 6AGK, 6AHP, 6AME, 6APT, 6AKW, 6AWT, 6AKV, 6AWS, 6BQL, 6CJV, 6CHL, 6CTO, 6CEA, 6CNL, 6CGO, 6DON, 6ZQL, 7IJ, 8CY, 8DG, 8PL, 8HK, 8XI, 8ZE, 9BFG, 9BGH, 9EHT.

All above heard on wavelengths between 30 to 90 metres.

Mr. A. Illingworth, Auburn, N.S.W., also using a P1 circuit, has done some good work on detector and one audio. Here is his list:—

Victoria.—3AR, 3BD, 3BM, 3BQ, 3EN, 3EM, 3GB, 3HL, 3JH, 3LO, 3LM, 3OT, 3RG, 3TM, 3XF.

S. Australia.—5AB, 5BG, 5DN, 5DO.

Queensland.—4AN, 4CK.

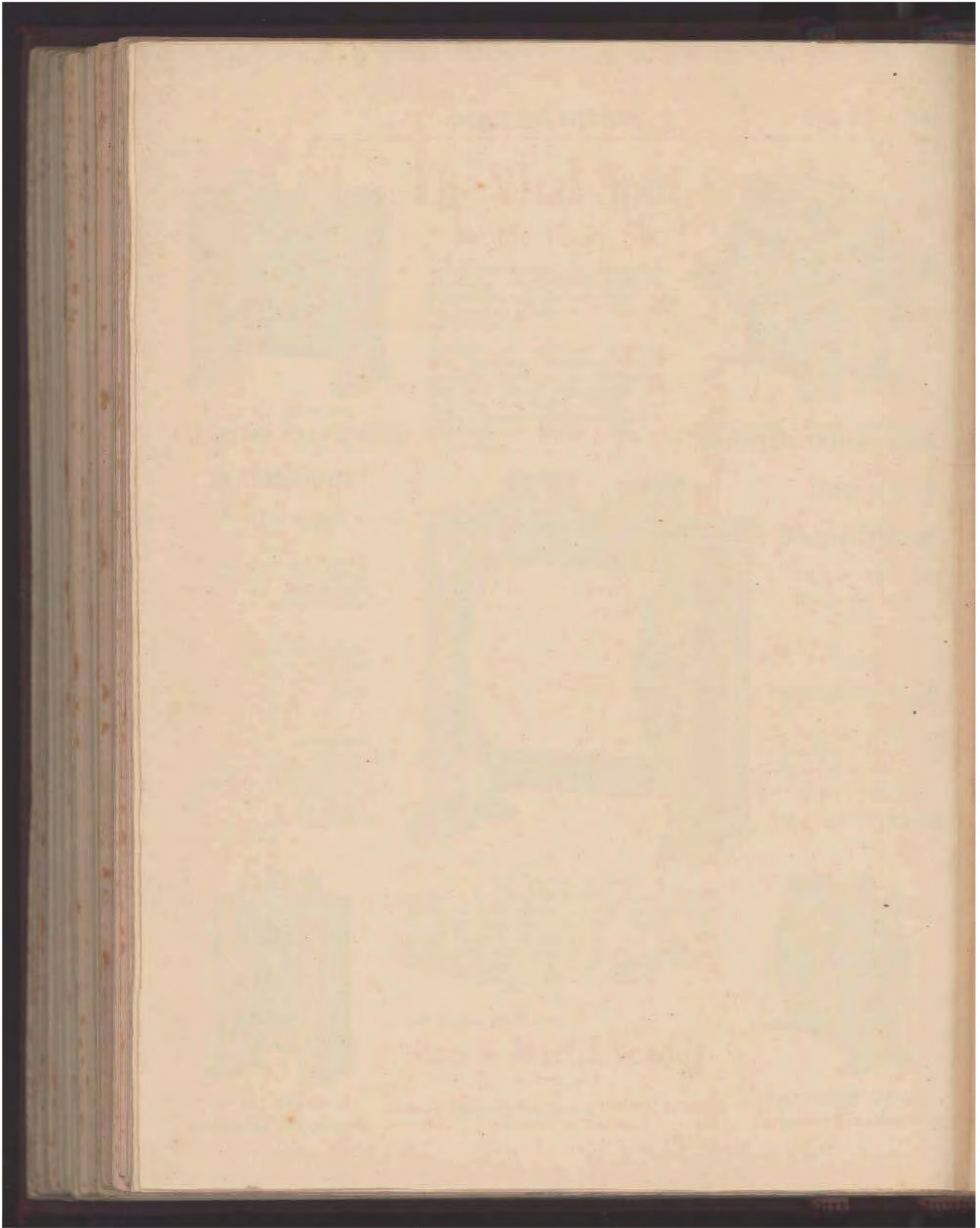
N.S.W.—2HM, 2RJ, 2CR, 2CS.

New Zealand.—2AC, 2AP, 2BM, 3AD, 3AK, 4AA, 4AG, 4AC.

U.S.A.—1PL, 2BRB, 2XQ, 4IO, 4OA, 4SA, 4TJ, 5QY, 6APW, 6AWT, 6CGO, 6CNL, 6EB.

Britain.—2OD. This was at about 4.54 a.m., when he was working 3BQ.

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Make this a Radio Xmas

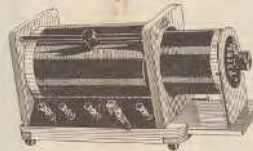
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Phon, 3000 ohms 61 0 0
Marble's, 3000 ohms 1 7 8
Marble's, 2000 ohms 1 7 6
M. A. K., 2000 ohms 7 9 6
No. 1 Special 1 7 4
Proctor Special, 4000 ohms 1 7 4
Phon, 2000 ohms 1 10 8
Tosca's 2000 ohms 1 10 8
Brand's Metal Tone 1 10 0

Phon, 1000 ohms 1 17 0
Western Electric, 4000 ohms 1 17 8
Marble's Oxford 3 0 0
Spartan, 2000 ohms 3 4 0
Truman's Professional 2 8 0
Simpson, 2000 ohms 2 10 0
Nelson, 2000 ohms 2 3 0
Dialing, "Type C" 2000 Ohms 2 10 0

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Columbia 1 10 0
Manhattan "Jazz" 1 12 0
Amplex 20 1 0 0
Amplex 40 1 0 0
Amplex 8 1 10 0

Western Electric, No. 4004 1 0 0
Amplex, 17 1 0 0
Manhattan "Builder" 1 0 0
Trio "Builder" 1 0 0
Picking Ambrosia 1 0 0
Magnuson, Type 10 4 10 0
Amplex, Type 15 1 0 0
Magnuson "101" 10 10 0
Magnuson "101" 25 10 0

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The Construction of a Low Power Transmitter and a Portable Single Valve Receiver

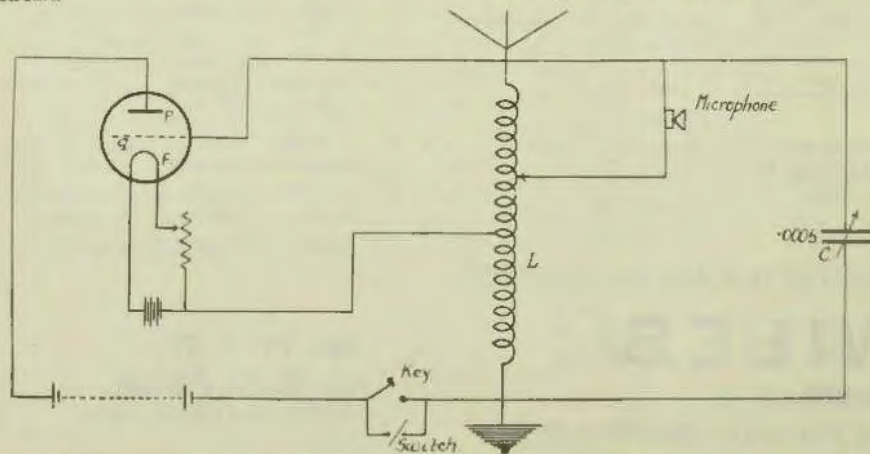
Low Power Transmitter.

WITHOUT going too deeply into the theory of valve transmitters, we hope that the following article will supply some of our readers with some useful constructional details of a small low power transmitting set C.W. and phone. The main inductance *L* is wound with 70 turns of No. 24 d.c.c. wire on a former 2½ inches in diameter. The middle of this inductance is connected to the negative side of the filament battery. One end is connected to earth and the other to aerial, and the microphone between the aerial end and some portion of the upper half of the inductance. Just what turn to connect to, will have to be found out by experiment. It will depend upon the resistance of the particular microphone used, and the simplest method of arriving at this is to connect up the set temporarily, placing a watch in front of the microphone. Next tune your receiving set and listen-in for the ticking of the watch; try various positions on the inductance until the loudest ticks are obtained in the receiver. The key shown in Fig. 1 is used for transmitting C.W. When the set is used for telephony, the key should be short-circuited by means of the switch which permanently closes the plate circuit.

C is a variable condenser of .0005 mfd. This condenser and inductance, when used with a 20-foot aerial, gives a wavelength range varying from 150 metres to 350 metres.

We do not claim that this transmitter is capable of transmitting any great range, but at the same time, however, using an ordinary Marconi "R" valve, with 160 volts (dry battery), speech and music were heard at Glenbrook, 43 miles from Sydney. During the Christmas holidays you will find it both instructive to yourself and amusing for your friends if you instal this little transmitting set in one room, using an indoor aerial about 20 feet long, and listening on your main receiver, which is connected to your outside aerial. To those who are thinking of installing a transmitter and obtaining the necessary license, we cannot recommend anything better than that they should start with this type of transmitter before going to the expense of the higher power transmitter.

No Radiation or Plate meter is necessary, and if you carry out the above instructions you will find that you are radiating as soon as you press your key or speak into the microphone.

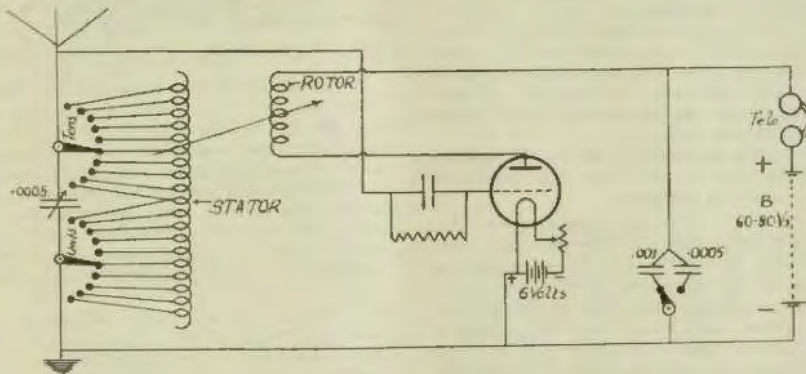


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Portable 1-Valve Receiver

The circuit used in the well-known single circuit regenerative or P1 circuit, a vario coupler being used for tuning.

Unfortunately there are very few vario couplers manufactured which operate efficiently on both short and long waves. We have experimented exhaustively with home made vario couplers designed to operate on both 350 metres and 1100 metres and the one about to be described has proved to be the most efficient. It might be interesting to readers to know the manner in which these experiments for comparison were carried out.



The first one made was the one with a long stator or primary winding, with rotor fitted at the top using large sized wire on both stator and rotor. This proved excellent on the 350 metre band but the valve would not oscillate too well on 1100 metres. The next move was to alter the position of the rotor from the top of the stator to the exact centre, rewinding the primary of course to suit the different position of the shaft of the rotor. Now regeneration was very strong on 1100 metres but poor on 350 metres. The next one made was with the primary bank wound with 22 d.c.c. The whole of the coupler was very "squatty" and with the rotor at the top of the stator, regeneration was fairly good on both long and short wavelengths. After this, dead end switches were

used to cut out the unused portion of the primary when receiving on the lower wavelengths, but still satisfaction was not obtained. We mean by this, that it was not as good as honeycomb coils using a P1 circuit.

The next one built was a much smaller one using only No. 26 d.c.c. wire for primary single layer, and No. 34 d.c.c. wire for the rotor. This proved very good on all wavelengths up to 1450 metres, when the rotor shaft was placed about a third of the way down the stator. This will enable you to get 40 turns of wire above the stator and 110 below.

Stator.

Wind 150 turns of No. 26 d.c.c. wire with tapings for units and tens. The unit end of the

stator is earthed, and the other end is connected to the aerial.

Rotor.

Fully wound with 34 d.c.c. wire. Readers will find that the smaller the wire on the rotor and the more wire they can get on to the rotor, the more freely will the valve regenerate over the whole band of wavelengths that the vario coupler will cover. The variable condenser which is placed between the two switch arms of the tens and units is for obtaining accurate tuning. The other two small condensers, either of which can be placed across the telephones by means of a switch, are of .001 and .0005 mfd. This little set will give excellent signals on a 22-foot indoor aerial up to wavelengths of 1100 metres.

BUY RADIO GIFTS FOR XMAS

BELOW THE BROADCAST BANDS

RADIO A2JM.

RADIO A2JM is owned and operated by Mr. R. C. Marsden, Victoria Road, Edgecliffe, and is probably one of the best known amateur stations on the air.

Mr. Marsden has been actively interested in amateur radio for some years past, and had a transmitter in operation before the war.

Many transmitters and receivers have been tried at 2JM, but the present installation seems to be delivering the goods.

The aerial system in use is supported by an 80-foot stick, and comprises four four-wire cages; the counterpoise covers all the available space, and is built in the form of a fan. Attention has been paid to detail, and the station from start to finish is a model of efficiency.

The present transmitter consists of a modified reversed feed-back circuit ("Sure fire" IDH), and is surely delivering the goods.

Two five-watt bottles are used, amongst other things, to give this station the strength that it has. Rectified A.C. is used on the plates, rectification being carried out by means of the usual electrolytic rectifier, together with sundry chokes and condensers, which usually have a habit of burning out. Despite many setbacks and adverse information, 2JM has persevered with the jam jar rectifier, and is quite satisfied it is on its own. One of the reasons for the absence of background noises at this station is due to the fact that the filament winding of the transformer has been balanced out with condensers, after the inclusion of the rheostat, in the circuit. The usual working power is in the region of 13 watts, and a radiation of I.T.C.A. is usually obtained.

2JM is a firm believer in grid modulation, and has got it down to a fine art, as will be noticed by his fine transmission lately.

Q.S.L. cards have been received from all States, N.Z., and a solitary one from Fiji, which checks up with the log. Many interstate stations have been worked, and it will be noticed that 2JM came out on top in the "Wireless Weekly" transmitting tests.

Consistent working over a whole week shows what this station is capable of.

The present receiver is the extremely popular low loss and one step as described in "Q.S.T."

Even before the days of broadcasting this station did plenty of good work, and was one of the first stations to put over any vocal item.

Older experimenters will remember with interest the evening when Miss Lee White and Mr. Clay Smith rendered various items from Station 2JM, much to the enjoyment of experimenters of that time.

KEY CLICKS.

The fact that it was a fine week-end seemed to have bitten the experimental transmitters badly, and the fact that "it ain't gonna rain no more" was loudly proclaimed no less than three times from local transmitting stations on Sunday afternoon.

2JM delivered another talk on Sunday afternoon, which certainly was very interesting, as it dealt with the very important question of circuits. With regard to circuits, here's a new one: "A CIRCUIT A DAY KEEPS THE SIGNALS AWAY."

We hear with interest that the Institute intend to transmit standard frequency signals so that experimenters may calibrate their receivers. Nothing definite has been done as yet, but we believe that the intention is to transmit signals on 150, 200, and 250 metres as a beginning. This is a move in the right direction, and the sooner it takes place the better, as very few seem to know where they are at present with regard to wavelengths.

We hear that POZ, the station at Nauen, Germany, has been carrying out extensive short wave tests below 100 metres, with an input of 20 k.w. or so. It is said that in England his key clicks can be heard on a non-regenerative circuit quite clearly, while on a single valve regenerative the volume is deafening.

A peculiarity of short wave transmission exists in the fact that below 150 metres, no matter how well the plate supply is rectified, the C.W. note is always harsh, and not a clear whistle as it should be.

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No one seems to know why, and some reason for this is required.

A station in Canada which uses accumulators for the plate supply, and which theoretically should have quite a pure note, has one of the huskiest notes imaginable. Rectifiers seem to have no effect on the current, and for this reason many stations employ straight A.C.

A peculiarity, however, exists in the fact that harmonics from longer wave stations retain all their original purity.

Does anyone know why?

2ZN has not built a low loss receiver yet, but intends doing so shortly. He is a great stickler for the tuned impedance circuit, and it was on this circuit that he logged WNP.



STRATHFIELD AND DISTRICT RADIO CLUB.

The usual weekly meeting of the above club was held at the clubroom at Mr. Powell's residence, corner Albert Road and Duke Street, South Strathfield, on Thursday evening, 27th inst. The President, Mr. A. F. Jacob, occupied the chair, and there was a very good attendance of officers and members. Another new member was admitted and given a cordial welcome by the members present.

Although no fixed programme was laid down for the evening, the meeting was of a most enthusiastic nature, and members brought forward many interesting points for discussion. A short lecture by Mr. H. Harris on the procedure adopted in international working by amateur transmitting stations proved very instructive. Mr. Harris spoke from experience, he and his brother, Mr. T. H. Harris, being two of the most prominent experimenters associated with the club, and just recently they have been listening-in to both sides of the conversation between 2DS and American amateurs, and 2CM and English stations.

In addition to the above, the club's receiving apparatus came in for a good deal of attention, various circuits and adjustments being tried out and explained. It is hoped to further add to same at an early date, with a view to giving loud speaker demonstrations on various circuits.

Now that the Institute is about to initiate a definite roster of lecturers to clubs, the way is open for clubs to arrange their programmes on definite lines, and at the next committee meeting of the club early in December it is hoped that

arrangements can be made to conduct classes in buzzer practice, as well as make improvements in other directions, which should further enhance the attractiveness of the club. Now that the wireless business has settled down and become an established factor in the community, the club movement is becoming more popular. A well-conducted club can do much in the way of stimulating interest in wireless subjects generally, and helping individual members in making their home sets more efficient.

Our membership roll, although in a very healthy condition, is not full yet, and additional members would be welcomed. The Hon. Secretary, Mr. K. Campbell, 44 Bayard Street, Mortlake, will be glad to supply particulars regarding membership or the club's activities to anyone interested.

THE LEICHHARDT AND DISTRICT RADIO SOCIETY.

Members of the Leichhardt and District Radio Society rolled up in good force to the "All Experimenters' Meeting" held in the Royal Society's Rooms, under the auspices of the Wireless Institute of Australia, on Tuesday, December 2nd.

The films screened on that occasion were extremely interesting, and much appreciated, and it was generally agreed that the decision to postpone the 25th monthly business meeting until the following meeting night was a wise one.

Next Tuesday the Society will hold its 112th general meeting, when Mr. F. Thompson will deliver the final lecture of syllabus No. 2. The subject to be dealt with will be "Valves," and in the capable hands of Mr. Thompson should prove very interesting and instructive.

A launch excursion will be conducted on the evening of Saturday, December 20th, and on the following Tuesday the final meeting of the year will be held, and a social evening held.

Persons interested in the activities of the Society are invited to forward inquiries to the Hon. Secretary, Mr. W. J. Zech, 145 Booth St., Annandale.

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INTERSTATE NOTES

VICTORIA

The Long and Short Of It.

THE controversy over reducing the wavelength of 3LO still splutters about the newspapers, and one is tempted to apply the words of Pope—"For forms of government let fools contest; that which is best administered is best." If we talked in terms of oscillations or kilocycles, perhaps popular confusion would be less confounded. One of the very strongest reasons why long waves were adopted—commercially, of course—was that, until the advent of the valves, it was almost impossible to set up high oscillations (i.e., numerous oscillations per second) in a circuit with the means available, and, as high frequencies (or short waves) require high insulation, the working conditions of commercial wireless favoured the long wave low frequency system. The same facts serve to illustrate why those who get 3LO fairly well often fail to get 3AR, and find the local amateur almost a sealed book. You can get 3LO successfully on a coil of many turns of close-wound fine wire, and without being particular as to a dozen turns one way or the other, without being in any way derogatory to 3LO's sharpness of tuning. (For the same reason, by the way, you can also get a good supply of static!) But when you divide your coil by more than four, and the latitude of your tuning by even more, while at the same time you greatly increase the liability to leakage and should use thicker wire of better insulation, and take more pains with your connections. Now, these are the very things boys and inexperienced men won't do. They think that 3AR is a sort of whipping post on which to flesh their maiden coils, or, in more popular language, they "try it on the dog" at 3AR. If they only knew it, it is more creditable to be able to get 3AR well than 3LO.

Licensing Examination.

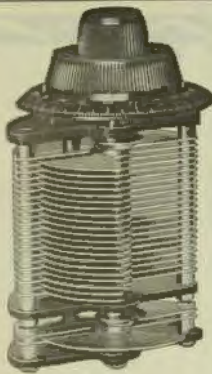
An examination of applicants for experimental licenses was held recently in Melbourne, and the results reveal the extraordinary state of chaos in which the Wireless Branch carries on its business. Following the examination, so many complain's were made to the Wireless Institute that several of

its Council were moved to form a deputation to the Controller of Wireless and make formal protests. In reply, Mr. Malone is said to have made the amazing statement that he didn't know the details of the examination, and if some of them had been submitted to him he would have disallowed them, notably those relating to the Morse Test. It is alleged that this test lasted for over half an hour, and that speeds up to 25 words per minute were set. If the juniors of the Department were actually allowed to have their fling in this egregious way, it reflects the greatest discredit on the management of what should be a Department sympathetic with the aims of experimenters.

3AR.

Associated Radio has extended its premises right across Elizabeth Street, having lately made the firm of Nettleberg, furriers, the selling agents for their numerous products and accessories. Why is it that wireless goods get into such dressy company? A well known barber sells cat's whiskers and other items; two well known clothiers, with more or less appropriateness, handle cotton and silk covered wire and things thereto appertaining; and now here, among rich robes of sable and ermine and fox and bunny, we find 3AR spreading its wares. But better news still for those who are confirmed bigamists in the broadcasting world is that 3AR is increasing its output and contemplates erecting a new station at Sunshine, and has already in addition secured a license to operate a station in Tasmania. With these extensions, if 3AR will also get away from vain repetitions of phonographic jazz such as "One more night in your 3ARms," and buys a new microphone and tactfully requests its prima donna not to shriek into the instrument's shell-like ear, we ought to get some really first-class stuff from this second-class station. Their wavelength is the very thing for popular transmission, and a million homes should shortly be resounding to the familiar closing wishes of Uncle Rad: "This concludes our evening's transmission, which I hope you have all thoroughly enjoyed, especially those who have dARneed."

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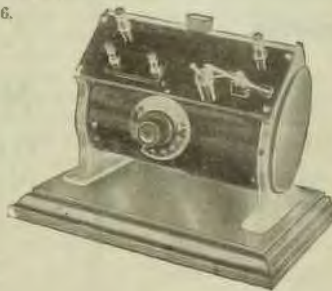
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Make it a Radio Xmas!

Israel in Egypt.

Inspired by a great occasion, 3LO rose to the heights in transmitting the Philharmonic Society's production from the Town Hall, and in spite of the grave acoustical imperfections of that monstrous hollow vault, with its vast organ, loft, and deep balconies, and overarched glass ceiling laden with huge candelabra, the despair of musical sounds, yet one was able to sit back and enjoy the broadcast music. A peculiar kink in 3LO'S mental calibre frequently induces him to break off suddenly in some musical item to switch on to some other engagement, and this was unpleasantly in evidence between 9 and 9.30 during the performance under review, when some of the fine choruses were lost to the world at large while 3LO discoursed upon Hume and Hovell. Now, it is quite possible for a mystic to draw parallels between crossing the Red Sea and crossing the Hume or Murray River, but 3LO need not have undertaken the job. Otherwise, however, the transmission was super-excellent. It would have been quite easy for an armchair critic to listen-in and write up the report for next morning's paper without attending the Town Hall in person, and his critique would still have been as fair as some that actually appeared. The land-line trouble was rather in evidence during the Coleridge Taylor prelude, when extraneous voices could be heard during pauses in the music demanding various telephone numbers, but these were cut out later on. An unpleasant incident occurred during the after session at the studio, when a wicked swear word smeared the ether during the interval. Someone at 3LO does not realise that selectivity of conversation is highly necessary in the neighbourhood of a sensitive microphone. It may be of interest to mention that the present impressions were gathered from a one-valve regenerative set situated about two miles from the 2LO station at Braybrook. Regeneration was almost cut out, the dull emitter (Phillips B2) was working at less than maximum current, and even so the headset on less than 40 volts H.T. gave ample volume and the modulation was excellent. The lovely rich contralto, the deep bass in the arias, the massed choral numbers, and the delicate ripples of the first violins in the higher octaves, furnished a range of supreme tests for 3LO's transmission and the test was passed with high honours. Quite possibly, on four valves, with a loud speaker at a distance, the result might have sounded less praiseworthy; but, after all, one does not go to a musical

feast equipped with an ear-trumpet down which, like a funnel, the notes can be crammed. Anyone who gave "Israel in Egypt" a fair hearing over the ether must have switched off the current at last with a feeling of devout thankfulness for a supreme success.

3BQ.

The question now arises: Is 3BQ an amateur in the sense of not being a dabbler who gluts his financial appetite by some mode of living not made in wireless ways? It is, of course, well known that Mr. Max Howden is the extremely busy works manager of Messrs. Corbett Derham's Wireless Department, having been made so by virtue of his expert knowledge of wireless acquired during years of successful experimenting. There is, however, so much distinction between commercial wireless and the special variety 3BQ has made his own that there can be no doubts as to his remaining an amateur in spite of all temptations to belong to other stations. A man might even work for 3LO eight hours a day and spend the rest of his time on short wave work without impairing his status as an amateur, though, perhaps, with great ultimate profit to his employer and his contemporaries. The supreme test of the amateur status is that one gets up at four o'clock in the morning without being called, and after a hard day's work, to do something out of the ordinary routine, and this test 3BQ passed recently with supreme credit when he gathered in his first English station. The man who does that sort of thing is an amateur in the finest sense, and of the sort that uplifts the name high above the slough of rough-and-ready tinkering that too often marks attempts as amateurish. The trouble is that there is always a host of imitators who forget the 4 a.m. test and concentrate only on how many turns "Max" uses on his tuning coil, as if that was what made all the difference between him and them. As a matter of fact, the station at 3BQ is almost entirely home-made, and characterised by a neatness and precision and orderliness that are in accordance with the best traditions of the scientific experimenter.

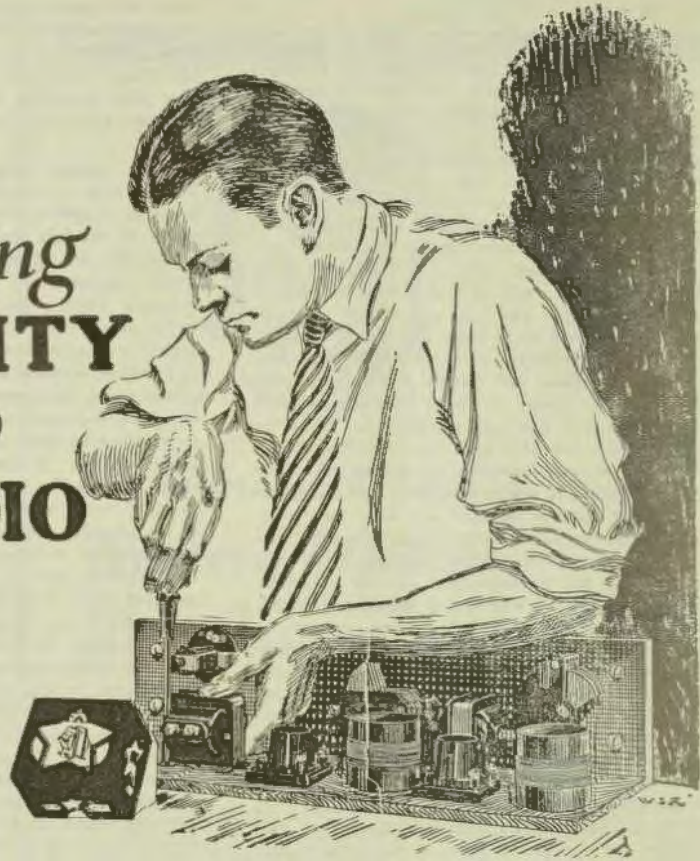
Interstate Amenities.

Messrs. Love and Hull, co-editors of the Victorian Wireless Institute's monthly publication, have been visiting Sydney, where they have won golden opinions from all sorts of people, and may be said in turn to have found Sydney to contain just as many good fellows to the square inch as

(Continued on page 44)

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SOLE AUSTRALIAN DISTRIBUTORS

(Continued from page 41)

Melbourne does. A year or so ago, at the monthly meetings of the Melbourne Division, Sydney was by no means the white-haired boy of the gatherings, so the change is pleasant. The recent visit of 2CM to Melbourne and the previous visit of the Sydney delegate to the Melbourne Wireless Exhibition, have also assisted to remove that "strangers yet" sort of feeling, so that possibly in due time there will be no "Divisions" expressed or understood, in the Wireless Institute of Australia.

IBQ Yet Again.

Max Howden is accumulating records as thick as leaves in Vallambrosa (which is an obscure township in the Gippsland gum forests). He now, as the daily papers put it, carries on conversations nightly with nearly every one of the nine U.S.A. wireless districts. These conversations, of course, are in code, which it is necessary to emphasise in fairness to those who have not yet achieved telephonic communication with England and America. Nevertheless these achievements of 3BQ are a distinct advance on recent sloppy experimental transmissions and set the pace for other experimenters to live up to. It is rather amusing that quite a number of other amateurs can now hear English stations and have discovered that the English amateurs while others slept were toiling outward in the night and can talk on short waves even more familiarly than their Trans-Atlantic cousins. The English language is shortly to be restored in all wireless circles.

Beam Wireless.

A certain modesty that must have been observed at all times to characterise these notes prevents the writer from suggesting that the daily papers should get some one to write about wireless matters who really understands them. The "Age" recently had a queer article about Beam Wireless which it is tolerably certain, even its office-boy could hardly have been guilty of. Among other statements is the extraordinary one that: "While amateurs and experimenters have established contact with other enthusiasts in England, nothing similar has been recorded to the credit of Amalgamated Wireless Ltd." This, of course, is totally untrue, and in fact, recent amateur successes may without discrediting them be said to have been much stimulated by previous commercial experiments. When the British fleet visited us the naval operators were in sure and certain touch with Oxford at all times. Only the other day the "Berrima" operator was

able to announce to passengers the results of the English elections before they were published in the English newspapers. Any old amateur will tell you he has recently heard Mr. Fisk or his agents transmitting to the Marconi official station, and of course Marconi's own report of his current experiments is now available in Melbourne so that if A.W.A. is not at present in a fine frenzy of "establishing contact" it is merely because that stage has been outlived and the desire now is to "come to grips" and get a permanent hold on two-way communication between England and Australia.

The further statement that "the beam system will be scrapped in favour of the short wave system" merely emphasises the ignorance and prejudice of the would-be critic, as of course the Beam System is essentially "short wave." There is a further astounding assertion that the "beam" is subject to grave and inconvenient limitations as to atmospheric conditions of transmission, being suited only for hours of darkness, which is very transient over the full half of the earth's surface. This sort of stuff is of course merely an unworthy attempt to throw dust in the eyes of the uninformed public, since the researches of local amateurs show that the alleged limitations of the Beam system are applicable to all short wave low power transmission, while Marconi has recently discounted them in the case of short waves of higher power used directionally, or, in other words, in the case of the Beam System.

SOUTH AUSTRALIA.

The Radio Inspector has a well Deserved Holiday.

MR. H. W. HARRINGTON, Radio Inspector for South Australia, has been spending a five week holiday in Sydney. He is expected to return to Adelaide next Monday week. Mr. E. L. Greig, of Melbourne, is acting in his place during his absence.

Broadcasting Still Delayed.

No "A" Class license has yet been issued in this State, and although two "B" Class licenses are to be allotted, only one has been granted, and this to a company that, so far, has done nothing in the interests of radio, while Mr. E. J. Hume (Station 5DN), who has equipped a powerful station and has been giving the listeners in very many enjoyable concerts, transmitted regularly every Tuesday, Thursday and Saturday evening, has not been

(Continued on page 55)

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Xmas*

(Continued from page 44)
 allotted a license. The announcement in the press that a "B" Class license had been issued to another company and not to Mr. Hume was read with considerable disgust and concern by the numerous wireless enthusiasts and listeners in. Mr. Hume, who was virtually promised a "B" Class license, has had installed a new transmitter with a much greater power than the one he is at present using, and is only waiting for the license to come along to put it on the ether. Mr. Hume has also had lines erected connecting his studio with several of the best concert halls in Adelaide, and I am quite safe in saying that if it were not for Mr. Hume's station the wireless trade in Adelaide would have fallen to pieces, yet in spite of this, others are granted a license in preference; the bitter part of it is that this other company will not be ready to start operations until some time well on in the new year.

I would like to see the radio dealers and the wireless-minded public of South Australia forward to the P.M.G. an emphatic protest against the very unfair treatment of the most promising of this State's transmitters. Broadcasting has been delayed long enough here. The public is getting restless and asking how much longer the authorities propose to collect license fees under false pretences, and why has not a license been issued to 5DN, who is ready and waiting to start operations on a large scale immediately, and who has already shown what he can do?

A New Company Starts Up.

Listeners-in a week ago, received a surprise when they heard a station transmitting on the wave length of about 420 metres under the call sign 5CL. This was the Central Broadcasters Limited, a new company, having taken over the station formerly run by the South Australian Broadcasting Company at the Grosvenor, North Terrace, Adelaide. A new transmitter of 500 watt capacity has been installed, although up to the present the transmission has been very weak for the power used; no doubt improvements will be made as time goes on. Still, some very good programmes have been broadcasted from this station, and considering the very short time that they have had in which to get on the ether, they have done very well.

WIRELESS INSTITUTE TO TEST LOUD SPEAKERS.

The monthly general meeting of the South Australian Division of the Wireless Institute of Aus-

tralia will be held on Wednesday, December 3, in the Prince of Wales Lecture Theatre at the Adelaide University. The subject for the evening will be comparative tests of different types of loud speakers. Arrangements have been made with the radio dealers for a number of loud speakers for the test, and members are invited to bring along their own to compare with the others for volume and quality of reproduction. Provision is being made for the use of both English and American valves to ascertain the possible advantage of using either English or American tubes with any particular type of speaker. The Wireless Institute is proving of great value to those interested in wireless and it is gratifying to note that its membership is flourishing. There is a great deal of humour and pathos in the early efforts of the wireless beginner. This account of a very funny incident was copied from the columns of one of our local dailies. A prominent Adelaide business man, becoming "bitten," engaged a professional to erect a most impressive aerial, and then took home an expensive multi-valve set, inviting all his friends to bring their sets around to his place the same night. They came—bringing apparatus ranging from five valves to three, and batteries galore. The stage seemed set for a most interesting evening. It was—but not in the sense anticipated. First a big foreign-made set was tried, but there was nothing doing on Melbourne and Sydney, and results were poor on local stuff. One after another the sets were tried with more or less indifferent results. The enthusiasts stopped, looked at each other and thoughtfully rubbed their noses. Then a son of one of the men shamefacedly dragged into view a typical schoolboy set, consisting of a valve and a crystal, and asked, "May I try?" He tried and the results were splendid from the start. He switched over from local "stuff" and was just getting on to transmission from further afield, when his valve gave out, and the evening's entertainment ceased. The older men realised that the joke was on them, and laughed heartily at it. But it was a proud boy who carried his set home that night, and a prouder father who now tells of his son's exploits.

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 Consulting Radio Engineer

Maclurcan & Lane Ltd.,
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4/- in the £ = 4/- in the £

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RADIO HEADPHONES, CONDENSERS, VALVES, CRYSTAL SETS, Etc.

10 Days Only

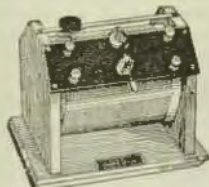
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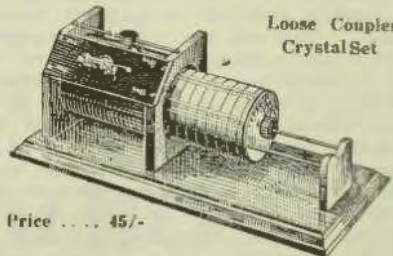
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Single Coil Crystal Set

Price 25/-

are made in our own Factory, and are High Grade Sets at a reasonable price. They receive any wave length from 150 metres to 2000 metres. Head 'phones are used, and within 25 miles of any Broadcasting Station will give clarity and good volume.



Loose Coupler Crystal Set

Price 45/-

Head Phones, from 25/- Aerial Outfit, from 4/-.

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EBONITE PANELS

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Gifts

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Xmas

**AUSTRALIAN STATIONS TO BE ERECTED.
IMPORTANT ANNOUNCEMENT.**

ATENDER from the Marconi Company for the erection in Australia of stations under the new Beam system for direct communication with England and with Canada was accepted last week by the Board of Amalgamated Wireless Limited.

These stations will have a guaranteed traffic capacity three times greater than that previously guaranteed for the high-power station. The new Beam stations will be equipped with high speed sending and receiving apparatus, and will be capable of handling four messages at one time, one to and from England and one to and from Canada. It is anticipated that the service will operate 24 hours a day continuously.

The new Wireless Agreement Bill passed recently by the Federal Parliament required Amalgamated Wireless Limited to arrange for stations with a duplex traffic capacity of 21,600 words per day. The Directors of Amalgamated Wireless Limited have succeeded in getting a guarantee of double that capacity, which gives a total for the two stations of 86,400 words per day.

IMPROVE YOUR AERIAL.

THE craze for distance having set in in Australia, a large army of recruits from the ranks of the Broadcast listeners has linked up with the "D.X." or long distance enthusiast and the popular object at the moment is to listen to the programmes of Broadcasting stations across the Pacific, or to intercept the chirpings of American amateurs working on low wavelengths. For this latter purpose the "low loss" receiver is essential, and boiled down, this means that the size and quality of the wire used in the coils, the method of winding, the mechanical construction of the condensers, and the type of valve and socket used must be studied very carefully, so that the losses in the receiver, particularly with regard to short waves, may be reduced to a minimum.

But what we are all apt to overlook is this: That the very first place we should look to for cutting down losses is the aerial.

As the ether waves are of much higher frequency than the electric light mains, greater precaution should be taken to insulate the wireless aerial from earth. Possibly you have noticed that on Sunday mornings, opportunity is taken when the industrial load is off, of washing the insulators carrying high tension mains. This is found ne-

cessary during long dry spells on account of accumulation of dust on insulators, and should heavy dew or misty rain come up mud is formed and there is always the possibility of a short circuit occurring. This is more noticeable along the sea coast where the salt spray, which carries a certain amount of grease, settles on to the high tension insulators. Two precautions taken in this instance are (a) washing the insulators periodically, or (b) extra large petticoat insulators.

On a wireless aerial, using bare wire, there is just the same danger of leakage through dust settling on the insulators, and dew or misty rain forming a thin layer, which will in time cause a leakage to earth. To overcome these leakages enamelled aerial is becoming very popular. It cost very little more than the bare and the increase in strength of reception is very noticeable. A further point in favour of enamelled aerials is the prevention of corrosion which is very rampant along areas close to the seaboard.

Remarks have been made by broadcast listeners, especially those with crystal sets, that their signals seem to be weakening. A great deal of this trouble can be put down to the bare copper aerial becoming tarnished with a chemical deposit which forms a coat over the bare aerial, setting up a very considerable amount of resistance to the ether waves. By using an enamelled copper wire, this will be greatly overcome as the enamelled covering prevents the copper wire from tarnishing—thus doing away with corrosion.

Life on a Wireless Station.

INFORMATION WANTED.

Mr. L. Nunn, Kyogle, Richmond River, is anxious to discover the name and wavelength of a station he heard broadcasting a bagpipe selection at 9.30 p.m. on November 26th. We would be glad if any reader can enlighten our correspondent.

If the storage battery is charged at home, watch it carefully in regard to undue heating. If the battery gets hot disconnect it from the charging unit, as it is then being charged too rapidly. Reduce the charging rate. If the charger has a fixed charging rate, write to the manufacturer and find out how to reduce this rate.

FOR SALE.—Baby Sterling Loud Speaker, bought last month, £3/10/-. or will exchange Amplion. Apply 46 c/o Wireless Weekly, 13/16 Regent St., Sydney.

BUY RADIO GIFTS FOR XMAS

Columbia "A", "B" and "C" Radio Batteries

The most satisfying and profitable
Radio Batteries you can sell

Advertised all over the world.



COLUMBIA Radio Batteries are the result of constant study and experimenting in the largest laboratory of its kind in the world. They have been accepted everywhere as absolutely the best radio batteries made and they will give far more satisfactory results than any others. They will sell quickly and yield a good profit.

COLUMBIA Dry Cell Radio "A" Batteries are made especially for dry cell vacuum tubes and will greatly outlast any other type of ignition battery for this purpose.

COLUMBIA Storage "A" Batteries for vacuum tubes of one-half ampere or over have many characteristics which make them ideal for such use. They are shipped dry and charged as sold, thus always assuring a new, fresh and powerful battery.

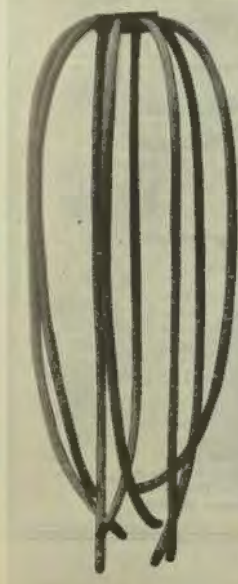
COLUMBIA "B" Batteries are made in 22½ and 45-volt sizes. They are powerful and long lasting. Thoroughly insulated and waterproofed and furnished with Fahnestock Spring Clip Connectors.

COLUMBIA "Three" Batteries are suitable for use as an "A," "B" or "C" Battery. They are made of extra large sized cells and last unusually long time.



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No More Wireless Widows

The New Discovery

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8 people listen in with one headphone



For CRYSTAL or VALVE
Price - - 30/- Post Free

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Don't Be An Ostrich !

Look danger in the face.
Play for safety, for home and hearth and get a
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The Fire Insurance Companies insist on the installation of a lightning arrester.

THERE MUST BE A REASON

Sold by all first class radio stores at 7/6 each.

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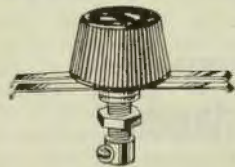
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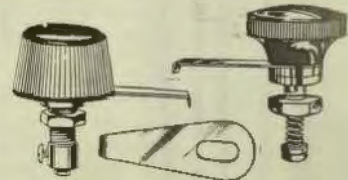
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GIVE YOUR BOY A PAIR OF PHONES - 2/-
OR AN AMPLIFIER FOR CRYSTAL SET



Series Parallel, 1/9 ea

CALL AND INSPECT
OUR WONDERFUL
DISPLAY OR WRITE
FOR LISTS.



Rotary Switch, 1/6 each

A STERLING LOUD SPEAKER 57/6
ALL GILFILLAN-MARCO - SPEEDEE
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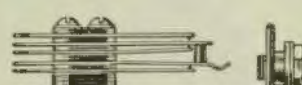
No. 4—Single Filament Control, 4/9



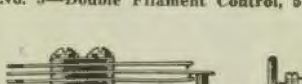
No. 4a—Second Audio Jack .. 5/4
(For Neutrodyne Receivers)



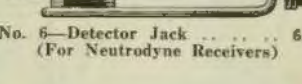
THIS Jack is an improvement on any other Jack on the market. It is made entirely of non-ferrous metals — therefore no magnetic influences. The bracket is made of specially prepared brass strip with rounded edge, bent against the grain, insuring extreme strength and good appearance. Nipples, washers, screws, all made of brass, highly nickel-plated and polished. All blades are made of high-grade German silver of spring temper, having tension springs where needed. The contact tips are made of pure silver, the best substitute for platinum. The ends of the blades are made with the crowfoot offset, allowing easy access for all wires; they are tinned and charged with a Non-Corrosive soldering flux, thereby preventing acid corrosion and consequent short circuits. They are of standard dimension and fit any standard plug, and can be mounted on any panel.



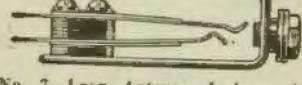
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No. 9—Seven Spring Automatic Jack
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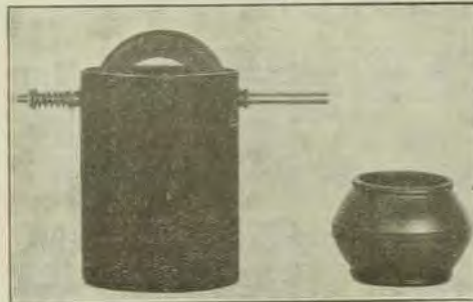
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All the stations on
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Easy to wind up to 350
turns of 26 gauge d.c.c.
wire. More efficient than
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Less than half the price
1/3 each



**INSTALL A GRODAN
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Obtainable in two sizes—
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Stocked by all the principal
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7/- and 8/- unassembled.
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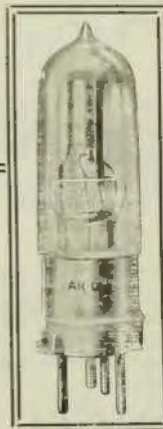
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Little need be said about the Ediswan Wireless Valves. Their performance speaks for itself. We know there are no better Valves made.

TYPE A.B.

A splendid valve of the bright emitter type, specially recommended to the amateur. May be used either as a detector or amplifier (H.F. or L.F.), and operates on low plate voltage.

Filament Volts	4
Filament Amps	0.75
(General)	30—40
Plate (Detector)	30—40
Plate (H.F.)	40
Amplifier L.F.	80
Impedance in ohms	38,000
Amplification Constant	6.0
Emission Milliamps, Approx.	
Total	6
Cap	4 Pin Standard, Full Proof
Price, 17/6 each.	

TYPE A.B., .06.

Embodying the latest improvements in the dull emitter type. It works at a filament voltage of 2.5, and the current consumption is only of the order of .06 of an ampere (0.15 watts). Thus the valve may be operated off ordinary dry cells.

Filament Volts	2.5—3
Filament Amps	0.6
(General)	30—100
Plate (Detector)	30—50
Plate (H.F.)	30
Amplifier L.F.	50—100
Grid Bias Volts, Negative	1—3
Impedance in ohms	37,000
Amplification Constant	10.5
Emission Milliamps, Approx.	
Total	5
Cap	4 Pin Standard
Price, 30/- each.	

**The Edison Swan
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Adelaide, Brisbane
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TWO SPECIAL XMAS OFFERS--- *The*
Har-mid
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COMPLETE WITH HEADPHONES AND AERIAL WIRE

40/-

These really excellent little sets are usually sold at 20/- without the accessories included above. This special offer of the "Har-mid," complete with Headphones and Aerial wire for 40/- is unequalled in value. Why not inspect them.

SINGLE VALVE SET £8:5:6

Complete with Headphones, Aerial Wire, Valve, "A" and "B" Batteries. Everything complete to listen in

A really handsome set enclosed in Maple Cabinet, one to be proud of. We may not be able to repeat this offer. You are advised to inspect early.

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WESTINGHOUSE BATTERIES FOR RADIO

JUST ARRIVED! Large Stocks of Types
A.B.C. Wet Chargeable Batteries

THESE BATTERIES ARE OF THE HIGHEST QUALITY

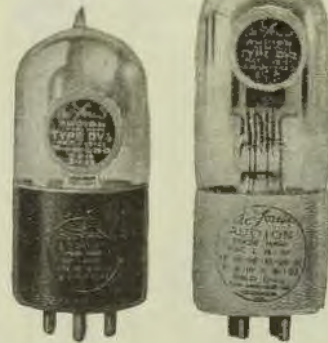
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Sturdily constructed in every respect, and built into crystal or vulcanite containers.

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30s. each



D.V.3 D.V.2
Filament, 3 volts Filament 5 volts
.06 amp. .25 amp.
Both Types Fit Standard American
Socket.

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De Forest THE MAN WHO INVENTED BROADCASTING DE FOREST VALVES

TYPE D.V.2—Takes 5 Volts at $\frac{1}{2}$ Amp. on Filament 30/- each
Plate Voltages, Detector .. 18-22½ Volts
Plate Voltages, Amplifier 60-150 Volts

TYPE D.V.3—Takes 3 Volts at .06 of an Amp. on Filament 30/- each
Plate Voltage, 16-22½ Volts, Detector
Plate Voltage, 60-120 Volts, used as an Amplifier.

Both Types Fit Standard American Socket.

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Wetless Duo Lateral Coils

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Suppliers.



These Coils are
attractive in appear-
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"RADION" within 11° of the North Pole



The biting cold of the frozen north, many degrees below zero, holds no terrors for Radion.

Frozen in the ice for weeks within 11° of the North Pole, the "Zenith" Radio set taken by Dr. MacMillan on his recent expedition provided the famous explorer and his men with the only news obtainable of the outside world.

This set, carefully selected for its adaptability to any climate and condition, was equipped with both Radion panels and parts. Radion once again proved its matchless qualities under the most vigorous test any radio equipment was ever put to.

Radion will prove equally supreme in any climate. It is made expressly for wireless work and far excels any other material in the four main radio essentials, namely:

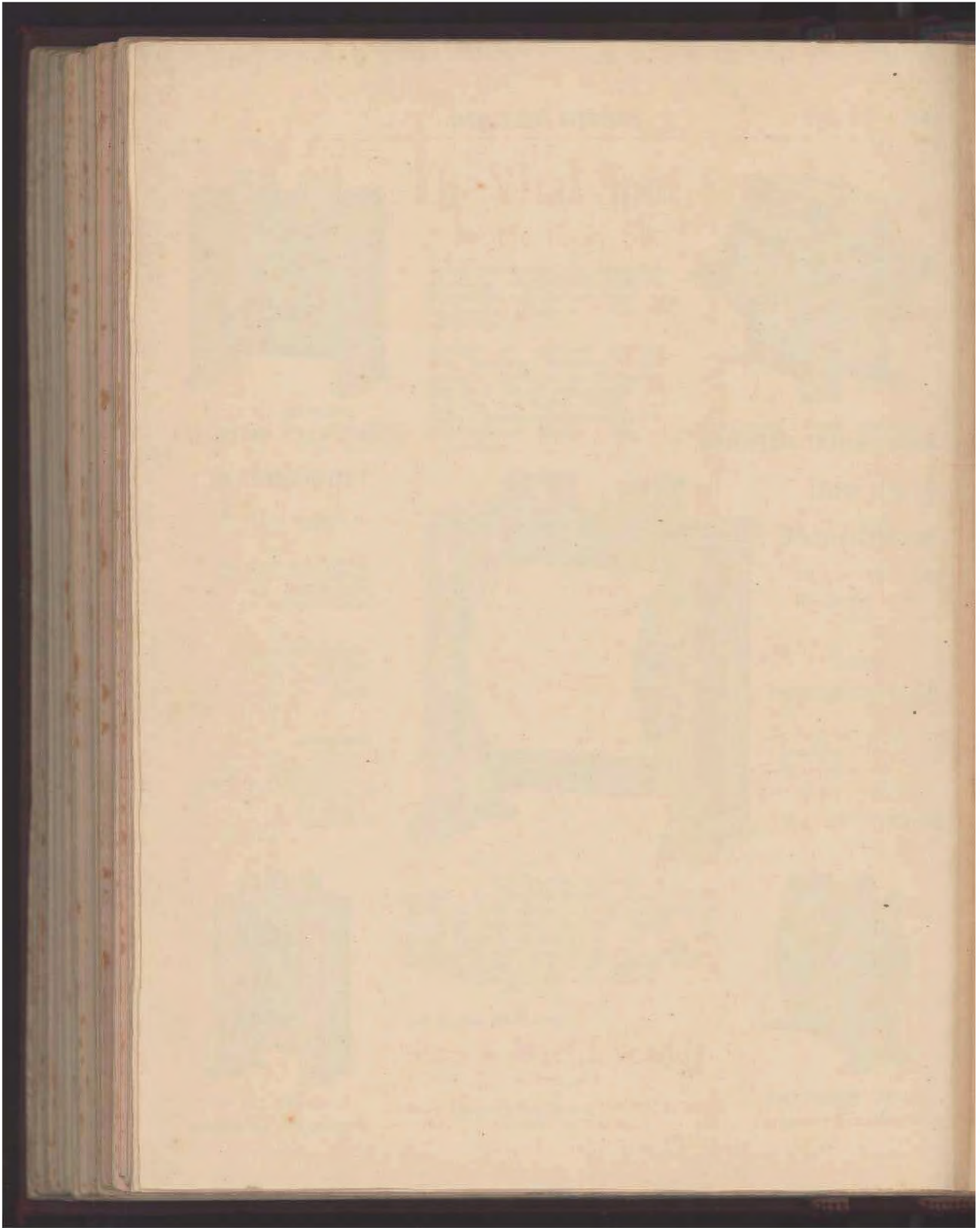
1. Low Angle Phase Difference
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These characteristics result in a clear, satisfactory reception unobtainable by the use of any inferior material. Do not jeopardize all the time and effort you put into the making of your set by using inefficient insulating material. Look for the name Radion on every panel, dial, socket, knob, etc., so that you will be sure you are getting the very best that science has devised.



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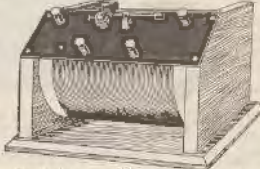


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51 Quartz Condenser
17x41 Plate, 201 15/-
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22x41 Plate, 2000, 10-plate with leads, each 25/-
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The ideal way to purchase separately complete for 15/-

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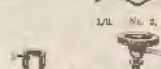
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N.H.M. (New Home Made)



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Crystal Set, 1/6

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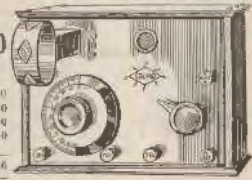
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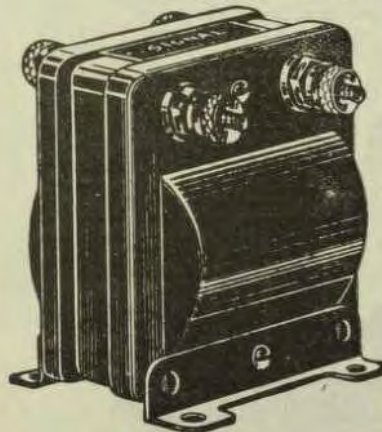
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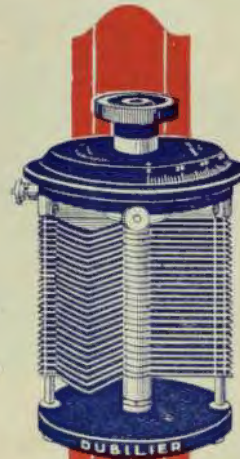
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