

The Queensland Radio News

"Your Own Wireless Journal"

6^D



Vol. II.

Wednesday, 1st DECEMBER, 1926

No. 11

Registered at the General Post Office, Brisbane, for transmission by Post as a Newspaper.

A New, Simplified, Better Type of Battery built for Radio Use!



**Carboncel
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is a low tension battery for filament lighting with a voltage of 1.45 and capacity of 500 ampere hours. Complete with salammoniac it is only £3/5/.

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is constructed to an *exclusive formula* which enables it to deliver strong, steady, level voltage and which gives it extraordinary long life.

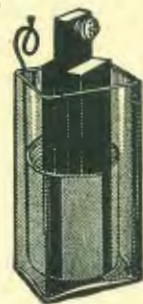
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AUDITONE	1-Valve, complete	£6/10/-	
CROSLY	2-Valve, complete	£10/15/-	Deposit £1/10/-
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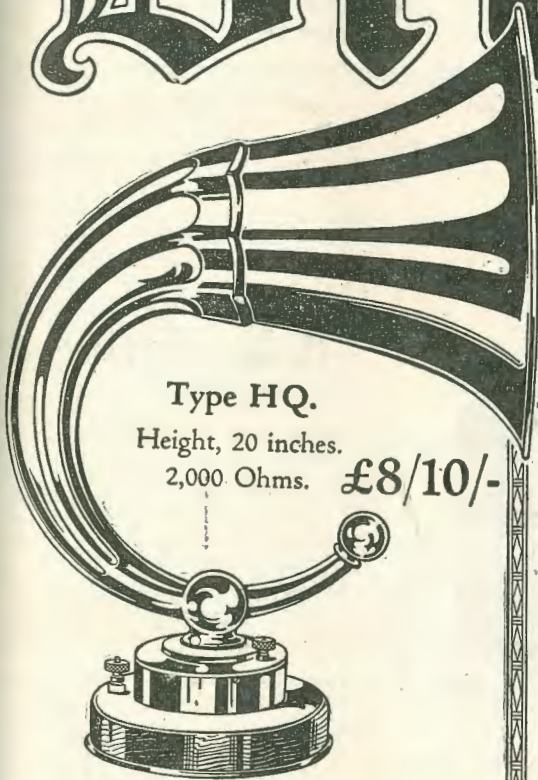
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Brown

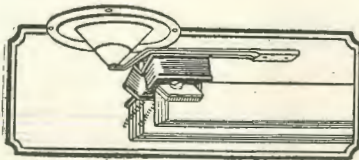
The perfect
Loud Speaker



Type HQ.
Height, 20 inches.
2,000 Ohms. £8/10/-

This handsome new Loud Speaker possesses the same beauty of outline as the luxurious Q Type, whilst retaining the full volume and sensitiveness of the well-known H1.

A superb instrument, which charms everyone with its exceptional fidelity of reproduction.



Write for
Illustrated Catalogue.

Do You Know How Sound Waves are Produced?

Sounds from the Gramophone are produced by the point of the needle riding in the groove of the record transmitting the vibrations, which are set up to the mica diaphragm of the sound box. As the mica diaphragm vibrates, so it produces sound waves, which are conducted through a tapered horn, thereby being greatly amplified. This mica diaphragm is connected to the stylus bar—at the end of which is the needle—at its exact centre. Thus, when the mica diaphragm vibrates, it does so from its centre outwards. If it were coupled in two places, or if two needles were used simultaneously, its flat surface would be distorted and would be unable to reproduce sound waves true to life.

The Gramophone Sound Box Principle.

This "centre pull" principle is incorporated in the Brown Loud Speaker—and used in this form appears in no other Loud Speaker in the world—the reproducer consists of a cone-shaped aluminium diaphragm anchored at its exact centre to the end of a vibratory reed. This reed is attracted and made to vibrate over a wide range of harmonics (from 100 per second to 3000 per-second in ordinary speech) by the current which passes through the coils on the end of the magnet above it.

The Brown Loud Speaker has acquired an exceptional reputation on account of the purity of its tone and its remarkable volume. The tuned-reed method of construction permits a much more faithful rendering of both the high and the low notes, with an entire absence of the distortions often attributed to Loud Speakers.

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OBTAINABLE FROM ALL RADIO DEALERS.

The Ideal Gift for Christmas

The "POLAR TWIN"

NOW BRITAIN'S MOST POPULAR WIRELESS SET.
Not a 1924 American Set dumped here at Any Price to Clear.

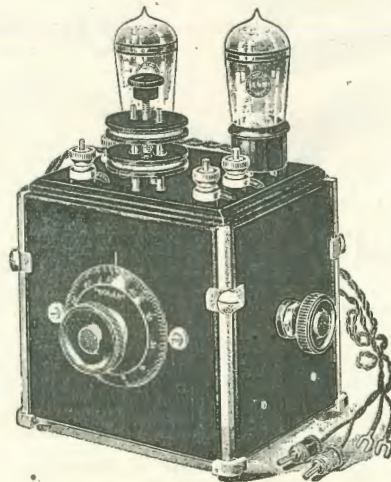
SMALL, COMPACT, ROBUST, and BEAUTIFULLY SWEET TONED,
CLEAR and DISTINCT.

Brings in all the broadcasting stations on the speaker, with only sufficient manipulation of the one dial and two knobs, to be thoroughly interesting.

Take a
Polar Twin
To the Seaside

or the country and have music and current news for all your holiday—then fit at home on your return.

None other is so suitable



Fit a
Polar Twin
To Your Car

with the aerial in the hood, or to your boat, and have wireless all this and every holiday.

Your dealer will show how.

None other is so suitable

EQUIPMENT RECOMMENDED:

Polar Twin Receiver	£6 10 0	Two Exide or C.A.V. 20-amp. hour Accumulators in Crate	2 15 6
Mullard PM3EB Valve	13 6	(Or Dry Cells if prefer.	
Mullard PM4EB Valve	13 6	100ft. Electron Aerial Wire, Insulators, and Earth Clip	0 3 6
Two Ripault's 60-volt H.T. Batteries ..	1 17 6	Eagle Arrestor Type Aerial, Earth Switch	2 9
Amplion AR38 Speaker	3 0 0		

TOTAL—£15/16/3.

From All Reliable Radio Dealers

AND, OF COURSE,

EDGAR V. HUDSON
55 CHARLOTTE STREET,

IS THE SOLE DISTRIBUTOR OF THE POLAR TWIN, and MOST OF THE BEST BRITISH WIRELESS GOODS.

Outline of 4QG Programmes for December

- Wednesday, December 1.—Studio concert, featuring "The Scottish Entertainers."
- Thursday, December 2.—Sandgate Methodist Choir.
- Friday, December 3.—Studio concert. Popular artists assisting.
- Saturday, December 4.—Violin recital by Mr. L. A. Pares.
- Sunday, December 5.—St. Stephen's R.C. Cathedral and concerts.
- Monday, December 6.—Organ recital; studio concert.
- Tuesday, December 7.—Studio concert. Novelty transition from the "Read Press Ltd.," with descriptions of printing of the "Queensland Radio News."
- Wednesday, December 8.—Popular studio concert. Mr. Gerald Cashman (tenor).
- Thursday, December 9.—St. James' Choir.
- Friday, December 10.—Studio concert. Novelty transition, comprising the broadcasting of Queen Street noises.
- Saturday, December 11.—"The Scottish Entertainers." Motor cycle races from the Speedway.
- Sunday, December 12.—Ann Street Presbyterian Church band concerts.
- Monday, December 13.—The Federal Band. The Anglo Male Quartette.
- Tuesday, December 14.—Students' recital.
- Wednesday, December 15.—Studio concert. Novelty transmission, comprising full description of the Bulimba power house.
- Thursday, December 16.—Christmas recital by the choir of the City Tabernacle.
- Friday, December 17.—Studio concert. Popular artists assisting.
- Saturday, December 18.—Special concert arranged by Mr. Erich John.
- Sunday, December 19.—Albert Street Methodist Church band concerts.
- Monday, December 20.—Programme from "The White House." The Federal Band. Anglo Male Quartette Party.
- Tuesday, December 21.—"The Scottish Entertainers."
- Wednesday, December 22.—Speedway races. Holy Cross Choir.
- Thursday, December 23.—Orpheus Concert Party.
- Friday, December 24.—Special Christmas Eve entertainment (details in another portion of this issue).
- Saturday, December 25.—St. Stephen's Cathedral. Story to kiddies relayed from Coolangatta. Concert relayed from Coolangatta.
- Sunday, December 26.—Church services. Relayed from Coolangatta of opening of new R.C. Church.
- Monday, December 27.—The Clarwin Orchestra.
- Tuesday, December 28.—Studio concert. The Anglo Male Quartette.
- Wednesday, December 29.—Popular concert.
- Thursday, December 30.—Grand radio motor hunt (details in another portion of this issue).
- Friday, December 31.—Special New Year's Eve entertainment.

Christmas Eve at 4QG Special Programme Arranged

- Selection, the Studio Orchestra (conductor, Mr. A. H. Featherstone); soprano solo, Miss Eileen McLennan; violin solo, "The Holy City," Mr. H. Scott MacCallum (accompanied by Mrs. Hilda Woolmer and the studio organ); monologue—reading from Dickens, "Harley's Ghost," Mr. H. Humphrey; soprano solo, Miss Pat. McOnigley; selection, the Studio Orchestra; contralto solo, Miss Irene Elphinstone; Christmas music on the studio organ, Mrs. Hilda Woolmer; bass solo, Mr. J. P. Cornwall; selection, the Studio Orchestra; soprano solo, Miss Pat. McOnigley.
- 9.0 p.m.—Metropolitan weather forecast for the holidays. Soprano solo, Miss Eileen McLennan; group of popular numbers by the Studio Orchestra (with vocal refrains by Mr. C. V. Woodland); contralto solo, Miss Irene Elphinstone; violin solo, Mr. H. Scott MacCallum (accompanied by Mrs. Hilda Woolmer and the studio organ); selection, the Studio Orchestra; bass solo, Mr. J. P. Cornwall; monologue—Dickens reading, "Gabriel Grabb," Mr. H. Humphrey; tenor solos, Mr. G. Williamson; selection, the Studio Orchestra.
- 10.0 p.m.—"The Daily Mail" News.

DANCE MUSIC.

- 10.10 p.m.—From the Crystal Palace—Half an hour's dance music by the Crystal Palace Dance Orchestra.

CHRISTMAS GLEES AND CAROLS.

- 10.30 p.m.—From the Studio—March, "Emblem of Peace" (Reece), the Federal Band (conductor, Mr. W. H. Davies); carols—(a) "Hail Saviour King," (b) "Good King Wenceslas," the Lyric Glee Party; hymn, "Christians, Awake!" (Wainwright), the Federal Band; duet, "Love Divine all Love Excelling," Miss D. M. McDowell and Mr. R. J. Robinson; cornet solo, "The Better Land"; male quartette, "We Have Seen His Star in the East," the Lyric Male Quartette; hymn, "Hark, the Herald Angels Sing," the Federal Band; soprano solo, Mrs. H. Gibson; serenade, "In This Hour of Softened Splendour" (Pinsuti), the Federal Band; male quartette, "God is a Spirit," the Lyric Male Quartette; hymn, "While Shepherds Watched," the Federal Band; bass solo, "Star of Bethlehem," Mr. J. P. Cornwall; anthem, "Nazareth," the Lyric Glee Party; hymn (vocal), "Hark, the Herald Angels Sing," the Lyric Glee Party; hymn, "Abide with Me," the Federal Band; hymn, "Oh Come All Ye Faithful," the Lyric Glee Party (followed by the same tune played by the Federal Band); Christmas Greeting from 4QG; "Home, Sweet Home," the Federal Band.
- 12.0 p.m.—Close down.

MICK SIMMONS LTD. WIRELESS SECTION.

The radio section at Mick Simmons reports brisk business and, having prepared many special inducements in the way of special value for Xmas buying, they expect to be busier still during the next few weeks.

The radio section at Mick Simmons is in charge of Mr. Finch, an experienced amateur and an authority on radio matters generally. When in need of advice drop in and talk it over with Mr. Finch—he will be only too pleased to help you.

REPAIRS

We do rewinding and overhauling of all kinds of Electrical Apparatus, including Armatures, Meters Phones, Loud Speakers, Coils, etc., and guarantee the work. Also Panel Engraving.

HAMILTON & PASS

BURNETT LANE, BRISBANE.

Phone C250.

Important Announcement

TO

Mullard Valve Users

Owing to the wonderful success of the Mullard P.M. series, it has been decided to substitute P.M.3 and P.M.4 in place of D.06 Valves.

They consume only one-tenth ampere.

They have longer life.

They have up to five and a half times greater emission surface.

They are practically unbreakable.

Mullard

THE · MASTER · VALVE

Advertisement of the MULLARD WIRELESS SERVICE Co., Ltd., "Mullard House," Denmark St., London WC2, ENGLAND.



THE EDITOR'S PAGE

Popularising Radio

THE statistical radio figures published for the five Australian States reveal that the percentage of license-holders in the Commonwealth to be sadly below its rightful quota.

It seems to us that a campaign of radio education is badly needed. This does not apply so much to city areas as it does to country towns and districts where opportunities of hearing concerts, and learning the wonders of radio are more rare.

We are of the opinion that the number of license holders in each State could be doubled if an intensive, concerted effort was put forward by the combined forces of the broadcasting stations and the radio trade.

There are many ways of carrying out such a campaign. Newspaper advertising—direct by mail canvassing, and a dozen other methods might be suggested, but we believe the best way to sell radio is by demonstration.

Why not then, a Demonstration Train—a Radio Train? The Queensland Government could outfit a train of three or four carriages for a moderate sum, which could cover Queensland within two months.

The purpose of the train would be to give the country people a chance to hear radio concerts; to prove to them that a big, expensive set is not necessary to receive music from Brisbane, and to supply them with all information concerning licenses, etc.

Advance arrival notices could be inserted in the local newspapers, and the fact that the Radio Train was coming to them as a special missionary from the Government Radio Station, would be sufficient to win the whole-hearted support of the country people.

Possibly the Radio Train would enlist at least 2000 or 3000 new radio recruits; it is hard to foretell. Supposing only 1000 licenses resulted, the scheme could be considered successful, for the immediate revenue the station would receive, besides the indirect results that would be sure to follow, and the renewal fees for subsequent years, would pay the cost of the scheme and leave the station substantially in pocket.

Our scheme may be practical or unpracticable. But the principle is sound. Popularising radio should, and can be done.

Handsome Radio Cabinets

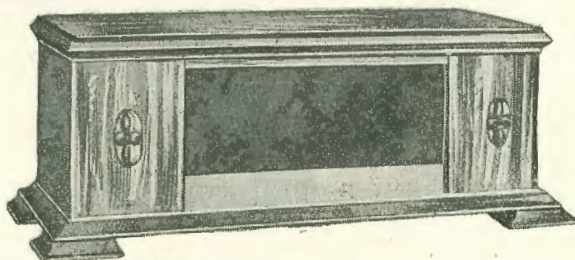
For those who build their own sets

Put your "set" in an

Exhibition Wireless Cabinet

and you have the satisfaction of knowing that you have made the best possible choice, both as regards effectiveness and appearance.

All of our Cabinets are faithfully made from ROSEWOOD and SILKY OAK, while STANDARDISED METHODS OF PRODUCTION result in lower prices.



R.W. 100 3-Valve Cabinet

Illustration R.W. 100 is for a Three-Valve Set, the measurements being 15 inch x 7½ inch x ½ inch (Bakelite Panel Size.)

PRICE 45/.

TESTIMONIAL

Extract from an unsolicited testimonial.

Please forward two Four Valve Cabinets in Silky Oak. The last batch of Cabinets excited general admiration.

Yours faithfully,

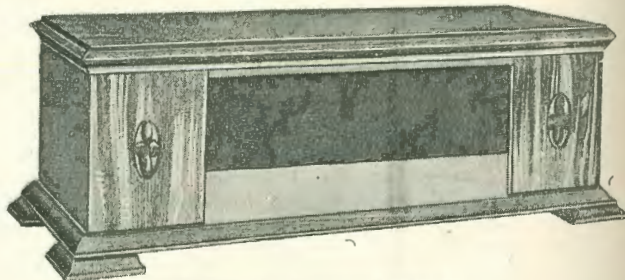
**P. H. OUTRIDGE,
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PERIOD or SPECIAL CABINETS

We make special styles in Cabinets, designing them where necessary to harmonise with any Furnishing Scheme. Period Styles such as JACOBAN, QUEEN ANNE, HEPPLEWHITE, CHIP-PENDALE, Etc., also supplied.

ESTIMATES AND SKETCHES FREE ON APPLICATION. COMPLETE SETS SUPPLIED WHERE DESIRED.

Those living out of town may order with every confidence. Goods are carefully packed and placed FREE ON RAIL BRISBANE. Immediate delivery guaranteed.



R.W. 101 4-Valve Cabinet

This is a Four-Valve Model. Panel Size 18 inch x 9 inch x ½ inch.

PRICE 50/.

HENRY ROBERTS
BRUNSWICK
HOME FURNISHERS
BRUNSWICK ST. - OPP. JACKSON'S BOND
STORES - NEAR EXHIBITION - VALLEY - BRISBANE

A Short Wave Receiver

By H. L. Hobler (A4DO).

The great strides made in amateur radio during the past few years have brought about wonderful changes in the design and construction of short-wave receivers, and the rapid advancement has also been responsible for the manufacture of much improved apparatus. To-day the circuits employed in short-wave receivers are very nearly as numerous as those used in the majority of broadcast receivers, and, as a result, a beginner in short-wave work is often at a loss to know where and how to commence. Most circuits have their advantages and disadvantages, and because, from the standpoint of results only, one regenerative circuit is as good as another, a well known hook-up is used in most cases.

A few weeks ago the need arose for the writer to build a short-wave receiver, and because it was desired to make this instrument as up-to-date and as efficient as possible, only very good apparatus (electrically and mechanically) was incorporated. Short-wave receiver circuits of all descriptions were thoroughly looked over and, where possible, opinions of users of particular hook-ups were asked. Tuned plate, throttle control, inductive-capacity feed back, and tapped tickler circuits were carefully examined. Finally it was decided to use a 3-coil circuit very similar to the familiar Schnell hook-up, but with the aerial coil inductively coupled to the grid inductance. The reason for adopting this circuit was because of the minimum number of parts necessary, the simplicity of the circuit, the condenser regeneration control, the fixed tickler coil, the excellent reports received from a very satisfied user, and because the regeneration control does not affect the tuning to any extent.

Now for the construction. Figure 1 shows the schematic diagram of the circuit. Its simplicity will be immediately noticed, and it will be seen that it differs only slightly—in the re-arrangement of parts—from the ordinary form of capacity controlled regenerative circuit. With this circuit and the proper proportioning of constants it is possible to reach a condition whereby the regeneration control can remain at the same setting for a very large (perhaps the whole) band of frequencies. This makes the receiver practically single control, and permits of one hand (in fact both) being kept free for logging, etc. When tuning, the regeneration control is set at about half its capacity, and the station tuned in with the tuning condenser. If, after a while, the wave of the transmitting station should "creep," as is often the case, it is unnecessary to touch the tuning condenser; just alter the regeneration condenser control to retune in the signal. In the receiver described in this article it is possible, once a station has been tuned in, to vary the regeneration control through approximately half of its value without losing the original wave. This is a great asset to any receiving set, because it permits of the received wave being tuned to any pitch—acting like a super-vernier control—and is invaluable for tuning out telephony.

In the diagram shown in figure 1, A-E is the aerial coil, inductively coupled to the grid coil G-F

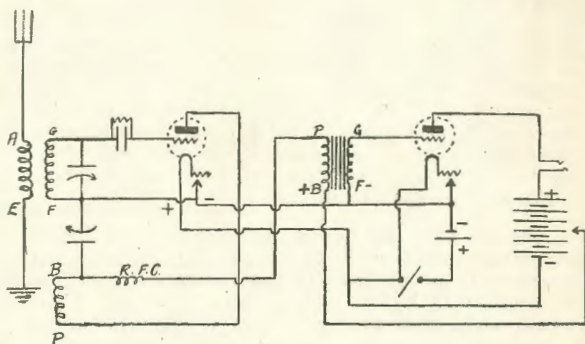


FIG. 1.

which, in conjunction with its shunt tuning condenser, forms the tuned grid circuit. The filament and grid terminals of the detector valve socket are connected, the latter through its condenser and leak, to the grid coil. The plate feed-back coil B-P is closely coupled to the grid inductance. This plate coil is located inside the grid coil and has one of its ends connected to the plate of the detector valve, and the other end connected to the filament lead through the .00035 variable condenser, which is the regeneration control. Although this forms the radio-frequency portion of the circuit it is essential that a direct current path be provided for the plate current, and it is, therefore, necessary to feed the output circuit (in this case the audio-frequency transformer) through the radio-frequency choke coil to some point of the plate circuit. In this circuit the choke coil is acting as a very small capacity and, therefore, it is desirable to have the high potential side of the choke coil connected to the point shown rather than directly to the plate.

The single stage of audio-frequency amplification is the usual transformer coupled arrangement.

The aerial circuit is aperiodic and should be loosely coupled to the grid circuit as possible. However, the writer finds that fairly tight coupling gives better results. If it is not possible to get a sufficient transference of energy from the aerial to the grid inductance by inductive coupling, the grounded end of the antennae or aerial coil can be directly connected to the filament end of the grid coil.

Since the aerial circuit is untuned the grid circuit requires most consideration for the constants of this circuit determine the wave band covered by the receiver. The 20, 40 and 80 metre wave-length bands it is desirable to cover, for stations are working between 20 and 90 metres daily. If these three bands are covered all the wave-lengths universally adopted will be covered, and the owner will be able to hear all that is taking place on the short waves. The receiver described is capable of receiving from approximately 15 to 100 metres, and to cover this entire band it is only necessary to use two secondary coils—the primary and tickler coil being suitable for the whole range.

Thus it is seen that plenty of overlap is allowed for the two outside bands, namely the 20 and 80 metre groups.

It would be possible, by the use of a special coil with a condenser having a certain capacity, to operate over this entire range of wave-lengths (15 to 100 metres) with only the one set of coils but the tuning would be so critical and the bands so crowded that the receiver would be practically useless from an operating standpoint. It was decided, therefore, to arrange the tuning system so that the wave-length ranges could be quickly, conveniently, and properly covered by means of plug-in coils, with sufficient overlap on either side of each band.

Because the condenser and coils are the heart of any set naturally good types were employed. A true straight frequency line type of condenser was chosen in order to make the tuning equally critical over the whole scale, and with a view of being able to calibrate the receiver accurately. The condensers finally decided upon were .00035 mfd. brass plate Pacents, and these half-a-heart shaped condensers have proved in every way efficient. However, of course other excellent types are on the market and can be selected as you think best for your purpose.

Coils.

The primary or aerial coil consists of 2 turns of No. 16 D.C.C. (double cotton covered) wire $3\frac{1}{2}$ inches in diameter, the turns being spaced to a distance of 1-8in., and is used for all wave-length bands.

The secondary coils are also $3\frac{1}{2}$ inches in diameter, and are of 16 D.C.C. copper wire, the space between each turn being not less than the thickness of the covered wire itself. Two secondary coils are used—a 5-turn and a 24-turn. The smaller coil permits of the reception of all waves from 15 to 54 metres, and the larger coil covers from 42 to 100 metres.

Primary and secondary coils are perfectly cylindrical in shape, and the windings are spaced with celluloid strip. No other insulating materials are used for formers, spacers or similar purposes. There is a best size of wire for particular frequencies, and while it is necessary to use a fairly large size for mechanical strength, it is unwise to have too large a gauge because of the excessive losses incurred when a large coil must be put into a set where there is not enough room for large turns and large spacing of the turns.

The only plate coil used is a 3-inch in diameter, 6 turn affair, made of No. 12 D.C.C. copper wire. The coil is wound on a former of the required diameter, then slipped off and tied with waxed cord. The diameter of this coil is smaller than that of the other coils in order that it will fit inside the secondary coils. All coils are wound in the same direction, and their ends terminate in Grodan E.C.S. plugs—a very fine, neat and efficient job. Care should be taken to see that the polarity of the winding is correct, otherwise the feed-back will be in the wrong direction.

The sockets for the coils can be seen in the photographs. They are mounted on a strip of bakelite, and when looked at from the back of the set the two sockets on the right are for the primary coil, the two in the middle for the secondary, and the left-hand pair for the plate coil.

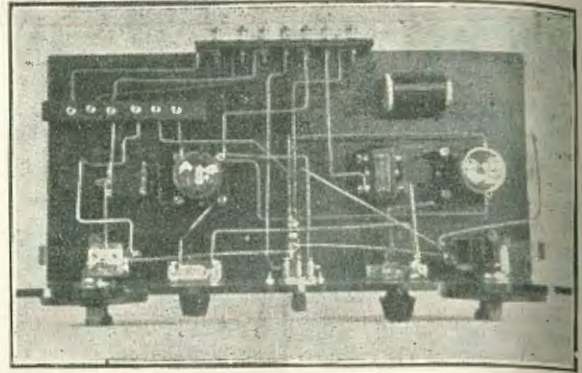


Fig. 2.

The Parts.

The two .00035 mfd. Pacent variable condensers are fitted with a 10 to 1 ratio vernier dial, and no trouble is found in tuning out any weak station. A Bradleystat permits of variation in the filament supply to the detector valve and an ordinary wire rheostat controls the audio valve's filament current and voltage. No tappings are provided for the use of the detector valve only; well, why should they be? After all how much do you use the one tube only when you have the two? A jack is inserted in the plate circuit of the audio-frequency valve, and this offers a ready means for using the two valves.

A push-pull battery switch is employed, and is shown in the schematic diagram and photograph. It has its advantages, and is distinctly worth while.

The valve sockets are of high-grade material, and have side and base wiping contacts. Good sockets are essential, and only first-class types should be used.

The radio-frequency choke coil consists of 100 turns of No. 26 enamelled copper wire on a $1\frac{1}{2}$ -inch tube. The value is not at all critical, but should "dead spots" be found to occur at certain condenser values the choke can be altered to try and dispense with these "spots" and allow the set to oscillate over the whole band of wave-lengths that it will receive.

At the back of the baseboard is mounted the terminal strip, carrying seven terminals. From left to right—looking from the front of the set—they are as follows:—Aerial, earth, negative A, positive A, negative B, positive B detector, positive B amplifier. The set slides into a polished cabinet (drawer fashion) which has a piece cut out of its back to take the terminal strip, thus allowing all the terminals to protrude through the back of the cabinet. This is an excellent idea for connecting the components that must, of necessity, be placed outside the cabinet.

The panel, as will be noticed from the photographs, is of plate glass, and is $\frac{1}{4}$ -inch thick. It was drilled with files, turpentine being used freely. The three-cornered files were first ground to a sharp point, care being taken to see that the three edges were also sharp. With the files sharpened in this manner they would not touch the glass, although when being ground they were frequently dipped in water

so that the temper would not be taken out. The next method tried, and the one adopted, was with the files broken straight off in the centre. With these broken files a hole could be made very quickly, but when the edges became blunt it was a tedious process. Care should be exercised when drilling glass to drill half-way through from one side, then turn the panel over and finish the hole from the other side. When boring holes near the edges take great care, otherwise the glass will chip, fracture or crack. Above all, have the glass well supported and never subject it to any strain.

Tuning.

Because the antennae circuit is inductively coupled to the tuned grid circuit the exclusion of an aerial, an earth, or an aerial and an earth, does not affect the tuning to any extent. In the case of the set described, when the aerial and earth are disconnected, it is only necessary to alter the tuning condenser about 1/32nd of an inch to re-tune the same station. The set works quite well without any conducting system (save that of the inductance in the primary circuit of the receiver itself), and in this state will bring in American amateurs by the score.

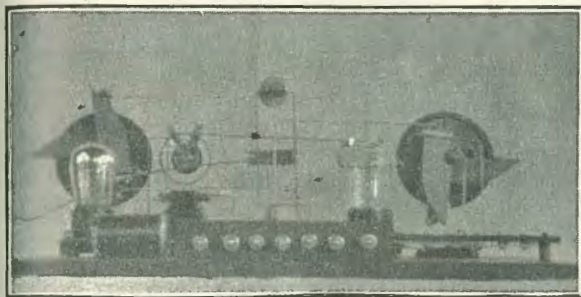


Fig. 3.

In figure 3 a photograph from the back of the set is shown. It appears from this that the condensers, rheostats, etc., are mounted in air, but this is only because the panel of glass and, of course, transparent.

In some cases, when a soft valve is used as a detector, it is unnecessary to use a grid leak. However, it is advisable to make extensive tests with different grid leaks, and grid condensers until the most suited for the valve you use as a detector, is found. The correct value is one which allows the tube to slide into oscillation with a soft "swish" and not a "click" or "plop."

Sometimes it is found that better results are obtained when the filament end of the grid coil is connected to the positive of the A battery, therefore you should ascertain which is the best before being satisfied that the receiver is at its best.

When the components of the receiver forming the subject of this article are of proper values, the set is extremely quiet in operation. In fact at times it is so quiet that one wonders if it is oscillating at all.

Performance.

In view of the fact that practically any short-wave receiver is capable of receiving numerous for-

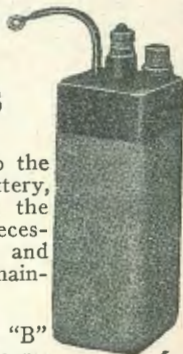
eign stations every day and night of the year, it is difficult to claim anything extraordinary for this particular short-wave set. Its advantages have been previously described at the commencement of this article, but one can say, however, that during the past eight weeks that this receiver has been in operation it has brought in 28 "ham" countries and has, without any aerial whatsoever, reproduced F-8JN (France) at strength R6. But, of course, any good short wave receiver will do that.

Melbourne Cup by Radio

The broadcasting of descriptions of the Melbourne Cup direct from the racecourse has gone far to popularise broadcasting. All over New South Wales interested persons assembled round loud speakers to hear how the race was being run. One announcer became so excited as he told how the horses were going that he shouted into the microphone several times, "Number 4 wins," forgetting in his excitement to tell his audience which was number 4. Listeners must have been kept in suspense for fully five seconds before they learned that number 4 was Spearfelt.

A typical letter received by a Sydney broadcasting station came to 2FC, Sydney, from Mr. H. L. Black, of Myola, Tomingley, who stated that though 300 miles from the broadcasting station the description of the race came through excellently. Mr. S. Middleton, of Clifton, wrote: "Every word could be plainly heard on the loud speaker."

**Silvertown
"B" Batteries**



British products again come to the fore with an efficient "B" Battery, having all the advantages of the lead acid type, without the necessity for frequent recharging and expert knowledge for their maintenance.

Cut out those noises with a "B" Battery, which will last for years, and cannot be ruined by neglect.

New Consignment Just Landed.

OBTAINABLE FROM

G. O. Wills & Sons Ltd.

The Electric Power House,

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Queensland Agents for I.R.G.P. and TELEGRAPH COY., SILVERTOWN, ENGLAND.

Which Set to Buy and Why!

"Volume — Selectivity — Distance — Clarity"—jump at you from every printed page, but how can you choose from so many?

The thinking buyer will look for the reputation behind the product. Only here can you find your answer, and the assurance that the money you spend in Radio will bring you the satisfaction it should.

Over twenty-five years ago the "Splitdorf Electrical Company" commenced building good and accurate electrical equipment, and has long been known as the leader of the field. A QUARTER CENTURY REPUTATION IS YOUR GUARANTEE OF THE ULTIMATE

IN MODERN RADIO RECEPTION. The "SPLITDORF" is a perfectly balanced five-valve Tuned Radio Frequency Circuit of remarkable and proven performance, and the price is within the reach of all—**£47/10/ complete**. And we will be pleased to arrange easy terms.

So before you commit yourself, study carefully our "SPLITDORF" proposition—call in to see us, and let us arrange a demonstration in your home, or if you live in the country, write and ask further particulars of this new and wonderful set, which is so revolutionary in design and performance that it is bound to change present-day Radio Standards.

Some reasons why YOU should call upon or write us for your Radio Requirements

1. We have good stocks of all good quality equipment.
2. Technical advice in all phases of Radio cheerfully given free.
3. Advice given is backed with over ten years' practical experience
4. Our premises are readily accessible and in a most prominent position in town.
5. Our Mail Order Department has been reorganised, and a same-day service is a feature we are proud of.
6. We can arrange terms to suit your pocket
7. We have a service man equipped for attendance to your set at all times.

For Attention and Service

WIRELESS SUPPLIES LTD.

Ascot Chambers, on the Corner of Queen and Edward Sts., BRISBANE.

Telephone, Cent. 3785.

Make This Pretty Lamp Shade Aerial

A Beautiful and Efficient Indoor Aerial

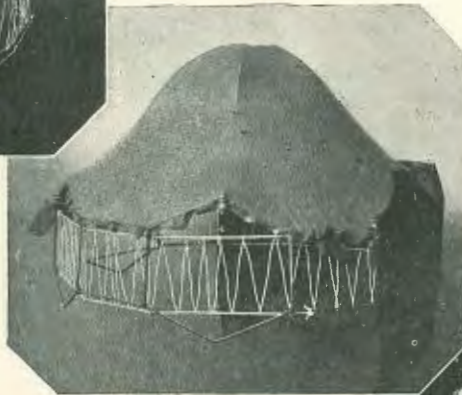
The method of construction is very simple. Secure a suitably shaped wire frame, one having a large bell preferred, as the greater circumference allows a longer length of aerial wire to be used.

When purchasing the frame, ask for a double hoop frame of a shape and depth to allow it to fit snugly into the bottom portion of the lamp shade frame.

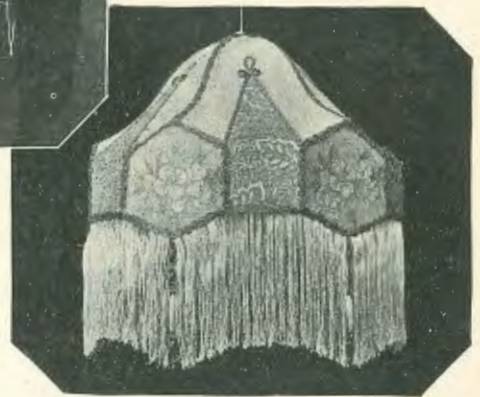
Now cut a small strip bakelite to fit upright between the two loop frames. On to this mount two terminals (or one terminal and a simple fastening screw), and place it into position against one of the upright frame wires.



The uncovered lamp-shade frame, showing aerial frame inserted and bakelite lamp-socket holder.



Showing method of stitching material to frame. The opening at the top is not made until the shade is practically finished.



The finished lamp-shade. Who would guess that such a beautiful shade concealed a wireless aerial?

NOW that summer is here with a vengeance many radio enthusiasts are seeking the aid of indoor aerials as a means of cutting out much static and interference that their outdoor antennae pick up.

Indoor aerials are quite effective for use with valve sets, the distance over which music may be received varying, of course, with the size and power of the receiver connected to them. A one or two valver should receive 4QG with good volume within reasonable distance from Brisbane. Three valves and over should receive southern stations as well as 4QG without any difficulty.

There is no need to disfigure a beautiful home by running aerial wires across rooms or around picture moulding. We suggest herewith an effective and artistic indoor aerial which costs but little to make, and which forms a beautiful and useful adornment to any room.

Unlike most radio apparatus this lamp-shade aerial calls for feminine assistance and artistry, insofar as the shade itself is concerned. Whilst a man may make the aerial portion efficient, he had better leave his wife beautify the frame, otherwise the colour scheme of the drawing room may be severely upset.

Litz covered wire or any insulated wire, approximating 20 gauge, is suited for use with this frame.

Secure one end of the wire to one terminal, and commence to wind in the manner shown in Fig. 1. Continue the winding until the circle is completed, spacing the wire fairly closely so that a good length of aerial wire will be utilised.

So as to cover any loophole for complaint from the Fire Underwriters' inspectors, it is advisable to cut and fit a circular piece of bake-

Let Us Make Your
Lamp Shade Aerial

We will design and make your Lamp Shade Aerial exactly as described in this issue of "The Queensland Radio News" at a very moderate cost.

As an Xmas Gift it would be hard to imagine anything more appropriate, fulfilling as it does a dual purpose.

See the Lamp Shade Aerial displayed in our window.

WIRE FRAMES and all LAMP SHADE MATERIALS.

If you intend to make a Lamp Shade Aerial yourself we can supply you with all the necessary material ready for making. A wide range of materials are available.

GIVE LAMP SHADES AND CUSHIONS FOR XMAS.

A gift that will beautify the home is a gift indeed. We have a wonderful array of Lamp Shades, Cushions, Pouffes in many beautiful designs, all exclusively priced.

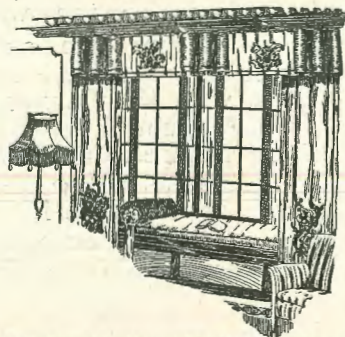
CALL IN AND INSPECT THEM.

Art Furnishings

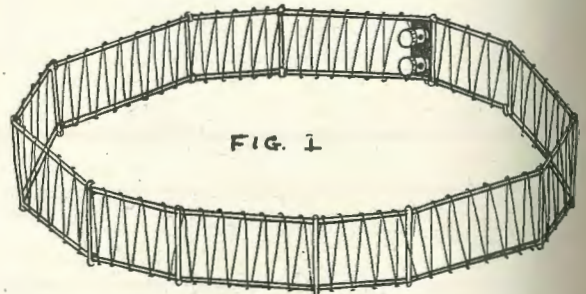
Brisbane Arcade, BRISBANE.

Phone: Central 3656.

We completely outfit homes with Curtains, Drapings, Lamp Shades, and all Soft Furnishings at keen prices. Homes visited and colour schemes suggested.



lite pierced so as to allow the lamp socket to be inserted at the top of the frame The lamp shade and the aerial it carries is then effectively insulated from the house electric lighting main.



The lamp shade may be used as a hanging lamp suspended from the ceiling, or may be mounted on a moveable lamp standard. In the former case the aerial wire to the set may be attached to and removed from the aerial terminal on the shade as required.

In the case of the lamp standard it is possible to make a fixture of the aerial wire by running it from the shade terminal down the post of the standard, and thence to the aerial terminal of the receiver.

Now, then, you've got the particulars, set to work and make this lamp-shade aerial, which is not only an effective summer-time aerial, but a handsome and useful adornment to your home.

A NEW FIGURE IN COMMERCIAL RADIO CIRCLES.

Mr. Tom Elliott (of 4CM fame) has been at last persuaded to turn his activities to the retail radio field in the capacity of manager of the newly-opened Wireless Centre in Adelaide Street.

Mr. Elliott has had fifteen years' actual experience in radio work at both reception and transmission ends.

It was he who designed, built and operated the first broadcasting station in Queensland (4CM), and is recognised as one of the pioneers of radio in Australia.

To-day Wireless Centre claims Mr. Elliott as their manager and radio engineer, and in his capacity as designer and supervisor of radio transmitting and receiving apparatus, we feel sure that Tom is just in his element.

How The Queensland Radio News is Printed

4QG to Broadcast Descriptive Talk from Printing Factory on December 7th at 8.15 p.m.



The Editorial and General Offices, situated in Douglas Chambers, Adelaide St., Brisbane.



A compositor making up a page of "The Queensland Radio News." He is "spacing" the bright metal "slugs" cast from the linotype machines devised.

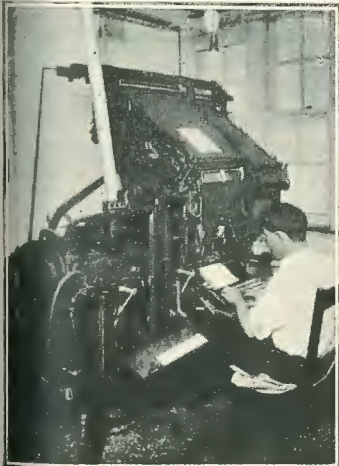
Don't Forget to Listen-in on Tuesday, Dec. 7th, at 8.15 p.m.



"Imposing" the pages to be sent to the machine. Sixteen pages are enclosed in a steel frame or "chase." The pages are being "planed down" with a wooden mallet and block.



One of the presses that print the journal. This machine is a Miehle Two - Revolution Press—one of the latest and greatest printing machines.



The Linotype. This machine sets all the "solid matter" that appears in the journal. As the operator touches a keyboard, brass matrixes fall from the magazines above, and when a line has been completed these are automatically sent away to the metal pot, where molten lead is pressed into the matrixes, forming a "line" or "slug." Each matrix is then automatically returned to its correct channel in the magazine, ready to be used again.

Some of the operations you will hear on December 7th.



A corner of the Binding Room. Here the sheets are folded and stitched as they come off the presses.

At approximately 8.15 p.m. on Tuesday, December 7th, an announcer from Station 4QG will wander through the factory of The Read Press, Ltd., microphone in hand, and describe the process of producing "The Queensland Radio News," to the accompaniment of the clatter and din usually associated with the operation of a big printing plant.

This little talk should be very interesting to listeners who have not had the opportunity of visiting a printing factory to see the many interesting processes a journal must go through before it reaches the hands of the reader.

Only a very small percentage of the public has the remotest idea of how a paper is printed. Station 4QG's announcer will endeavour to make each operation clear to his listeners as he journeys through the printery.

The principle governing the the operation of each machine will be described, and to make the talk more realistic the machines will be run for a few seconds before the microphone.

Don't forget to tune-in on Tuesday, Dec. 7, at 8.15 p.m., and listen to this brief but interesting little talk on "How the 'Queensland Radio News' is printed."

CLYDE

Radio Storage Batteries

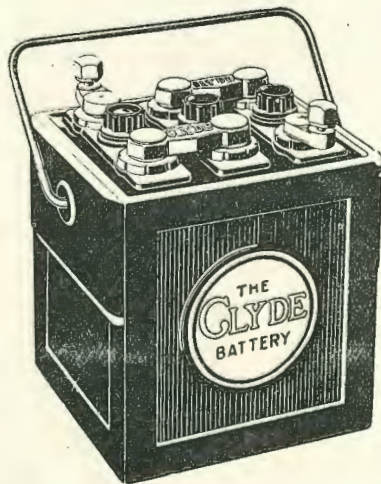
Work well———Wear well

Your radio set is no better than the batteries you use—and no better battery is made than the CLYDE.

Ruggedly powerful in construction and operation, made of the best materials by battery experts of long experience, and notably long lived, it is especially equipped to meet the heavy demands of continual radio usage.

Use Clyde Radio Batteries and you will know the meaning of "real radio satisfaction."

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Clyde radio and car batteries are obtainable from garages and radio dealers right throughout Australia. Main Service Station, 106 Goulburn Street, Sydney.

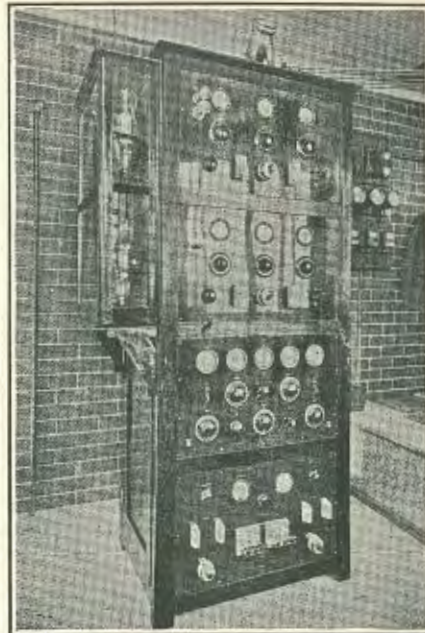
Manufactured by

The Clyde Engineering Company Ltd.

GRANVILLE, N.S.W.



The Studio at 2GB.



The Transmitter at 2GB.

Station 2GB

New Sydney Broadcasting Station

THE Theosophical Broadcasting Station is established to broadcast brotherhood. The station itself has no politics, no creed, no dogmas, and no doctrines, but political talks, religious talks, talks on Australia's problems, and questions will be heartily welcomed. Beautiful music will be the heart of the programmes, and we shall rely much on such music for our broadcasting of brotherhood," said the chairman of directors of 2GB, the Rt. Rev. G. S. Arundale, M.A., LL.B., D.L., on the occasion of the official opening of the station a few weeks ago. The Hon. T. D. Mutch, Minister of Education for New South Wales, who was then asked to declare the station open, spoke as follows: "It was because I had received an assurance of the high purpose of the promoters of this Theosophical broadcasting station, 2GB, that I accepted the privilege of officially opening it. The declaration of the aims and policy appeal to me strongly, as I believe they will to that large section of the public who realise that no country can be great among the nations of the earth, if the spirit of its people, their philosophy of life is merely materialistic. It is declared by the promoters," continued Mr. Mutch, "that this station will stand for clean and honourable politics; for religious liberty and mutual respect between faiths; for social reforms; for educational reforms; for the rapid development of Australia's resources and manufactures; for an 'Australia-first'

policy; for the spread of culture through the arts and sciences including, of course, music and literature."

The Director of the States Conservation of Music Mr. Arundel Orchard Mus. Bac., who is specially interested in 2GB's endeavour to broadcast really good music, then in a brief speech gave his good wishes for the success of the station. The Hon. Mr. Sproule, K.C., Solicitor General in former Labour Ministry, who was also present, remarked that the main thing, to his mind, in a broadcasting station, is to preserve the keynote of refinement and culture and purity, and he was convinced that that keynote would be always maintained by this station.

Powerful Station.

The station is as present licensed to use only 3000 watts (3 k.w.), but is designed and equipped for an effective output of 20,000 watts. The latter power has already been used by 2GB for special tests, and it is therefore the most powerful station in the Southern Hemisphere. The design of the station is absolutely unique, and in accordance with the latest developments of both receiving and transmitting stations. It differs from that adopted in all other Australian stations, in that wireless and sound currents are combined while both are of very small power, and the combination is afterwards amplified until the required power is obtained.

The main studio is fitted on the seventh floor of Adyar

Programme of 2GB

The following is a summary of the weekly transmissions from the Theosophical Broadcasting Station 2GB, Sydney.

(Wave-length 316 Metres.)

Monday, Wednesday, Friday, 6.45 p.m.: Children's talk by the "Man from Dreamland," or "The Dream Fairy."

7.30 to 10 p.m.: Studio vocal and instrumental concert and special talks.

Saturday, 8 p.m. to 10 p.m.: Request night. The station will endeavour to broadcast any item asked for by listeners.

Sunday, 10.30 a.m. to noon: Morning service of St. Alban's Church, Redfern.

6.45 p.m. to 8 p.m.: Lecture by the Theosophical Society, from Adyar Hall, Sydney.

8 p.m. to 10 p.m.: Grand concert from Adyar Hall, and band concert on alternate Sundays.

Wednesday, 3.30 to 5 p.m.: Special talks to women.

House, in Bligh Street, Sydney, and adjoining it are reception rooms and offices.

Adyar Hall itself, which is renowned for its acoustic properties, is used as a studio for band items, etc. An auxiliary studio is also fitted at the Manor, Mosman, for the convenience of the various artists and lecturers, who may find it inconvenient to travel to the city studio. Both studios are used during an evening's transmission.

Carbon microphones are at present being used in the studio, similar to those in use at the other Australian stations, but the engineers are fitting a form of magnetic microphones, somewhat similar to those used in England. This type, in which all "hiss" has been eliminated, has been found to be essential for the satisfactory broadcasting of church services, conferences, etc.

The sound currents from the microphone are magnified by a six-valve amplifier before being passed through a telephone line to the actual transmitting station, and a receiving set is fitted so that the quality of transmission from the station can be controlled from the studio.

Transmitter at Mosman.

The transmitting station is picturesquely situated in the gardens attached to the Manor, the residence of Bishop Arundale, at Mosman. The aerials are supported by two wooden masts, one at the front of the Manor being 100 feet high, while the other is at the rear, and is about 80 feet above the transmitting plant. The magnificent views of Sydney Harbour from the station is well appreciated by the operating staff.

The sound currents from the studio are fed into a connection board, where convenient arrangements are made for supplying the station with sound current from either the studio in Bligh Street, that in the Manor itself, or any hall situated in Sydney. The sound currents are first reduced in strength as may be necessary for clear transmission, and are then fed through a one-stage amplifier to the modulating valves, which have a power of about 10 watts.

Crystal Control to be Used.

At present the wireless currents are generated at the correct wave-length of 316 metres, by a small receiving valve, but this will be replaced by a quartz crystal as soon as the wave-length is definitely fixed by the Postal Department. It will thus be made impossible for the wave-length to vary in the slightest degree from that allotted to the station. These small wireless currents are fed through a control valve to a third valve which, working in conjunction with the modulating valves, combines them with the sound currents, to form the actual wireless telephony currents which are necessary to actuate a receiving set. At this stage the power is only about five watts. These currents are then amplified by three stages before being put into the aerial.

Giant Water-Cooled Valve.

The first stage uses a 240-watt valve, the second a 480-watt valve, and the last stage a giant water-cooled valve capable of handling 35,000 watts without being in any way overloaded. The water-cooled valve is a most interesting piece of apparatus. It requires 200 gallons of fresh water an hour to keep it

cool, in addition to powerful air blasts. The high voltage supply for the small valves is obtained by stepping up the ordinary lighting current of 240 volts to 1000 volts, which is then converted to direct current at about 450 volts by means of small rectifying valves. That for the large valves is obtained by stepping up the 415-volt current from the power mains to 25,000 volts and converting this to direct current at about 10,000 volts by means of two water-cooled valves.

Combined Currents.

The method of combining the wireless and sound currents is very interesting to a technical person, because no iron-cored chokes are used in the process. It is possible to adopt this improved method because the combination is effected with such very small powers, while in all other Australian stations the sound current is amplified till it is equivalent to several horse-power, and is then combined with the wireless currents. This method results in considerable economy, both in capital cost and upkeep. Thus, whereas certain stations have advertised the fact that they require 35,000 watts to maintain a power of 5000 watts, 2GB only requires 19,000 watts for a power of 15,000 watts. It is quite fascinating to move a small dial, similar to that on a broadcast receiver, and watch the power of the station vary from zero to maximum.

Causes No Interference.

The design also permits of the inclusion of various devices for the limitation of unwanted sidebands, and thus prevents the station from unduly interfering with reception from other stations on nearby wave-length. With regard to the installation of the quartz crystal drive to ensure stability of wave-length, a recent international wireless conference recommended the compulsory adoption of this method of wave-length control as being the only way to solve the interference problem.

One might think that so powerful a station as 2GB being in the midst of a popular residential suburb like Mosman, interstate reception would be made impossible for receiving sets in the neighbourhood. However, the Postal Department has made tests with a crystal set at Mosman, close to 2GB, and is satisfied that all other stations can be received there without interference from 2GB. The president of the Mosman Radio Research Laboratories has publicly stated that interstate stations may be received in Mosman, on an ordinary tuning circuit, without the slightest background from 2GB. This speaks volumes for the efficiency of the Theosophical Station.

The wave-length of the station is 316 metres, the tuning position being almost exactly between 2BL and 2KY. 2GB has been built by the Theosophical Broadcasting Station, Ltd., Mr. E. G. Beard being the designing and constructing engineer. The station was opened eight weeks after actual work was commenced, such a short period of time being something of a record for the erection of a high-power station.

Wide Range of 2GB.

Many hundreds of letters from all over Australia, and New Zealand have been received by 2GB, congratulating the officers of the station on the strength and quality of transmissions. On the occasion of the last high-power transmission, Mr. F. Davey, of Laid-

"IT WAS SURE TO COME." "IT HAS COME."



"It DELIVERS THE GOODS." "IT'S SOME COIL."

The "Blue-Spot"
Multidyne Coil

A REVOLUTIONISING WIRELESS INVENTION.
 (London Sales, 10,000 Monthly.)

Indispensable for every Radio Amateur
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Covering all wave-lengths from
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The Multidyne All-Wave Coil is
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OBTAINABLE FROM ANY DEALER.

There's a full range of "BLUE SPOT" Goods from a
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Wholesale terms to bona-fide dealers only.

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King House, Queen St., Brisbane

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ley (Q'ld.), received the station at full loud-speaker strength in broad daylight. 2GB is heard particularly well in New Zealand, one report stating that music and speech could be clearly heard, 60 to 70 feet from two loud-speakers worked from a four-valve set. Victoria has furnished many excellent reports, one listener stating that 2GB "came in easily half as loud again as any of the interstate "A" class stations, and nearly as loud as 3LO." Regular reports are received from Queensland, while from West Australia a report states that 2GB is heard on two valves.

The success of the station has fully justified the original features incorporated in its construction, and thus listeners-in have another station of high power with high-grade programmes to listen to, and will doubtless appreciate the efforts of the Theosophical pioneers who have the erection of this station possible.

SPEEDWAY BROADCASTS.

A recent innovation introduced by 4QG once more emphasised the fact that personality may be conveyed through the microphone to a listening audience. A microphone was installed at the Exhibition Grounds, and a full description of the motor cycle races was given. The noise of the cycles and the crowd cheering was distantly audible, and made a suitable background for the actual description of the race, which was graphically related. At the conclusion of each race, band music provided a very pleasing contrast.

AN ANNOUNCER'S DIFFICULT TASK.

In a broadcasting station the announcer is often subject to a certain amount of criticism. People seem ever on the alert to watch for possible errors in pronunciation. A few weeks back the announcer at 4QG became very uneasy as the hands of the clock crept round to 8.0 p.m. The cause of his uneasiness was the fact that a concert was being given by the Blackstone St. David's Society, and most of the titles of songs had to be pronounced in Welsh. Nevertheless, the announcer rose to the occasion, and was afterwards complimented by Welsh listeners on his pronunciation. Unfortunately, one night recently, the name of one of the foreign ships in touch with the Pinkenba Coastal Radio Station upset the announcer's mental equilibrium. The ship's name was "Bjornstjernenjson," and the only alternative left was to spell it.

Are you building a good Set at the lowest possible cost ?

NOT unless you are making use of the following—

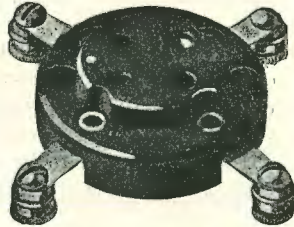
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Pilot Kilograd Dial, 10-1 vernier	£0 7 6
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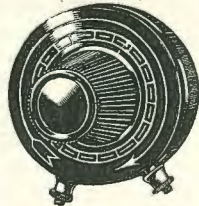
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MUTER FIXED RESISTANCES.

CONDENSERS, Capacities from:

No. 600, capacity .00015	£0 2 3
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LEAKS.

1/2 Megohm	£0 2 0
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1 1/2 Megohm	0 2 0
2 Megohm	0 2 0
3 Megohm	0 2 0



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Transformers, 5-1 and 3 1/2-1	£0 17 6
Shock-proof 'Phone plugs, with spring grip	0 3 0
Single Pole switches, No. 925	0 2 0
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Amplifiers in 1st, 2nd, 3rd, and 4th stages

Also 3 stages Resistance Coupled.



No. 1700 Fixed Rheostats for 201A, with 6 volts	£0 3 3
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Muter Variable Grid Condensers	0 6 6
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MACK MOULDING BAKELITE SOCKETS.

Standard 201A Sockets	£0 2 6
UX Type Socket	0 2 3
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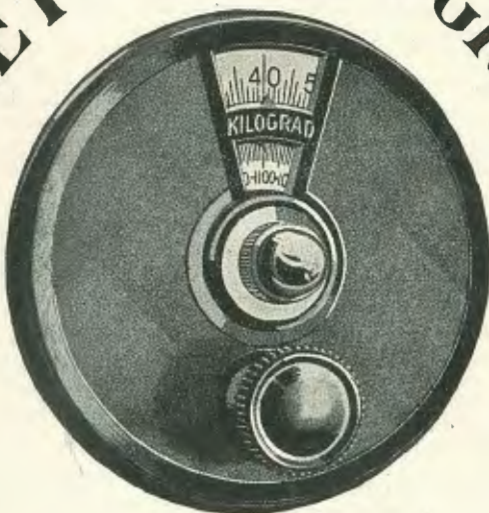
26 Chesser St., Adelaide.
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The PILOT 10-1 Double Calibrated Vernier Dial

THE PILOT KILOGRAD

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and make
your old set
up-to-date
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ance, and
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operate

Shows the way to better tuning

Reasons why the Pilot Kilograd Dial is the Best of the New Type Vernier Dials on the Market

None excel it in appearance. It can be put on any old set now in use and, of course, improve the tuning control. It is the only vernier dial that will show both clockwise and anti-clockwise calibrations, so that dealers can make no mistake in placing quantity orders.

It has a friction control that prevents the slightest backlash.

Finally, while being as mechanically strong as any offered to the public, it is the cheapest bakelite moulded vernier dial available in Australia to-day.

Sole agents for the Pilot Electric Mfg. Co., the largest manufacturers of radio parts in the world are~

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66 Charles St., Launceston, Tas.

Personalities



"Eddie" Reinhold—a successful and ardent radio experimenter for many years—has quit radio and all its thrills, and is seeking fresh adventure and excitement on the motor cycle track. Very nice Eddie, O.M., but we've got a hunch that next winter will see you putting up some new long-distance reception records.

Mr. Armstrong, our worthy radio inspector, has returned from his holiday at Redcliffe. We are wondering whether the next batch of pirates will hail from down yon'—but, there—that wouldn't be a holiday, would it?

"Texas" Ward, late of Pinkenba Radio Station, has been transferred to Thursday Island radio. Mr. Ward and his family sailed on the 19th November last.

Mr. George Smith, of V.I.B., Pinkenba, is back home after enjoying a splendid trip on the s.s. Makina, running between Sydney and 'Frisco. George was in charge of the short-wave apparatus, which was installed in conjunction with the ship's ordinary set. He states that Sydney radio on short waves was easier to log at the 'Frisco wharves than when nearing Australian waters. Such are the peculiarities of short waves!

The Rev. Free, of All Saints Rectory, reckons that this wireless is just the thing. Anyway, his crystal set is perking that fine that he'd like to sing an anthem about it!

We heard a good one the other day. A young radio beginner in Sydney who had just built his first receiver, was experiencing some trouble in obtaining good reception. Thinking the trouble to be in the condenser, he took it into the office to ask one of the clerks, whom he knew to be a radio man, what the trouble was. Solemnly the clerk took it into his hands, toyed with it, held it up to the light and, turning to the young fan, said: "No wonder you're not getting good music, for there are six or seven big statics caught in between the plates. Take it along to the — Radio Store, and get them taken out." We can well imagine his consternation when the assistant politely told him that his leg had been pulled, and explained to him what static really was.

Percy Grant has returned from the North, and is journeying through to Sydney to take up a thorough radio engineering course.

Mr. Ted Blackburn (jnr.) of 4EI (P.M.G. Experimental Station) has entered partnership with Mr. Harold Raymond (late sub-station foreman, City Electric Light). Battery recharging and repairing are their "long suit," and the latest in English charging apparatus is installed.

Mr. E. H. Sagar, of 5CM fame, spent a quiet (?) week-end with Mr. B. Cooper (4BW), Mareeba, recently.

Mr. Harold Walsh, of 4HW, has been off the air latterly, on account of his legal studies. He recently passed his exam., and now being a full-fledged solicitor, intends to enforce law and order in the air traffic. To help him do it he is reorganising his stations. He has been allotted the call-sign of 4WB for use in connection with his dealer's license. During his absence from the air the whole of his apparatus was on loan to other hams, and Harold is now collecting the junk. The old radio inspector was frequently heard on 35 metres, using 4HW's transmitter. The new apparatus now being installed includes a 250 watt bottle, which will be operated by crystal control.

Mr. Bob Little recently returned from a trip to Sydney, where he met many local enthusiasts. The "Harbour Hams" tried to put it all over our Bob, but our Bob was just a little too clever for them, and kept them in their place.

Mr. Edgar Hudson, of the well-known Radio House, and Jack Clark, town salesman, of the same little cottage, took a well-earned holiday at the South Coast last month. Meanwhile Fred Hoe has been busting about town in the office car, giving demonstrations on a little "Polar Twin," which he cleverly concealed beneath the dash-board.

Speaking of statics—if they were at a premium, Queensland would be a wealthy State.

Mr. E. J. Cundith (formerly secretary, Gympie Radio Club) recently called in to see us. He proudly brought to view a gold medal with the club badge attached—a gift from the club in recognition for his past services.

Mr. H. Kington, just returned from an extensive trip through the North, expresses amazement at the expansion of radio in the country during the past three or four months. The general opinion seems to be in favour of 4QG, whose signals are received at sufficient strength to overcome average "statics."

Throughout his northern tour Mr. Kington enjoyed the companionship of a portable Minuet receiver.

What may be the greatest collection of amateur radio gear is to be seen at the "shack" of Mr. Poultney, president of the Townsville Radio Club. Every breed of set is represented, and a place is found for dynamos, motors, and battery chargers. He is certainly an enthusiast, and outside (as well as inside) business hours will yap on one subject only. Yes—you've guessed it!

The Filadyne Two-Valver

We present in this issue a somewhat unconventional circuit, for which the author makes some striking claims.

Mr. Hunter—an experimenter for many years—received the circuit from England, but, not being impressed with its peculiar arrangement, laid it to one side.

Recently he again came across it, and decided to try it out. The results astounded him. He states that the Filadyne equals any crystal rectification, and the volume yielded is as good as many 3-valvers.

In any case it is an interesting arrangement, and many amateurs will doubtless consider it worth their while to try. Those who do so will, we feel sure, be amply rewarded for their time and trouble.

What Filadyne Means.

FOR the benefit of readers it will perhaps be advisable to summarise the theory underlying the operation of a Filadyne set, before proceeding with the constitutional details of the two-valver described in this article. Filadyne is a "synthetic" word intended to indicate "filament force." In an ordinary valve set the signal energy from the aerial or from the anode circuit of a preceding valve is passed on to the grid of a valve, in order to influence the stream of electrons passing from the filament to the plate. By this means rectification and/or amplification is carried out. In the Filadyne circuit the signal energy is fed on to the filament of the valve, in order to influence the electrons stream at its source. The grid is connected to the H.T. plus, and is therefore, enabled to disperse the space charge, a cloud of free electrons which normally tends to congregate thickly around the filament.

One of the results of this is that lower H.T. voltages can be used, although this is more by way of being an incidental advantage. Loud, clear signals and distance sensitivity are the more important claims made for the Filadyne. The two-valver will, of course, operate a loud speaker most satisfactorily over very good ranges. Tone and volume can both be described as exceptional.

The L.F. side of the circuit is perfectly normal. Separate H.T. positive connections and grid bias are included, and it will be noticed that one H.T. battery and the one L.T. battery serve the both sections of the receiver. This is important in view of the fact that many constructors may think it impossible to add a stage of L.F. to the Filadyne detecting circuit without using separate batteries.

No Complications.

It is interesting to note that the L.F. side is in no way affected by the fact that a complete reversal of valve electrodes takes place. This, of course, similarly applies to the detector. It is a curious circuit on paper—in fact it looks much more curious than it really is. Actually nothing could be much more straightforward. Possibly it is a note of unconventionality that is emphasised by comparison with the conventional in the form a stage of "straight" L.F. in close proximity. From the point of view of aerial and earth and accessory requirements the Filadyne is quite normal with but one or two exceptions, which will be dealt with in detail at the end of this article.

It is quite a straightforward set to construct, and there are no complications to be faced. Ordinary components are employed throughout.

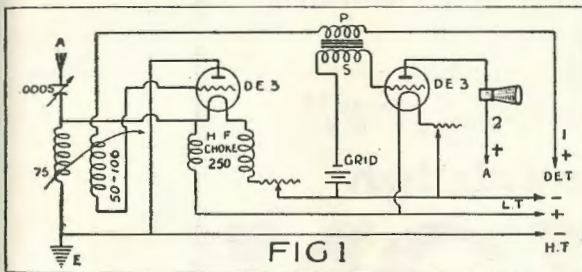
It should be noted that, as described, this Filadyne two-valver is suitable for reception of stations with wave-lengths below 1000 metres, although it can be adapted to receive on the higher wave-bands without difficulty.

A list of parts required is given separately, and particular attention is drawn to the filament rheostats. These must have a maximum of 30 ohms. In Filadyne circuits the valve functions best with its filament under-run. Over-running the filament, even to the smallest degree, will prevent the circuit operating. Not that filament adjustment is really critical, but just as in an ordinary set if the valve filament is not hot enough the receiver refuses to work, so in the Filadyne anything above a certain temperature cuts out signals.

It will be agreed that this is something of a further advantage, especially in the case of dull emitters, whose lives are shortened by over-running. Indeed, it is impossible to over-run a dull emitter in a Filadyne receiver, owing to this topsy-turvy state of affairs.

The Two H.F. Chokes.

The two H.F. chokes should consist of 250 turns of cotton-covered 22 or 24 gauge wire (honeycomb coils



A theoretical diagram, Fig. 1, of the circuit is shown, and this clearly indicates how the filament input is affected. The filament of the detecting valve is isolated from the batteries and filament rheostat by two H.F. chokes. The ohmic resistance of these is low, and they do not impede the flow of heating current from the L.T. battery. But they do prevent H.F. charges spreading through the L.T. system and confine them to the filament of the valve.



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will do). Actually 250 turns of coil of any type could be used, but the wire must be of fairly stout gauge, in order to keep their ohmic resistance down. For wave-lengths over 1000 metres 500-turn coil chokes would be needed.

Accessories.

Now, a few words in respect of accessories. Ordinary coils of any of the usual types can be used. As series condenser tuning is employed the aerial coil will need to be of about 75 turns.

The reaction will vary with valves used, and may be anything from 50 to 100. The grid bias battery should be about 4½ volts tapped like an H.T. battery, but at every 1½ volts. About 22 to 60 volts H.T. will be needed for the first valve, and 60 upwards for the second valve, according to what types are used.

Now, not all valves will suit the Filadyne—very few do, in fact, but it is worth while trying out any that may be on hand. The writer gets the best results from a D.E.3, and D.E.5 in the L.F. side. If you could get the valves, a good combination is a D.E.R., followed by a D.E.4 or a D.E.6. Other valves which work well are the A.B.T.H.B.5—D.E.5. There may be others which I have not tried. Remember, some valves fail to operate altogether in the Filadyne stage, and dead silence results.

Besides too much L.T., too much H.T. can cause a weakening, if not a total loss of signals, and so can a reversal of L.T. connections. Tuning in the Filadyne is very sharp, and a high order of selectivity is evinced. Naturally the L.F. side is quite normal in behaviour, and the above observations in respect of H.T. and L.T. do not apply.

Point to Point Connections.

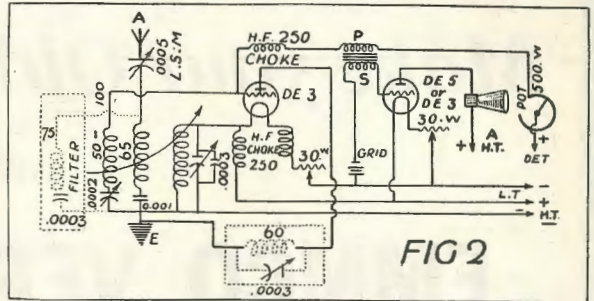
Aerial terminal to fixed plates of variable condenser, moving plates of condenser to socket of fixed coil holder, one filament socket of first valve holder, and to one side of one choke to L.T. positive. L.T. positive also goes to one filament socket of the second valve holder. L.T. negative goes to one contact of each of the rheostats, the other contact of the first rheostat is taken to one side of the remaining choke, other side of choke to remaining filament socket of first valve holder.

Earth terminal to plug of fixed coil holder, H.T. negative and plate socket of first valve holder, grid socket of first valve holder to plug of moving coil holder, socket of which goes to H.T. positive terminal of L.F. transformer, plate terminal of transformer to H.T. positive 1.

Grid terminal of transformer to grid socket of second valve holder, grid bias terminal to negative grid bias, positive grid bias to L.T. positive lead. Plate socket of second valve holder to one phone terminal, other phone terminal to H.T. positive 2. Remaining side of second rheostat is joined to remaining filament socket of second valve holder.

The writer is confident that constructors will agree that the set is exceptional in point of selectivity, sensitivity, and tone.

Before closing the writer will give something for the experimenters. Fig. 2 shows an improvement on Fig. 1. You will notice there is the 3-coil tuner,



also a tuned-plate coil. After tuning in say, 2BL, one has only to move the condenser on the plate coil and bring in 3LO, 2FC or 5CL at will while 4QG is working.

Of course, the writer does not say that anyone hooking up this set (Fig. 2) is going to do that, as he thinks you will agree, on looking at the circuit, that it will require a week or two to become used to, but after handling the set alright you will be surprised how selective it really is.

List of Components for Fig. 1.

- 1 Panel, 16in. by 8in. by ½in.
- 1 .0005 var. condenser with vernier.
- 1 Ferranti A.F.3.L.F. transformer.
- 1 Walz coil holder.
- 2 Rheostats 30 w.
- 2 Terminal strips complete as shown.
- ½ lb. 22 or 24 gauge D.C.C. wire (approx.), wire, screws, transfers, &c.

ARRANGING ORCHESTRAS AT 4QG.

Listening to the broadcasting of orchestral music from 4QG often comment on the fact that each individual instrument in the various orchestras may be distinguished, and that there is a perfect balance of the orchestra as a whole. It is interesting to note that the members of any orchestra which plays at the station are not indiscriminately placed in the studio or hall. Each type of instrument must be placed in a certain position in relation to the microphone, in order to achieve the balance which makes for the successful transmission of orchestral music. The individual artists themselves must also be considered, must be placed according to their own particular characteristics. A great deal of work has been carried out at 4QG in connection with the various bands and orchestras which are broadcast. This work, combined with careful attention to detail during transmission, has resulted in the achieving of first class results by 4QG in its orchestral transmissions.

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If you are not already familiar with the merits of Emmco investigate **NOW**. Remember that it has the advantage of hair-line adjustment and a special logging window. Remember also, there is no back-lash, no slipping, and it makes tuning **easy and absolutely precise**.

"Uncle Jack" Says "Goodbye" to Queensland

2BL's Popular and Able Announcer Leaving for New Zealand

IT came as a surprise to thousands of Australia's listeners to learn of the resignation of Mr. "Jack" Prentice from the executive of Station 2BL, Sydney.

Mr. Prentice has been connected with Station 2BL since its inception, and his energy and ability have contributed in no small measure to its efficiency and popularity.

Those of us who have heard his cheery announcements and his eloquent discourses upon literature, foreign affairs, music, philosophy, psychology, etc., etc., have felt a deep regard and admiration for a man whose intellect and vision could cover such a comprehensive range of subjects.

The boys and girls of Australia will miss "Uncle Jack" in no less a degree than will their elders. His buoyant spirits and infectious fun have permeated Station 2BL's bedtime story session—and the children of many States have come to love him.

Mr. Prentice has resigned from 2BL to accept the position of chief announcer with the Broadcasting Company of New Zealand, operating Station 1YA in Auckland.

This station is the first of a chain of four new stations to be established in New Zealand. Station 1YA will be the head station, and three duplicate stations are to be erected at Christchurch, Dunedin, and Wellington. Mr. Prentice will play an important part in the organisation work of these stations.

When we heard of Mr. Prentice's departure we immediately wired him, asking him if he had a farewell message for his many Queensland listeners.

Mr. Prentice has courteously sent along the following good-bye message, and in publishing it we feel sure that all Queenslanders will echo our sincere "Good-luck and good-bye" to "Uncle Jack" Prentice.

"GOOD-BYE QUEENSLAND!"

By telegram and letter our Worthy Editor has offered me an opportunity to say good-bye to the many Queensland listeners who, he assures me, regret my departure for New Zealand. This unexpected courtesy—for editors generally are severe and harsh-minded persons who look with coldly critical eyes upon the world around them—leaves me wondering how I can best use the opportunity. What can I say

more than that I have been overwhelmed by the kindness shown me, since my resignation from the staff of 2BL has been announced, and that I am still wondering what I have done to deserve all the nice things that have been said and written?

During my two years' work I have been treated with courtesy and consideration in such generous measure that I shall always regard these years as the happiest and most congenial—as far as work is concerned—that I have ever spent. From the very inception, letters have reached me in steady flow, filled with appreciative sentiments, with helpful and constructive criticism and with a sense of deep personal regard. Thus I have been inspired to go on offering my best. The unseen audiences have always been a reality when I have been speaking, and I have striven to give them instruction and entertainment—I am speaking of my personal contributions to 2BL's programmes—to the best of my ability. They have repaid me in generous measure by continuing to listen during the whole period that I have been speaking.

Believing as I do that radio is destined to a great future as a public utility, and as an educational medium, I feel that every attempt should be made to develop it along sound lines, allowing for all types of listener, catering for all tastes in moderation, and for none overmuch, but always with the idea in the background that it is too valuable to be allowed to deteriorate into merely a means of entertainment. Thus every effort should be made to educate as well as entertain, and the closest measure of co-operation between local and inter-State stations should be maintained, so that overlapping and duplication might be avoided. Only those who are by temperament and training found suitable should be permitted to compile programmes; only those who are found worthy should be allowed to continue broadcasting.

These are some of the thoughts that emerge as I sit writing here, with one eye on the clock, remembering that I have accepted my appointment in New Zealand, hoping that errors of judgment and policy which I have observed here may be avoided there. It is in a spirit of service that I am leaving Australia, with some amount of regret, be it said, and the hope that I may assist in bringing radio into its own in the sister Dominion. All my life I have striven to share with others what I myself have garnered and radio offers a splendid opportun-



Uncle Jack Prentice

ity. But also I have—or seem to have—a happy knack of finding my way home again, and so it may be that the chance will come again in the future for me to speak to Australia as I have been doing. Twice already I have gone abroad with the fixed object of finding a home, and returned ere long. History may repeat itself in this case also.

I hope that my many friends in Queensland will not forget me. As radio progresses it is possible that such increased receptivity and improvement in transmission the reception of distant stations will become easier, and so it is possible that the links of the present may be renewed. This is my hope. I wish to thank everyone who has been thinking of me with kindly thought, and to say that I shall long remember the many evidences of kindness that I have received.

To the small members of the radio family, who know me as "Uncle Jack," I send my heart's love. It has been a very lovely thing that from the studio in Sydney I have been able to talk to so many of them simultaneously, and to know that eager interest made the passing of the day, until bedtime story hour approached, all to slow. I am convinced that the ideals which we have striven indeed to inculcate will not be lost, and that many a little lonely child will grow up better and happier by reason of the radio family, while others will have been taught a love which extends beyond mere family bounds. Whatever the years may bring I shall always be glad and proud that I was "Uncle Jack," of 2BL.

So I must conclude—with a confession that as the hour of departure draws closer it seems harder to go! I am looking forward to New Zealand, but there is a little feeling of regret for all I am giving up. But here is one little consolation; our editor has shown himself so considerate that I shall be tempted from time to time to send along a little contribution to the "Queensland Radio News," which will let you all know what is happening, what progress we are making, and how things in radio in general are progressing. Thus, it may be, that a little link will be retained. But be assured that even though you may forget me, it is quite impossible for me to forget you! So I say "Good-bye."

J. M. PRENTICE.

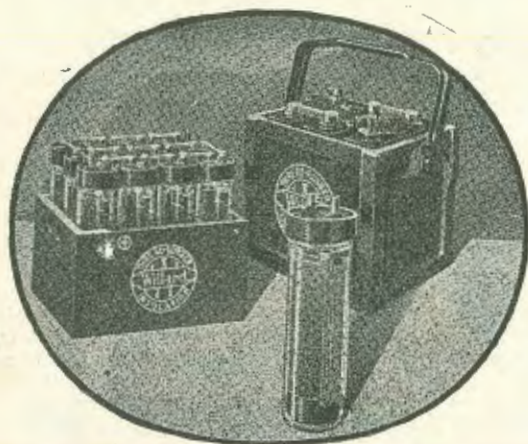
RADIO FOR MOTORISTS.

Portable radio sets are becoming quite fashionable. It is now part of the equipment of many motorists who are enabled to enjoy broadcast music and speech when in the country or at the seaside. There is no need to worry over aerials of the type which require high masts and careful insulation. Many portable sets now have all the components and accessories, including the aerial, contained in a case of quite small dimensions and weighing only 30 or 40 lbs.

The motor party can use the set while the car is travelling and, of course, when they stop for meals or to camp.

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A New Method of Valve Repairing

By T. Elliott (4CM)

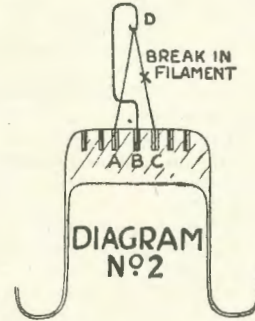
It may not be known that fully 90 per cent. of burnt-out radio valves that have been discarded may be placed into commission again by a simple method of repair.

Careful inspection of these valves reveals that most of them have become useless because of broken filaments, while the vacuum is quite good. This is the kind of valve that should be selected for repairing by the method to be described.

The writer has experimented mostly with "Radio-trons" UV201A's, UV202, and UV203—the latter two types being used for transmission. All valves experimented upon had a glass tip at the top, without which repairing becomes practically impossible.

To begin operation, first remove the base of the valve by means of a small metal saw, being careful not to damage the connecting wires of the valve. These wires, which are soldered to four small brass pins, can be removed when heat is applied. When this is done the four connecting wires can be bent over the valve and held fast with binding material.

B and C the other half of the filament should also light up.



The dotted line in diagram No. 3 indicates the position of a small hole that must be bored through the glass support so as to make connection to the filament supporting arm B.

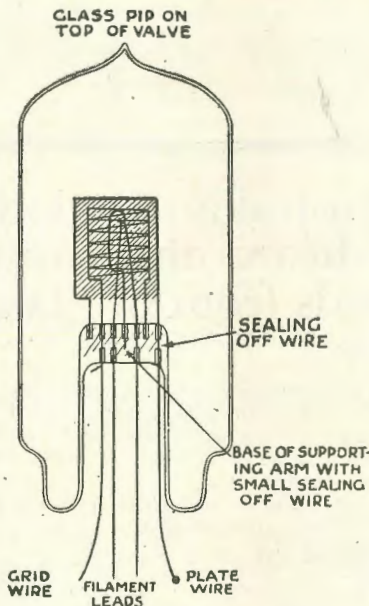
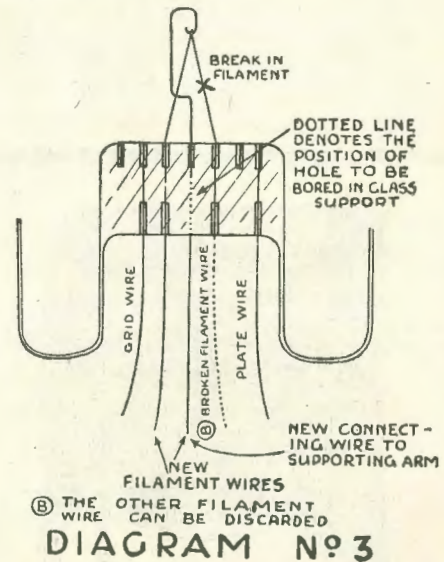


DIAGRAM NO 1

Make a careful examination of diagram No. 1. The supporting arm which holds the filament in position can be seen running through the glass support; this arm has a small piece of sealing-off material fastened to it, and to this point a connection should be made.

If the filament is broken between D and C, as in diagram No. 2, a connection is made between A and B. Half the filament should then light up. If the break is between A and D and a connection is made between



The boring of this hole is perhaps the most delicate job in the whole process, but it can be accomplished with a small 1-32nd steel drill with aid of carborundum powder, which actually pierces the glass. This powder is mixed with a few drops of water, making a thick paste. The valve to be treated is placed upside down and a small quantity of paste placed into the recess to be bored. The b-ring is done downwards, and by holding the valve in one hand the cutting paste is allowed to run under the drill now and again. This is done by varying and controlling the pressure. A dental drill and drive is the right apparatus for the boring operation, but if this is unobtainable, an ordinary bench drill can be used.

Just before drilling a slight impression should be made in the glass by means of a small three-cornered steel drill to give the boring drill a start.

When the hole is bored so that the drill touches the sealing-off wire, a test can be made by placing a small wire down the hole so that it will touch the sealing-off wire, and a connection be made to the good filament lead. Half the filament should then light up. Be careful to use only half the normal filament voltage for testing.

Next clean out the hole just bored carefully, removing all moisture by holding it over a small flame. When this is done a solid connection can be made by using dental amalgum. This is quite a simple operation, and a few minutes' demonstration with a dentist will save much written explanation. A wire of a similar gauge to that of the other connecting wires should be fixed in with the amalgum. Leave this filling for a day or two and it will set very hard.

This new wire connecting to the supporting arm should be tied down with the other three, making them secure, and to the four leads flexible leads should be soldered and marked. The valve is now ready for working.

The writer has repaired several UV202 tubes, putting 6½ volts on the filaments, and by applying the same high voltage as a new tube, the repaired tubes have been found to hold out and give equal service to a new tube.

£50 IN PRIZES.

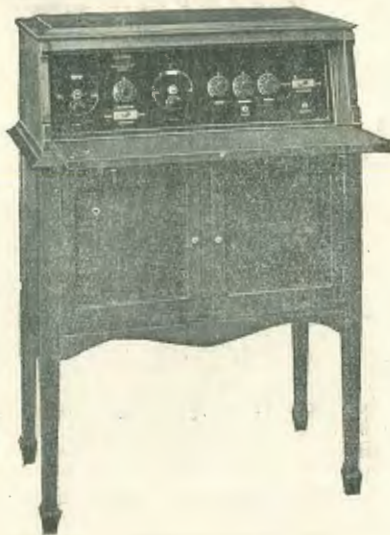
A distinctly novel stunt has been inaugurated by Electricity Meter Manufacturing Company, Limited, makers of Emmco radio products, who are searching for a slogan featuring the "Emmco." The prizes to the winners are to be allotted as follows:—

First, £35; second, £10; third, £5.

An entry form is enclosed with every Emmco carton, representing an individual purchase to the value of 4/6 or over. In initiating the idea, the Emmco people explain that it gives an equal opportunity, both old and young, to win a decently-sized cash prize. In any case, here is an excellent chance for someone to win a useful Xmas present.

BLIND GIRL ON RADIO.

A talented blind girl musician has been discovered by Broadcasting Station 2FC, Sydney—Miss Joyce Frew. She is a pupil of Mr. Gordon Lavers who is also blind, and Miss Frew is an artist of a very high order, both on the piano and the violin. She holds three British and Australian musical degrees. In conjunction with Mr. Gordon Lavers, Miss Frew will be heard from Broadcasting Station 2FC on the evening of December 8.



“All Australian Stations can be heard distinctly 400 yards from the Loud Speaker”

So writes an enthusiastic Queensland owner of a Five Valve Burginphone Set. The Burginphone offers you the finest recreation from Wireless. And offers it with clarity and faithful reproduction. There are any number of letters from enthusiastic owners we can show you.

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Junior Two, complete	£19 10 0
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Broadcasting News

From Sydney Town

TALKS ABOUT BABIES

Radio from 2GB.

Under the auspices of the "Advance Australia Radio Club," Matron Elizabeth McMillan, of the Australia Mothercraft Society, has started a series of talks to mothers about their babies from broadcasting station 2GB, Sydney. Most people in Sydney know the splendid service Miss McMillan has rendered to the wee atoms of humanity that have come under her care, in helping their mothers to understand them. In the country her work has been similarly effective, though usually carried on by correspondence. Now, by means of radio, Miss McMillan can talk to the mothers in the same way as she does from the Mothercraft Society's rooms. Miss McMillan devotes her life to the work which Sir Truby King has carried out with remarkable results in New Zealand and in other countries, under the title of the Plunket System.

AN EXPLORER'S TROPHIES.

Unique Radio Evening

An interesting evening for radio listeners is being worked up by broadcasting station 2FC. It will take the form of a visit to the home of Captain Frank Hurley, at Point Piper. Captain Hurley will conduct his visitors through the house, and will describe to them how he obtained the various trophies with which the rooms are decorated. Captain Hurley explored the Antarctic with Sir Ernest Shackleton. He has penetrated the least civilised of the islands of the Pacific. He has had thrilling adventures in Africa, and the trophies of his life would fill a fair-sized museum.

Leading artists will be included in the visitors to Captain Hurley's home, from which the whole of the 2FC programme of the evening will be transmitted. The date has not yet been fixed.

HIS TASTE IN RADIO

Oratorio Not Racing.

Apropos of the broadcasting of "The Elijah" by Station 2BL, a number of interesting letters have been received. A Mr. F. T. Hosking, of Bendigo, writes: "I want to let you know how greatly we appreciated 'The Elijah.' We did not know your programme, so it was an unlooked-for treat. The chorus 'Thanks be to God' was splendid; the soloists also did their parts splendidly.

Another man wrote that he also enjoyed "The Elijah." He had sung in it thirty-five years ago and had never heard it since. Having bestowed his compliment, the correspondent suggested that station 2BL should broadcast no more jazz music, comic songs, descriptions of horse racing, or boxing matches, and should confine their programme to oratorios and sacred music.

WHO'S WHO?

Broadcasting Tangle

A good deal of amusement has been created by the exchange of announcers from Station 2FC, Sydney, and 3LO, Melbourne, Mr. Cochrane, the hullo-man of 2FC, and Mr. Alf Andrews of 3LO having relieved each other for a fortnight. A number of letters have been received by both stations from persons who think they have tuned in to a new station, as the voice of the announcer is strange to them. One lady who regularly listened to Mr. Andrews at 3LO has transferred her allegiance to 2FC; others who think there is no announcer in the world like Mr. Cochrane now tune in regularly to 3LO. Another lady who has been in the habit of listening equally to 2FC and 3LO has written to the former station, saying she thinks it a remarkable coincidence that the voice of 2FC's new announcer is so like that of Mr. Andrews'. The thing has been a bit of a Chinese puzzle, but listeners have just become wise to the situation as the fortnight's arrangement expires.

RADIO FROM TRAWLER

An interesting account of the work of a trawler at sea was broadcast by station 2FC, Sydney, on Saturday and Monday last. An announcer from the station spent three days on the trawler, and having recovered from a bout of sea sickness, described the whole operation of catching fish. His words were sent from the trawler by wireless, picked up on the shore, and re-transmitted from the broadcasting company's high-powered station at Pennant Hills.

2FC'S OCTOBER RADIO BRIDE

Wedding Not Broadcast

The broadcasting of the "October Radio Bride's" wedding on October 28 did not eventuate, although elaborate preparations had been made. To put the case quite candidly, the reason was that the authorities of the Church of England came to the conclusion that to broadcast a wedding ceremony from St. Andrew's Cathedral would savour of irreverence, although Dean Talbot had consented to perform the ceremony in front of the broadcasting microphone.

The issue raised is certainly interesting. Two years ago Rev. A. Hay Holden, of Palmer Street Presbyterian Church, celebrated a wedding ceremony which was broadcast. When the winner of the recent Melbourne September bride competition was married, the ceremony was broadcast. Indeed the broadcasting of the ceremony was the whole point of the competition, both in Victoria and New South Wales.

In Melbourne the Anglican Archbishop forbade the ceremony being performed in any Church of England, and in that case, the Methodist minister tied the knot.

Though the actual wedding ceremony of the October bride was not heard by listeners, the artists who sang at the wedding breakfast were broadcast, so that listeners were not entirely deprived of their share of the October bride competition.

WOMEN'S RADIO CLUBS Forming in the Country

Broadcasting station 2GB (Theosophical Station) continues its endeavours to have radio clubs formed in the country, particularly for the purpose of brightening the lives of isolated women. The station has extended its women's session, and is now giving a women's session on four nights a week—Mondays, Wednesdays, Fridays and Saturday evenings.

As illustrating the use to which a radio set can be put in the country, Miss Nell Dungey, organiser of the Theosophical Broadcasting Station, has received a letter from a bush nurse, who states that a small hall has been erected in a townships which she visits, but only two entertainments have been held in it during the past six months, simply on account of the dearth of local talent. It is felt that a radio set in such a centre would enable the community to assemble every night in the week if they chose.

"JERRY" Radio Fun Maker at 2FC

Jerry, the ventriloquial doll, is quite an institution with radio listeners. Several times a week Jerry is heard from broadcasting station 2FC; he says such funny things at the expense of his master.

The latter, Mr. Rus Garling, does his best to reply to Jerry's sarcasm and jibes, but he is no match for Jerry. When Jerry takes his master round the hospitals entertaining the patients, broadcast listeners hear peals of merriment as the convalescent children and adults laugh in chorus at poor Mr. Garling's discomforture.

Jerry always has the best of it. One night last week Jerry and Mr. Garling had a competition to see who could tell the biggest lie. The latter said he saw a pilot fall from an aeroplane, hit the ground, and bounce back into his seat.

"Is that the biggest lie you can tell?" asks Jerry.

"Yes," says Mr. Garling.

"Were you very far away?" Jerry next inquires.

"About half a mile," is the unsuspecting answer.

"Could you see who was the airman?"

"Well, no, I couldn't see his face exactly," says

Mr. Garling.

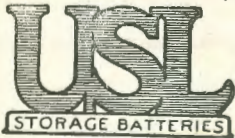
"I was that airman," shouts Jerry triumphantly.

"You win," Mr. Garling admits when the laughter subsides.

Jerry is a tremendous favourite. He is so much cleverer than his master that the children write shoals of letters to him and expect personal answers. At the moment Jerry is away on holidays, touring the southern districts with Mr. Garling. His car is labelled: "Jerry, 2FC," and whenever they come to a town the children flock to see and hear their old friend. And every night from the broadcasting station, "Uncle Monty" calls up Jerry and talks to him just as he talks to the other children.

TOOTH OUT BY RADIO

A writer in a Sydney paper describes how he had a tooth extracted by radio. He was fixing his wireless set and climbed a tree to set up the aerial. He fell from the bough and knocked out a large front tooth. This is the first case on record of a dental operation by radio.



Complete Satisfaction at all Times with U.S.L. Wireless Batteries

Radio Batteries

6 Volt	60 Amp.	£3 18 0
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Power to receive the distant stations clearly, and clearness for 4QG.

There's long life and dependable service in U.S.L. Batteries, too.

Bring your Battery troubles to U.S.L. and have them remedied at low cost.

Butler Bros. [Aust.] Ltd.

"Monarch House"

CREEK STREET, BRISBANE

"2BL FIRSTS"
Radio Achievements

From the point of view of radio listeners, the keen rivalry between the Sydney broadcasting stations is invaluable, as constant endeavours are made by each station to give the public of its best.

The managing director of broadcasting station 2BL has noted a few of the achievements of his station. 2BL, he says, was the first and only station to relay successfully a broadcast from the United States; incidentally 2BL was the first commercial broadcasting station in Australia. It was the first station to relay an outside line programme (that is, the programme of an entertainment at a distance from the broadcasting studio, the gap between the scene of the concert and the studio being bridged by telephone line); first to relay distant transmission—Penrith to Sydney; first to broadcast the General Post Office Clock and Chimes; first to broadcast a complete 4-act play from its studio; first to broadcast an interview conducted by telephone; cricket or football match early morning sessions; talking back (argument between listeners speaking by telephone from their own homes with lecturers talking in the broadcasting studio).

The following prominent overseas artists are among those who have been broadcast from the studio of 2BL:—Zacharewitsch, one of the foremost violinists; Arthur Jordan, the world-famed English tenor; Edna Thomas; Marie Narelle; Madame Kate Rooney; William Vaughan, Scottish basso; Alfred Cunningham, English baritone.

The achievements of 2BL are certainly notable—but 2FC may have something to say in reply.

DRESSMAKING BY RADIO
For Country Women

The Theosophical Broadcasting Station, 2GB, Sydney, has arranged a series of dressmaking classes by radio for listeners. The first will take place at 7.15 on the evening of Wednesday, November 17. The instructor is Miss Madden, who for many years conducted her own dressmaking establishment. Listeners will be asked to use a sheet of paper, and to fold or cut it as directed, and it is stated that the whole of the instructions can be followed without any difficulty and that any woman will quickly learn to make her own clothes. Each week a new pattern will be given.

RADIO AND SWIMMING
Expert Broadcasts

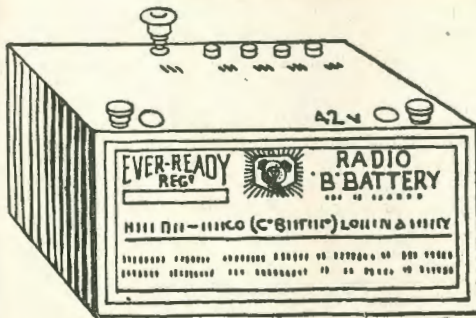
As the summer advances and the call of the water is heard broadcasting station 2FC, Sydney, has initiated a series of talks, which are being given by Mr. Harold Hardwick, both to children and to adults. Mr. Hardwick is an ex-world's champion swimmer, and is attached to the Department of Education, in which capacity he is organising vacation classes for the children.

Several country residents who are unable to visit the seaside frequently have asked Station 2FC to broadcast the sound of the ocean waves, and the crashing of the surf. Arrangements are being made to accede to this request, and in the near future a surf carnival will also be broadcast.

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LOOK FOR THE TRADE MARK

They are
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The New Radio High Tension "B" Battery, fitted with a Wanda Plug and 2-Screw Terminals. Any size you need, but all of guaranteed good service.

The popularity of Ever-Ready Batteries is due to their dependable qualities. They are always fresh, and give maximum service. They are made in Australia of finest materials. Positive tappings are arranged to suit all required voltages.

"Ever-Ready" Prices

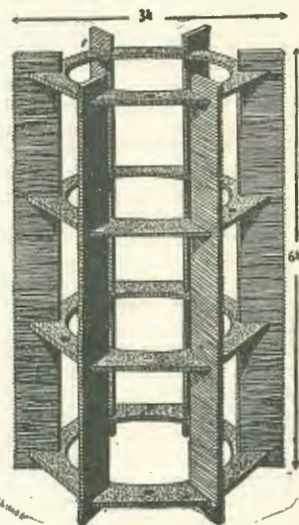
- W.P. 40V. 12/6 X.P. 40V (heavy ser.) 23/-
- W.P. 60V. 18/9 X.P. 60V. (heavy ser.) 34/6
- SUPER 40V. (Extra Heavy Service) 30/-

Sold by all Radio Stores

Wholesale Distributors
EDISON SWAN ELECTRIC CO. LTD.
156 CREEK ST., BRISBANE

GRODAN Radio Appliances

Variocoupler Parts, for winding reaction tuners of all kinds	7/9	each.
Variocoupler Mounts	3/	"
Pericon Detectors	3/9	"
Pericon Refills	1/6	"
Carborundum Crystals	2/	"
Wire Connectors, single 2d; double	/3	"
Loop Aerials	£1/19/6	"
Spiderweb Formers, plain	/6	each.
Plug-in Formers	1/3	"
Spiderweb Pins and Sockets	/9	pair.
"Ecs" Plug and Socket Terminal	/9	each.
Panel Markers	/3	"
Vernier Knobs	1/6	"
Valve Adaptors	3/	"
Neutralising Condensers	4/3	"
Cardboard Tubes, 2in., 2½in., 3in., 3½in., 4½in. diameter.		
Cardboard Stators, 2in., 3in., 3½in., specially made for wireless purposes.		
Three Coil Tuners	18/6	"



Anti-Loss Coil Former

It has been conclusively proved that the use of low-loss apparatus not only increases the receiving range of a set to remarkable extent, but also gives greater selectivity and greater volume.

Particular attention should be paid to the tuning coil. This should be wound with a large gauge of wire and supported by a minimum amount of insulating material. The turns should be well spaced. A coil wound on the Grodan "Anti-loss" Coil Former is only supported by the ridges of the projections so that each turn only makes point contact with the former, thus assuring the best results.

For Winding

Loading Coils, Choke Coils, Long-wave Tuner, Three-coil Tuner, Pile or Bank Coils, Crystal Set Coils, Low-loss Coils, Browning-Drake Regenerators, Tapped Inductance, Wave-traps, Single Layer Coils, Space Wound Coils, Multi-layer Coils, etc.

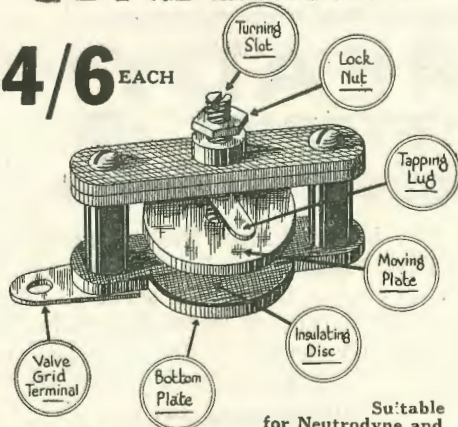
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Wind as you wish—any wire—any gauge

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4/6 EACH



Suitable for Neutrodyne and other circuits. The Only Neutrodyne Condensers to fit on the Grid

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KINDLY WRITE FOR CATALOGUE.



Issued Gratis with the December Issue of The Queensland Radio News 1926

VALE 1926

A Radio Resume of the Closing Year

ANOTHER year has flown, and we have again reached the December issue of the journal. To those of us who have month by month, been writing for its columns the year has

been one of great progress. Even in so short a space as twelve months one cannot but notice the tremendous increase in public interest amongst the citizens of Queensland in everything pertaining to radio.

Time was, and not so long ago, in terms of years, when an enthusiast in wireless was a veritable "homo sapiens" to his neighbours—but now, indeed, might the term be applied to one who has steadily declined to associate himself with the current craze.

But radio has little in common with the other means of present-day amusement. It has assuredly come to stay—especially in our Australia with its vast spaces—and it has opened up for dwellers in our island continent an era of entertainment such as could not have been foretold by the hardest prophet of yesteryear. And yet—if the last few years have shown wondrous progress—what of the years to come? The man in the street reads of the broadcasting of English concerts to America, and of American concert to England, and wonders when Australia will share in the overseas entertainments. The time is not yet, but is fast approaching. Even

nowadays the average amateur can boast of short-wave reception of music from American KDKA, which enterprising station has more than once broadcast especial Australian programmes.

Then again, on a very long wave-length, the British station at Rugby—call GBR—hammers out its daily press news to the world. It would thus seem that we are on the threshold of a time when a one or two-valver will log the world's programmes.

The design of receiving sets has altered considerably during the year. It is now uncommon to see the old type with coils mounted on the front of the panel where, besides being an eyesore, they were very much in the way. The present sets either do away entirely with moveable coils or find some means of placing them out of sight. The variometer or variocoupler type of coil, with its revolving rotor, gets over the difficulty very well. This system of moun-

ting is used in the case of the Browning-Drake circuit, and in many of the short-wave sets. But the ordinary coil holder will serve if it is mounted on the baseboard with extensions from its controls taken through the panel and fitted with two-inch dials. The chief disadvantage of this mounting lies in the fact that the coils swing in a plane parallel to the panel and take up such a large space that would otherwise be utilised in wiring up the rest of the set. [OVER

Greetings

To our readers we extend our Very Best Wishes for a Joyous Xmas and a Bright New Year.

May 1927 light the threshold of a Happy and Prosperous Season, and Health be your portion throughout the days to come.

Radio for Xmas

The
Best
Present
you can
make!



RADIO is going to head the "Gift List" this year, and rightly so—for no other gift can bring such universal joy and happiness.

Are you giving Radio? If you are you naturally want the best value for your money, and a gift to give long service.

The Sets sold by W. Haigh & Co., Limited, are wonderfully low-priced, and are giving faithful service in hundreds of Queensland Homes. They are quality built, tested, tried and guaranteed.

A CRYSTAL SET FOR YOUR BOY.

Our Famous Crystal Sets, Price 10/.
Installed complete with phones, 42/6; with
Brandes phones, 12/6 extra.

GIVE A VALVE SET.

One-Valve Sets, complete £6/10/.
Two-Valve Sets, complete £10/15/.
Three-Valve Sets, complete £13/10/.
Four-Valve Sets, complete £35/10/.
One-Valve Set complete includes phones, but
no loud speaker.

Two, Three and Four Valve Sets complete
include phones and loud speakers.

RADIO ACCESSORIES.

Phones, Brandes 30/, Spitfire 17/6; Exide A Battery Accumulators, 20 amp. hour per 2-volt cell £1/1/, 30 amp. hour per 2-volt cell £1/6/, 40 amp. hour per 2-volt cell £1/10/; Exide B Battery Accumulator, in 20-volt units per unit £1/10/; Hydro-meter Exide, only for A and car batteries, 10/; Brach Stats, an automatic control rheostat, 4/9; Emmco Vernier Dials, 6/9; Jewel Volt Meters, 0.50, 15/; Jewel Valve Tester, £3/12/6.

W. Haigh & Co. Ltd.
IPSWICH.

Vale~1926—Continued

The various Neurodyne and other circuits using fixed coils are steadily increasing in number on the Australian market at prices that render them attractive to the purchaser. The Super-Hetrodyne is practically unknown outside the realm of the amateur, though the dealers say that an occasional demand by a client for the construction of an eight or ten-valve super shows that listeners-in are keeping well abreast of the times.

The number of controls on a set, too, has come under the simplifying influence. Gone, apparently, for ever, are the days when one had necessarily (for prideful purposes) to have two controls on each of his condensers, two more on the coil holder, and others on his rheostats, grid-leaks, and potentiometers. Gradually a simpler panel layout is growing. Rheostat controls are abolished by the use of amperites, or brachstats, or other of the cartridge type of filament controls. These devices are of excellent design, and do their work very well. In an ordinary broadcast receiver it is quite satisfactory to instal these resistances throughout, though many people like to have a variable control on their detector tube.

The old type of big wire-wound rheostat is also disappearing. Nowadays these are neater and very much smaller—and in many cases the wire resistance is so arranged that it is spaced on pillars from the body of the instrument to obviate undue heating effects. The carbon-block compression rheostats are still very popular and give very fine control.

Perhaps in the case of condensers do we find the greatest evolution. It is not so very long ago since we had to cut out our condenser plates from kerosene tins and buy our spacing washers haphazardly in the hope of getting a few of the required dimensions. Since then we have graduated through many schools. The present design of condenser is really a beautiful job. The English manufacturers have outstripped their American rivals in this branch of industry. Of course, nowadays all condensers, to have a ready sale, must be of the straight line frequency or S.L.F. type with their long eccentrically balanced brass plates, so designed to give an approximately even spacing of stations around the dial. Further, the low loss craze has not subsided, and designers are arranging their products accordingly.

Overseas publications show that the latest fashion is to have three or four condensers mounted tandem fashion on one shaft, and then to so mount the instrument on the panel as to have the shaft parallel thereto, with panel-windows cut to read the settings of the condensers. These have not yet reached Queensland except in completely manufactured receivers.

Tube sockets and the like have not shown any startling changes in design, nor is much alteration noticeable in such gear as phones or speakers, though the large cone type of speaker appears to be growing in popularity.

It is very pleasing to note the manner in which the Australian manufacturer is turning out gear to compete with the overseas products, and at least three of the big southern factories are capable of making anything from a complete set to anyone of its component parts. It looks, indeed, as if the radio manufacturing industry is at last established in Australia.

Make it a Radio Christmas

WHAT greater gift could there be to father, mother, wife, husband, brother or sister—than RADIO?

There's fun for the holidays—fun for all year. Fun for the fellow who gets the gift—and for the family, too.

In many a home for months the family has been "at" father to buy a radio set. In a great number of homes father has given way to the clamourings of his flock, and has appeased them by humping home a bulky parcel.

What was originally intended as a gift to the family has become dad's own pet hobby, and nobody else is allowed to go near it!

Without exception the introduction of radio into the home has brought with it happiness, contentment and amusement without end.

There are many other "fathers" who have waved aside the impatient demands and plaintive pleadings of their families with a superior, "Wait until Christmas—4QG will still be there, don't worry." Others, mindful of their children's studies, have put forward another argument. "You can worry me from now until doomsday, but we aren't going to get a radio until Christmas—when Johnnie finishes school."

They know the alluring fascination radio possesses and they are just a little afraid that the sweet sounds of the loud speaker may lure the young student away from his school books.

The time is now at hand. Father's Promissory Notes and I.O.U.'s are falling due and the family haven't forgotten—nor are they likely to forget. They anxiously await the arrival of Xmas Morn, so that they may see whether father has bought a crystal set or a super-het. Young Tom has planned which bough he will swing the aerial from, and mother has already asked over a few friends to listen-in on Christmas Day.

There are thousands of families that are going to be the happier and brighter this Xmastide through the gift of a radio receiver, and by the same token there are thousands of fathers who are themselves going to receive real joy from the giving of radio.

Every father owes it to his family to invest in some form of home entertainment. How can he expect his growing sons and daughters to stay in at evenings when there is nothing but after-tea chatter to listen to? Young life yearns for music, song, fun, dancing, and the places they sometimes go to seek such recreation is not always unquestionable.

Radio, besides being an entertainer and instructor, is also a scientific hobby, and a father who would wish to instil a love and appreciation for things scientific in the minds of his sons—and his daughters, too, for that matter—could not do better than surprise them on Xmas Morn with a worth-while radio set.

Maybe mother and children are planning to buy father a radio. Well, what could be finer? Radio is the greatest rejuvenator known. It makes boys of men—it allows them to forget the care and toil of the day and drown it in the music of the night. Yes, by all means, give father a radio set.

There is not a more unselfish Xmas gift than radio—it brings joy to not one, but many—it brings happiness for not one day, but for years.

Thus we say, make it a radio Christmas. You will never regret it, rather will you name Xmas, 1926, as the gladdest period of your life.

ARCADE Wireless Depot

BRISBANE ARCADE,
(Adelaide St. End.)

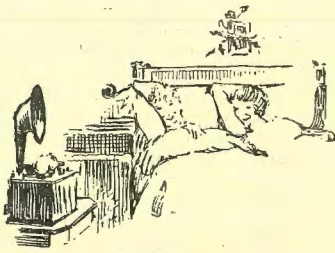
We stock the Famous Crossley Sets,
Fada Neutrodyne, Rico-Dyne.

Udisco Three and Five Valve Sets.
Demonstrations daily.

1 Valve Amplifier

1-Valve Amplifier to attach to Xtal
Set, £3/5/—beautiful tone and guaranteed loud speaker results.

Let us quote you for Repairs, Accessories, and Sets.



MICK SIMMONS, LTD.,

In wishing all a Hearty Xmas Greeting, extend a welcome invitation to visit their Big Store, where a fine range of Wireless Goods is exhibited, and where our Radio Expert will help and advise those wishing to choose their gifts.



*The Most Popular Gift this Season
will be RADIO*

What would the world be without Xmas, and what would Xmas be without Radio? There are many of those you love who would revel in a gift of Radio. Make them happy by choosing your gifts at Mick Simmons, Ltd.

A Truly Wonderful Set—
The SIMOLIAN
Two Valve Holiday Set

No aeriels, no trouble—light and compact. Just take it anywhere and listen in to all stations. Ask for demonstration.

£12/10/- Complete

Our Special
CRYSAL SET

Complete with Headphones and aerial equipment. Ready to listen in—we guarantee perfect reception.

32/6

**Repeater
Headphones**

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**Cutler-Hammer
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30 ohms
2/6 each

The
NEUTRODYNE
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For those wishing to construct their own Selective Receiver. This is a good Set.

25/-

**Diamond
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Buzzer Type
2/9 each.

We have full stocks of all Radio Requirements.

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Our Radio Expert is at your service with helpful advice for the betterment of wireless reception.

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An old saying, "the proof of the pudding is in the eating." That's why we want you to hear this speaker. Volume, Clarity, Perfection.

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**Special Low Loss
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With Vernier—all capacities.

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**3/20 Bare Copper
Aerial Wire**

2/9 per 100 feet.

**Best Porcelain Egg
Insulators**

1/6 per doz.



Mick Simmons Ltd.

QUEEN STREET, BRISBANE

opposite Town Hall



SHAVINGS

From an Amateur's Bench

NEW SETS.

When first trying out a new set, test the battery terminals with leads from your accumulator. The engraved terminals may have been changed round, and this test will obviate any chance of putting 80 or 90 volts across the valve filaments. No self-respecting valve would stand that!

IMPROMPTU SPEAKER.

Don't take your unwieldy loud speaker on your trips. Put a telephone receiver at the bottom of a washstand jug. If the signals are at all strong this plan is very successful.

SHORT WAVES.

The average P-one type of receiver using detector and a couple of stages of audio frequency amplification will, if carefully constructed, go down to a wavelength of 50 metres. Disconnect your ordinary aerial lead from the set and let it hang free. Then wrap a few turns of insulated wire—the gauge does not matter—around your aerial lead, and connect this insulated wire to the set. The turns made around the aerial lead act as a small coupling condenser. Try with coils of two and five turns in your coil holder. These coils may be made of any self-supporting wire, and should be about three to four inches in diameter.

HAVE A LOOK.

Before blaming your set for not working, see if your phones are in circuit. Mine weren't!

TEMPORARY AERIALS.

When you go off for your Xmas trip, don't lug an aerial with you. An ordinary bed mattress of the wire spring type is quite satisfactory, especially when used with the ordinary water-tap earth. A three-valve set in Brisbane has brought in Adelaide regularly in this manner, and New Zealand short-wave amateurs simply boom in.

SPRING CLEANING.

The best way to thoroughly clean your set is to use the old kitchen bellows with a long piece of cyclist's valve rubber attached to the spout. The air pressure will clean condenser plates and under valve sockets and so on when a rag can't reach. The next best thing is a long, soft-haired brush.

REACTION COILS.

Don't use too large a reaction coil just to see how loudly your set can squeal. Have a heart—your ears and your neighbours' ears, are delicate organs, and spare parts are at present unobtainable.

WIRING A HOUSE FOR LOUD SPEAKERS.

A neat method of arranging for the use of loud speakers in several rooms of a house, served from one receiving set, is by the use of those combined earthing switch and arrester, manufactured by the Edison Bell Company. It consists of an ebonite case fitted with a short circuiting jack and suitable terminals for wiring, and looks very neat on the wall. Several may be wired up in series throughout a house, and as they automatically short circuit themselves when the speaker plug is withdrawn, there is no undue drain on the battery of the set.

BATTERY CARE.

If you contemplate an extended holiday away from your set, don't leave your accumulator in a discharged condition. Charge it fully before you go, and then you will not have the anguish of finding badly sulphated plates on your return. See also that the level of the electrolyte is correct. Accumulators cost money.

WIRING A SET.

To wire up a set in the simplest manner start off with the filament leads. The negative lead usually runs right across the baseboard and serves valves, transformers, grid leak and aerial coil, and condenser. The filament positive lead may well run across the back of the panel to serve the rheostats. When these two leads are completely wired up there is very little left to do.

The
Home of Quality Radio

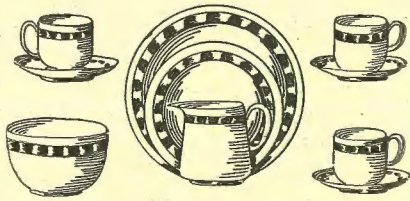
C.C.M. RADIO

Sole Agents for the "Operadio," "Fada," and "Erla" Radio Sets. Burgess Radio Batteries, Na-ald Sockets and Dials, Lucas Radio Batteries, Sterling Battery Meters, and a complete range of Radio Accessories.

We invite you to come and inspect—
RADIO DEPT., First Floor.

CANADA **CYCLE** **MOTOR**
AGENCY (Q'LAND) LIMITED.
Creek & Adelaide Sts.
BRISBANE

HIXCO—“Easy First” for Furniture



Gifts
for the Home from
“HIXCO”

“Something for the home” is an ideal gift—and that something may be any of a hundred notions. Explore “Hixco’s” China and Glassware Department, where the biggest range in the city is to be found.

Chinaware is displayed from the leading makers, including famous English houses—amongst them Royal Doulton in all their well-known decorations.

21-Piece Tea Sets, from **25/.**

Good English China Float Bowls, in new designs. **From 15/6.**

Gloria Lustre Fruit Dishes, from **2/6.**

A Wireless Section is now included at “Hixco,” where the best makes of Crystal and Valve Sets are obtainable. Inspection will repay you.

JOHN HICKS & COMPANY LTD
CORNER OF ANN ST
GEORGE ST. BRISBANE



“CYRIL”

4QG would not be complete without “Cyril.”

He has been with the station since the very early days, and what he knows about the Queensland Radio Service would fill a book.

Before even the temporary 4QG commenced operations “Cyril” became a member of the staff of the Queensland Radio Service, and during the hard days when the little station was under construction, when every member of the (then) small staff worked hours and hours each day, “Cyril” was in the thick of it all.

“Cyril,” who is a cadet engineer in the station, is not very old, but he has already had quite a lot of experience in broadcasting.

Much of the success of transmission from outside points belongs to “Cyril.” He knows just what lines the station owns, just where they terminate, and just what trouble or otherwise one may expect to strike on them.

In the station itself he is also a fund of information and knows just what to do, and when to do it.

The Hotel Carlton is his long suit. Up at 4QG they say he likes the Carlton Hotel because the chairs are comfortable.

The Director of 4QG swears by him. Says he doesn’t know what would happen to the station if he lost “Cyril.”

You can see him for yourself on this page.

It is only right to add, however, that the cartoonist hasn’t made a real good job of his legs.

Your "A" and "B" Battery Supply from the House Main

(By H. and C. Stephenson.)

Many readers of this paper have at some time or other read articles describing how both high tension and low tension power for the receiving set can be drawn from the 240-volt alternating current mains. Although many articles have been written on this subject the writer has only heard of two or three cases in this city where it is being used and is giving satisfactory service.

It is not because these eliminators are not satisfactory that they are not commonly used, but because very few enthusiasts have attempted to instal them.

Readers are assured that for no great expense, and a little spare time during their holidays, they can construct either or both of the battery eliminators about to be described.

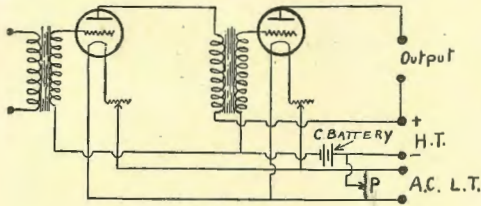


Fig 1

THE A BATTERY ELIMINATOR.

First of all it may be stated that this supply may only be applied to the filaments of the audio frequency amplifying valves. Yet this is a great advantage if one is using power valves which consume a large amount of current. Fig. 1 is a diagram of a suitable two-valve amplifier circuit, using alternating current on the filaments of both valves.

It will be noticed that the negative side of the high tension supply, also the terminal marked filament negative on each audio transformer, are connected to the centre tap of the potentiometer (P), the resistance of which should be about 400 ohms.

The grid bias or C battery is very important, as it is by having a correct negative bias on the grids of the amplifying valves that the 60-cycle hum heard in the headphones or loud speaker, is reduced to a minimum. The voltage of this C battery should be about 4½.

For stepping the 240 volts down to 6 volts for the filaments of the valves, a small bell-ringing transformer should be used, which can be purchased at any of the various electrical firms. Another way of obtaining this filament voltage is described later on in this article on the construction of a B battery eliminator.

Operation of the completed amplifier is very simple. It may be connected to your crystal or single valve set with good results. With the potentiometer hard over to either side, a very loud hum will

be heard in the headphones, but by adjusting the potentiometer the hum will be reduced to a minimum.

THE B BATTERY ELIMINATOR.

We will now describe the construction of an efficient B battery eliminator, by means of which readers should be able to forget all their past faulty B battery troubles. First of all a transformer is required, which is suitable for stepping 240 volts down to about 100 volts. As such a transformer possibly cannot be bought it will be necessary to build one.

The following are the necessary particulars for the construction of such a transformer.—The coils should be wound on the former shown in fig. 2, which is a tapered block of wood with two end pieces. A ¼in. bolt is passed through the centre, around which it must be free to rotate. Before commencing the winding it is advisable to place four pieces of insulating tape across the former near the corners. These will serve to hold the windings together when removed from the former. So as to make a good job the coils should then be impregnated in paraffin wax and neatly taped with a good insulating tape.

The primary winding consists of 1200 turns of No. 24 gauge D.C.C. wire, and the secondary 500 turns of 24 gauge D.C.C. wire.

If it is desired to also supply the filaments of the amplifier valves off this transformer, a separate winding will have to be wound, consisting of 30 turns of 20-gauge D.C.C. wire which, when wound, should be no more than three-quarters of an inch wide. This winding will be placed alongside the 100-volt or secondary winding on the core.

The core should be made of the best transformer iron if possible, but if this is not obtainable a benzine or kerosene tin, when annealed, is very efficient. The core has a cross section of 1½in. square, and is built up to form a 6-inch square, from laminations 4½in. long by 1½in. wide. Assemble two legs of the transformer core with laminations projecting 1½in. alternately to the right and left; this will allow the last limb to be interleaved later on. So as to reduce eddy current losses to a minimum, each lamination as the core is being assembled, should be given a coating of varnish.

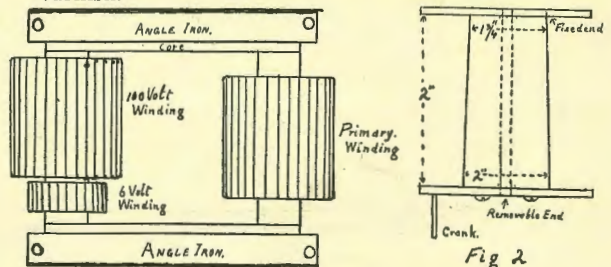


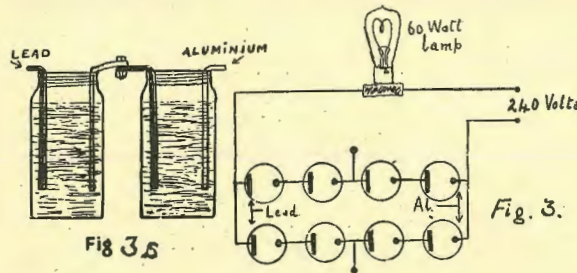
Fig 2A

Fig. 2 gives some idea of the appearance of the finished transformer.

The construction of the rectifier is very simple, the following articles being required:—

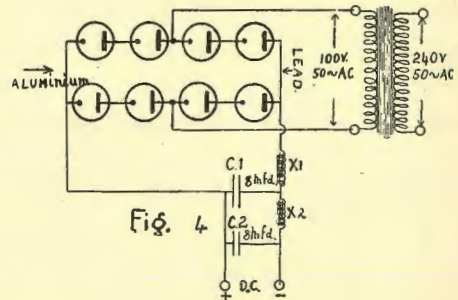
- Eight jam or peanut-butter jars,
- A piece of lead about 10in. square.
- A piece of pure aluminium about 8in. square by 1-16in. thick.
- And ½lb. of borax.

The aluminium plates should be about ¼in. wide by about 6in. long, and the lead plates about ½in. wide by 6in. long. Each jar has inserted in it a lead and an aluminium plate as shown in fig. 3A, the lead plate being connected to the aluminium plate of the next jar in each case.



Great care should be taken to see that the aluminium plates are perfectly clean; in fact they should be thoroughly cleaned with emery paper before inserting in the jars. Arrange the jars as shown in

fig. 3, and fill each with distilled water, then add borax until the water will dissolve no more. The rectifier is now ready for forming, which process is performed by connecting up the jars to the 240-volt mains, as shown in fig. 3, care being taken not to earth either side of the mains or touch them yourself. The rectifier should be left like this with the current switched on for about four hours, or until the brilliancy of the lamp in the circuit is at a minimum.



In fig. 4 is shown the connection of the completed B battery eliminator. So that the resultant direct current supply shall be perfectly smooth the choke coils marked (X1) and (X2) and the condensers (C1) and (C2) are inserted. The choke coils may be the secondaries of audio transformers. The choke (X1) need not be included if it is found that the supply is smooth enough without it.



DIAMOND DRY CELLS



“Diamond Batteries Make Good Sets Better”

Diamond Radio Batteries are powerful, silent, and outlast any other make of Dry Cell. More than a million are manufactured in Australia annually. Every cell is guaranteed, and should a fault be found in any Diamond Dry Cell it will immediately be replaced. Remember a Radio Set is no better than its battery, therefore it is most essential to choose a battery that will give long and honest service. Such are Diamond Dry Cells.

RETAIL PRICE LIST

A—	Battery “Coil”						
	1.5 Vt. “Coil”	..	2/9				
	1.5 ” “Buzzer	..	3/-				
	1.5 ” “C”wealth-	..	5/9				
	1.5 ” “AVER”	..	5/6				
B—	60 Vt. Large Type	..	27/0				
	10½ x 7	..	22/6				
	45 ” Large Type	..	22/6				
	10½ x 7	..	13/6				
	4.5 Vt. “Bison”	..	13/6				
	4.5 ” Large	..	16/6				
C—	6.0 ” Ignite	..	16/6				



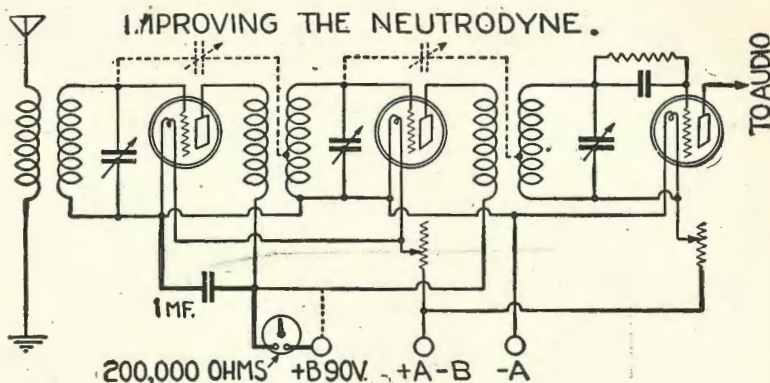
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Improving the Neutrodyne



REMOVE WIRES INDICATED BY DOTTED LINES, ADD WIRING INDICATED BY HEAVY LINES.

In an effort to obtain clear reception and prevent oscillation in the radio frequency amplifier, designers of the neutrodyne have balanced this receiver with small neutralising capacities, using one condenser for each tube in the radio frequency circuit, but frequently, particularly with home built receivers, neutrodynes are found that are by no means as efficient as they could be made. The trouble can usually be traced to excessive oscillation at the shorter wavelengths, and when correcting this it is advisable to consider the cause and effect of oscillation in the set.

Any circuit including a coil and a condenser is capable of electrically oscillating, provided its resistance is low enough. One of the chief purposes of the vacuum tube is to compensate for resistance losses in oscillating circuits. It supplies energy from the "B" battery at the proper frequency and phase to make the circuit sensitive. If the energy supplied by the tube more than compensates for the resistance loss, however, the circuit will generate sustained oscillation, and will not clearly reproduce radio broadcasting when in that condition.

It is evident from this that the circuits of a radio receiver must be adjusted up to oscillation to insure efficient reception, but some controlling factor must be provided or the tubes supply too much energy and get up continuous oscillation, or the regenerative whistles familiar to all radio fans. The neutrodyne controls this factor with a counter electromotive force introduced by means of the neutralising condensers. Unfortunately, the adjustment for a wave-length of, say 500 metres, is not suitable for a wave-length of 300 metres, and vice-versa, since radio receivers tend to oscillate more at the shorter wave-lengths, and if oscillation at the short wave-lengths is balanced out there is such a lack of sensitivity at the longer wave-lengths that many stations cannot be heard at all.

Distance fans will welcome a scheme whereby in exchange for an occasional squeal or two, volume on distant stations will be increased and the range of their neutrodyne extended several hundred miles. This is possible by making use of a non-critical oscillation control that can be adjusted from the panel, and with this adjustment the radio frequency circuits can be maintained in their most sensitive condition at all wave-lengths.

From the accompanying diagram it will be seen that very few changes need be made in the standard

neutrodyne. The two neutralising condensers, which are connected from the grids of the two radio frequency amplifier tubes to the secondaries of the succeeding radio frequency transformers, may be re-neutralised, or still better, entirely removed from the circuit.

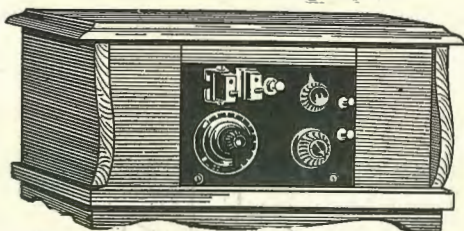
To control oscillations a non-inductive variable high resistance is introduced in series with the positive "B" battery leads running to the primaries of the radio frequency transformers. It is important to use a resistance of proper value and taper and the 200,000 ohm non-inductive type made by the Central Radio Laboratories is suggested.

An important feature in changing the circuit is to connect a by-pass condenser of approximately 1 mfd. exactly as shown in the diagram bridged from plate to filament circuit. Most neutrodynes already have a condenser that can be connected in this position; it must be added to the others. This provides a direct path for the radio frequency currents, which otherwise would encounter resistance in the control and "B" batteries. It is obvious, therefore, that the radio frequency circuits will be free to oscillate without added resistance, insuring greatest selectivity and sensitivity. Oscillation can be exactly controlled, however, by varying the resistance knob, which in turn varies the pressure of the "B" battery current passing to the radio frequency amplifier tubes.

Care should be taken to use the resistance control in such a way as to keep the set at the point of maximum sensitivity. If the circuit does not oscillate enough to make this possible, turns should be added to the primaries of the radio frequency transformer coils, adding one turn at a time until the desired results are attained.

The modified receiver will use less "B" battery current than before, particularly at the shorter wave lengths, and the "B" batteries, therefore, will last much longer. By far the greatest advantage however, is the fact that the receiver is rendered more sensitive and selective on the short waves where congestion exists, as tuning will be sharper in the associated circuits. Undesired signals are more readily excluded. The variable resistance, furthermore, provides an excellent volume control, and since oscillation can be adjusted so smoothly and accurately, there will be a noticeable improvement in the tone quality.

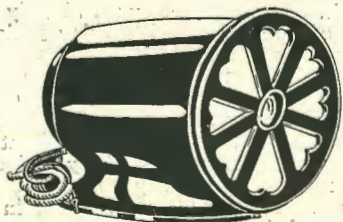
If His Hobby is Radio see
CHANDLER'S
Wireless Christmas Ideas



"DUODEX" Receivers

Beautifully clear reception with splendid tone and volume on 4QG are possible with "DUODEX" Receivers. Southern stations can also be brought in; operate from 200 to 2000 metre wave-lengths. Complete with Valves, Coils, Aerial Equipment and Loud Speaker.

2-Valve "Duodex," Price £12/10/
 3-Valve "Duodex," Price £17/10/



Freshman Master Speaker

A Triple Reflex Speaker with powerful unit—only 6 inches high, with volume equivalent to a 24-inch horn. No adjustment of diaphragm needed. Covered with brown leatherette. 5ft. cord.
 Price £3/7/6.

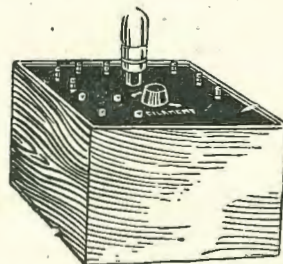
"Gloriola" Crystal Sets

"Gloriola" Crystal Sets De Luxe, complete with phones and aerial equipment.

Price £3/5/.

"Gloriola" Single Slider Crystal Set, complete with phones, aerial wire, etc.—very simple to operate; highly efficient.

Only 32/6.



"GLORIOLA" 1-Valve Amplifier, complete with Batteries and Valve. Price . . . £4/10/.

"GLORIOLA" 2-Valve Amplifier, complete with Batteries and Valves. Price £7.

"MANHATTAN" Junior Red Seal Loud Speaker, with adjustable diaphragm—upright horn which eliminates all metallic sounds. Splendid value. 5ft. cord. Price 32/6.

J. B. CHANDLER & CO.

"For Radio Service"

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(Next to Allan & Stark's)

S.A.S.

Order from **CHANDLER'S** Same Day Country Order Service



Send your orders to us, and goods will be posted or railed on the same day as the order is received. Special attention given.



Kleartone "B" Batteries incorporate a new idea in "B" Battery construction which insures longer life, greater power, and utmost reliability. They are the most economical "B" Batteries obtainable.

Kleartone Twin Dry Cells

Twin Dry Cell, 1½ volts, large capacity, can be used in place of two cells—specially suitable for dull emitter valves. **Price** 6/3.

Kleartone "B" Batteries

Horizontal, 22½ volts, tapped, containing 15 cells. **Price** 12/6.
Horizontal, 45 volts, tapped, 30 large size cells. **Price** 25/.

Vertical, 45 volts, tapped, 30 large size cells. **Price** 25/.

The "TURNLIGHT" Electric Torch No. 1, sketched above—cannot switch on in the pocket. **Price** 2/6.
Refills, each 1/3.

POCKET TORCHES

- No. 816 Hand Lamp, nickel plated, **Complete** 5/6.
- No. 814 Hand Lamp, black enamel, **Complete** 4/9.
- No. 905 Fancy Case, large lens, **Complete** 6/.
- No. 1635 Nickel Plated, large lens, **Complete** 4/3.
- No. 322 Nickel and Black Stripe, oval lens, **Complete** 4/3.
- No. 904 Black Enamel, small lens, **Complete** 4/.
- No. 171 Black Enamel, large lens, **Complete** 4/3.
- No. 171 Fancy Case, large lens, **Complete** 4/3.
- "The SCOUT," ideal for boys—3 lenses, White, Red, Green, **Price** 4/6.
- "The DUCHESS" Ladies' Torch, in brown leatherette. **Price** .. 3/9.
- "ANDY," 6-inch nickel case, round, **Price** 3/6.
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J.B.CHANDLER & CO.

"For Radio Service"

45 ADELAIDE STREET, BRISBANE

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S.A.S

A Merry Christmas A Happy New Year

May the anxieties of those who have suffered in 1926 owing to the drought, be relieved. We sincerely hope that the New Year will open with bounteous rains, and the labours of all during 1927 will be adequately rewarded.

A Gift

at this season should be one that carries with goodwill and pleasure to the recipient. What better, then, can you select than a radio set or parts? Remember, the recipient will think of such a gift for months and perhaps years.

Loud Speakers

- Spitfire 30/
- Brown H.4 40/
- Brown H.3 82/6
- Brandes 45/
- Sterling Dinkie .. 37/
- Amplion A.R.38 . 60/
- Amplion A.R.111 70/
- Amplion A.R.114 75/
- Amplion A.R.19.130/
- Primax 135/

Crystal Sets

Complete with one set of headphones and aerial equipment.

Single Slide type, 30/
Bebe Variometer 45/
Dulcephone De Luxe type, 75/.

The Dulcephone Set merits special inspection

Head-Phones

- Scientific 3000 ohm 13/9
- Murdock 3000 ohm 15/
- Dulcephone 8000 ohm 17/6.
- Ericsson 4000 ohm 20/
- Trim m Dependable 2400 ohm 22/6.
- Brandes Matched-tone 30/.

Dulcephone Receiving Sets

Complete with All Accessories

- 1 Valve Set • £7/10/-
- 2 Valve Set • £12/7/6
- 3 Valve Set • £17/10/-



- 4 Valve Set • £24/0/-
- 5 Valve Set • £55/-/-
Complete with Primax or A.R.19 Speaker
- 6 Valve Set • £60/-/-
Complete with Primax or A.R.19 Speaker

We wish to convey to our many clients our sincere appreciation for their patronage during 1926, and we anticipate with assurance that the year 1927 will eclipse previous years.

1927 Calendars

We are forwarding free to all our country customers a calendar containing an inset of a beautiful maiden listening-in to a Super-Heterodyne Receiver with cone loud speaker. During December, one of these Calendars (while they last) will be given away free with all purchases exceeding 10/.

Extravagant Claims

38 stations on a 3-Valve "Dulcephone" Set. Loud-speaker heard from 3 to 9 miles, operating on a 6-Valve "Dulcephone" Set. KGO working on loud speaker from 4-Valve "Dulcephone." In spite of these definite statements from satisfied owners we will NOT give any guarantee of reception beyond Australian shores.

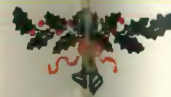
"Dulcephone" Receiving Sets

Remember, the "Dulcephone" Receiving Sets are constructed by Australian engineers, who have incorporated in them the latest developments in radio. Many imported sets, on the other hand, have been dumped here because they are obsolete or unsaleable overseas.

Wireless House Ltd.

City Buildings, Edward St.
BRISBANE

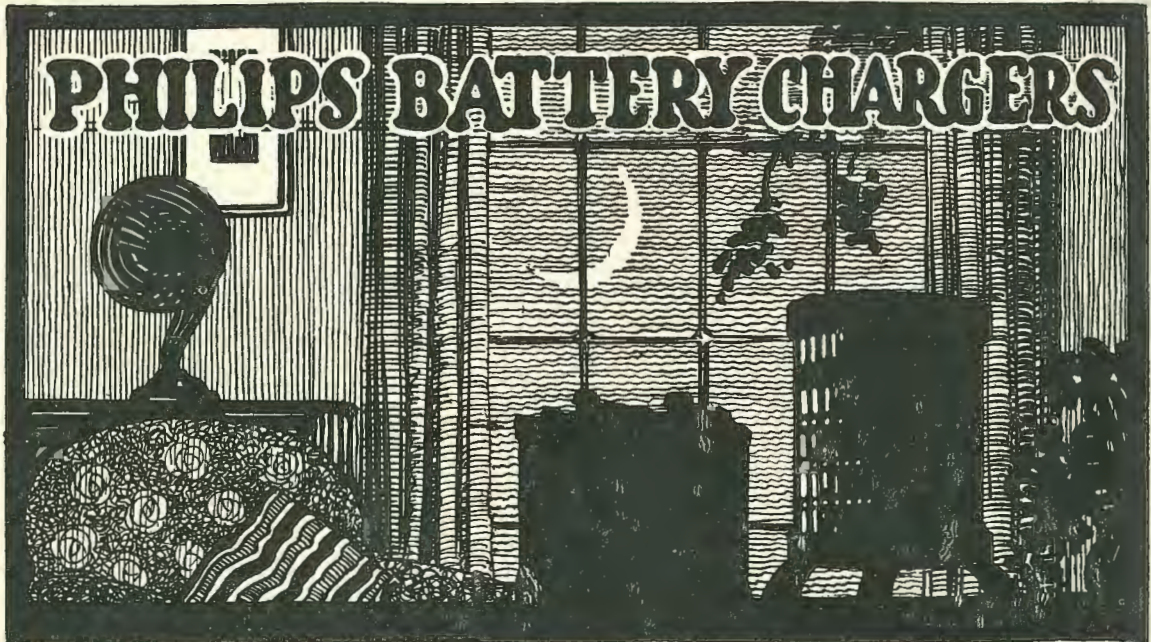
"Queensland's
Radio



Pioneer
House"

Wireless House Ltd.

City Buildings, Edward St.
BRISBANE



Charge while you sleep

The Philips Charger is an investment, not an expense, and will return untold dividends of Complete Satisfaction.

Day and night you can rely upon it to keep your "A" Batteries fully charged.

It is absolutely noiseless in use.

No more spoilt programs.

No more visits to the Charging Station.

So safe and easy to connect that a child can use it.

End your "A" Battery troubles by installing a Philips Charger.

Ask Your Dealer to Demonstrate it To-day.

Packed Complete with Rectifying Valve, Resistance Lamp, 2½ yards Flex, Plug, &c.

PRICED EVERYWHERE AT £6 EACH.



4QG's Christmas Arrangements

Listeners are assured of an excellent series of entertainments from Station 4QG during the Christmas period.

CHRISTMAS EVE.

On Christmas Eve (December 24th) a first-class entertainment will be provided for the kiddies between half-past six and seven o'clock. The whole of the bedtime story-tellers will participate in it, and special music will be provided by the Studio Orchestra, under the conductorship of Mr. Alf. Featherstone.

The night programme will be divided into 3 parts. During the first part a fine studio Christmas programme will be given. This will be followed by a short period of dance music. Then from half-past ten until mid-night the Federal Band and the Lyric Glee Party will participate in a Christmas recital.

CHRISTMAS DAY.

On Christmas Day there will be special transmissions.

On Christmas Morning the complete service from St. Stephens Roman Catholic Cathedral will be relayed.

There will be no transmission on Christmas afternoon, this course having been adopted so as to enable the staff to have a short period at home on Christmas Day. Every listener will doubtless appreciate this action and will be content to have no broadcasting during the afternoon.

On Christmas Night special attractions will be provided by the station. The kiddies bedtime story

session will commence at six o'clock and will last until seven o'clock. It will be relayed from the Kirra Surf Shed at Coolangatta. The bedtime story staff will visit Coolangatta and will provide the entertainment in the surf shed. Country listeners will be able to hear the surf beating on the shore.

After the bedtime stories the complete evening service will be relayed from the St. Johns Anglican Cathedral Brisbane. At the conclusion of the service the station will again switch over to Coolangatta and a special evening concert provided by the Kirra Surf Club will be relayed.

CHRISTMAS SUNDAY

On Sunday the morning service from St. Johns Anglican Cathedral will be relayed.

There will be no band concert in the afternoon but in its place the dedication and opening of the new Roman Catholic Church at Coolangatta will be relayed.

At night the evening service from St. Augustine's R.C. Church at Coolangatta will be relayed and then then the station will switch back to Brisbane, and the concert by the Greater Brisbane Municipal Concert Band will be broadcast.

NEW YEAR'S EVE ARRANGEMENTS

Some special New Year arrangements have already been also made. An exceptionally fine Scotch entertainment lasting from 8-p.m. until midnight will be relayed from the home of Mr. W. Donald, West, End, Brisbane.



Your Christmas Gifts

will be particularly appreciated if selected from

Harrington's

large and varied stock of Radio Sets and Accessories

Our Radio Department is replete with all the latest parts, and our experts advice is always at your service. Each of the following is wonderfully good value, and would make a particularly fine Christmas Gift.

3-VALVE SET, complete with all accessories **£27/10/.**
(Including Loud Speaker and Aerial Equipment.)

Terms—£5 down, balance 12 months

Trimms Headphones **:2/6 pair.**
Thorola Loud Speaker **£4/10/.**
Variometer Crystal Sets, complete with Headphones and aerial equipment), **£3/3/.**

Harringtons LTD

Radio and Photographic Warehouse,
93-95 QUEEN STREET, BRISBANE.
Branches in all States and N.Z.
Representatives Everywhere.

Announcement from
WIRELESS CENTRE

AFTER months of experimental research work, Wireless Centre (which has opened in Adelaide Street, opp. Normal School) takes pleasure in announcing that they have evolved a new type of receiver which will be known as "The Elliott 3," the performance of which is nothing short of amazing.

This receiver is the special design of Mr. Thomas Elliott, a well-known figure in radio circles, and is built under his supervision. Mr. Elliott has incorporated some wonderful qualities in this new receiver, which must be heard to be appreciated.



The ELLIOTT 3

All southern stations guaranteed at loud speaker strength.

4QG cut out within a 3-mile radius.

Well made and highly polished Cabinet; inside measurements, 18 x 9 x 6; ebony and mahogany finish optional.

The best parts, including Sure Contact sockets, Radiotron valves.

etc. All parts absolutely standardised.

All terminals arranged on back of back of cabinet, obviating unsightly leads.

"Service after Sale" is our big point. We guarantee you complete satisfaction.

Price with ALL
 Accesories.

£19-19-0

No Extras to
 Buy.

Call and hear it or write for further particulars.

WIRELESS CENTRE

(Under the Direction of Mr. Thomas Elliott)

ADELAIDE STREET, BRISBANE

A Distortionless Audio Frequency Amplifier

(By J. P. Love.)

There is no doubt that the popularity of radio broadcast reception depends to a great extent upon the use of loud speakers for the reproduction of the items received.

Many of the complaints hurled at poor old 40G are to the effect that "the modulation is bad" and "the music harsh." If these persons were only to pay a little more attention to their own apparatus they would probably find that after all they themselves, or rather, their sets, have been at fault all along.

The most commonly used amplifier consists of the ordinary two-stage transformer coupled type which operates at audio frequency. Most amateurs, in constructing an amplifier, employ the above system on account of its simplicity, and are quite satisfied as long as it makes a noise.

Now, it is almost impossible to make a two-stage transformer coupled audio amplifier which will give the maximum degree of amplification of the received signal and still retain the best quality of reproduction. Even suppose we could design a special transformer to operate in conjunction with a specified valve to give an equal degree of amplification from 200 to 4000 cycles with one stage reception would be almost perfect. Yet when two such stages are coupled together the speech and music become blurred; there is a harshness about certain notes and items which were previously pleasing now become positively painful to listen to.

In most cases the owner of the set, after desperately trying various remedies, becomes convinced that it is impossible to obtain a large volume of sound without distortion, or if he has previously used telephones only he is usually most emphatic in his assertions that really good reception is impossible with a loud speaker. As a matter of fact neither of these conclusions are justified, and there is no reason why a set should not be made capable of filling a large hall without noticeable distortion.

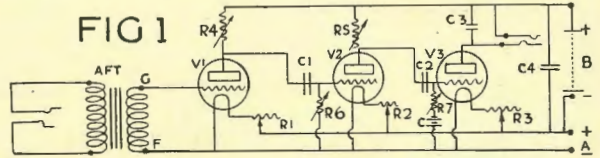
In this article it is intended to describe a resistance-capacity coupled audio frequency amplifier which will handsomely repay any time spent on the job with dividends of pure, distortionless music.

This amplifier will operate perfectly with a crystal set as the detector, and in the case of the amateur who already has a two-valve set employing one stage of audio it may be adapted by omitting the audio frequency transformer AFT of the amplifier unit, as shown in the diagram.

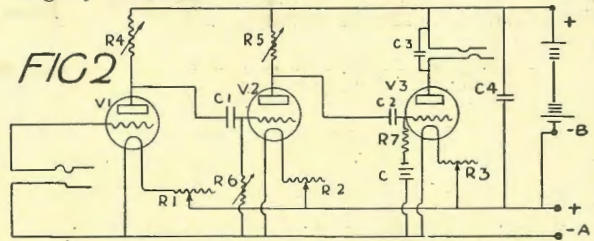
Before one can hope to obtain the best results it is necessary to employ a good-quality loud speaker. Most of the better loud speakers now on the market will be found to be quite satisfactory. Also it is essential that there be no distortion in the detector circuit, as this would be amplified and thus defeat the true purpose for which the amplifier was intended. Any distortion here may be avoided by the use of a crystal detector or, in the case of a valve set, by working the set away from oscillation point. a

COMPONENTS.

Referring to the circuit diagram it will be seen that R1, R2, R3 represent the rheostats which should be chosen to suit the valves it is intended to use.



The audio frequency transformer shown may be of any good make, and preferably of a 3½ to 1 ratio. And distortion in this one stage of transformer coupled audio may be considered as negligible, and this arrangement will be found to give greater volume. If desired this transformer may be omitted entirely, but it should be replaced by a resistance capacity coupling as in Fig. 2. This arrangement will not give quite the same volume, but will probably be slightly clearer.



The anode resistances R4 and R5 should have an ohmic resistance equal to about four times the impedance of the valve.

The UX 201A, which is recommended for use in this amplifier, has an impedance of 12000 ohms; the anode resistance should therefore be approx. 48000 ohms. It is preferable to employ two good variable resistance (such as a Bradleyohm) in this part of the circuit so that they may be adjusted for best operation. However, the Dubilier cartridge type of resistance will be found quite satisfactory.

The grid coupling condensers C1/C2 should have a capacity of .01 or .1 mfd. Condensers of this capacity such as were used in the old type of P.M.G. telephone are quite suitable.

The grid leaks R6 & R7 should preferably be variable or have a resistance of between .25 and .75 megohms. In series with R7 between the grid and filament of V3 a grid bias battery is connected with its negative terminal to the leak and its positive terminal to the negative filament lead. The value of this grid bias is best determined by experiment but it will usually be found that between 6 and 9 volts is the correct potential.

The recommended valve for this amplifier is the U.X. 201A but any other valve which functions well as an amplifier may be used. Of the dull emitter type the Cossor W.3. is probably the best suited for the job and will be found to give excellent results. If it is

desired to use any make of valve other than those specified it is important that the anode resistance R4 R5 should be in its correct relation to the impedance of the valve used, namely four times the impedance of the valve. This does not matter in the case of the Bradleyohms as they may be altered to suit

It is important to have a 2MF Condenser shunted across the B Battery.

A list of the articles required may now be enumerated as follows:—

- 2 S.C. jacks.
- 4 UX 201A tubes.
- 4 UX sockets.
- 3 Rheostats.
- 1 Audio transformer, 3½ to 1.
- 2 (Preferably) variable grid leaks.
- 2 .01 mfd. fixed condensers.
- 1 .2 mfd. fixed condensers.
- 1 .001 mfd. fixed condenser.
- 2 45V. grid bias batteries.
- 2 Bradleyohms (or failing this 2 Dubilier cartridge type anode resistances with clips to suit valve).
- Panel, 9 x 12 x 3-16ths.
- Baseboard, 8 x 12 x 1.

CONSTRUCTION

As there are now so many makes of radio material on the market, some of which may be favoured by the intending builder, it would, perhaps, be better to give the general panel and baseboard dimensions with instructions for the layout, rather than give exact measurements, which may not suit the material that the amateur may have to hand or decide to purchase.

If UX 201A valves are used in conjunction with Bradleyohms as the variable anode resistances, the panel size is 9 x 12 x 3-16ths, and the baseboard 8 x 12 x lin. thick. The above dimensions are for use with the material specified, but should the amateur decide to use different material, smaller valves for instance, the panel size may be obtained as follows: Purchase all the components with the exception of the panel. Arrange these on a piece of cardboard, and so decide on the size of the panel required.

LAYOUT.

The most satisfactory and apparently the least used method of laying out a panel is to obtain a sheet of white paper and paste it over the front surface of the panel. When dry it should be marked off into inch squares with pencil and rule.

By using this method it will be found very easy to determine the position of any part of apparatus without the trouble of using a rule and square. It also has the advantage of protecting the surface of the panel from scratches.

When the positions of the parts have been determined, the holes to be drilled should be marked with a centre punch and drilled out to the size required. The paper may be washed off the panel after all the holes have been drilled.

The panel should be screwed to the front edge of the baseboard, the holes for the screws being drilled one half inch from the panel edge, and the panel components mounted.

The components of the baseboard should be arranged in such a way as to give the shortest leads without grouping the parts too close together.

WIRING.

In wiring the amplifier a type of wire which is already insulated should be used, as this saves a lot of time. Just cut the wire to the correct length, bend it into shape, and solder it into place.

Carefully study the diagram in Fig. 1. Consider which would be the shortest way to run each wire, and do the least accessible wiring first.

The terminals should be arranged on a piece of bakelite or 3-ply at the right-hand end of the base-board.

It is important that C4 (capacity 2 mfd.) be connected across the B battery. Condenser C3 (across the phones) may be omitted if desired, but better results will be obtained with it.


OPERATION.

Check over all connections carefully, and then plug in the detector circuit to the primary of the transformer.

Turn on the rheostats, and with the anode resistances adjust until the best clarity is obtained. If a ticking noise should occur it may be eliminated by adjustment of the grid leak. When the correct values of grid and anode resistances have been found they may be left in that position. The C battery should be adjusted for best results.

B BATTERY VOLTAGE.

Owing to the fact that there is a high resistance in the anode lead of the valve it will be necessary to use a higher B battery voltage to overcome the drop of voltage across the resistance. It will be found that an anode voltage of from 120 to 150 volts will be satisfactory.



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A British Battery from the well known and the earliest established electrical equipment manufacturers in the British Empire.

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60 Volt	£5 5 0
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C.A.V. Battery Service Station

(Barnes Auto Co.)

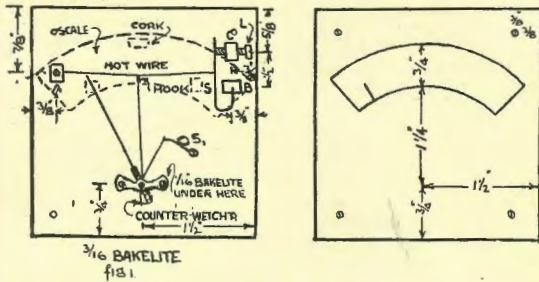
Corner North Quay and Queen Street.

A Simple Hot Wire Ammeter

By V. F. Kenna.

Whenever a "Ham" commences to experiment with alternating current, he at once realises that his D.C. measuring instruments, if of the moving coil type, are useless on A.C. A.C. instruments must differ from those of the D.C. type, in this respect—they must not be affected by a reversal of current. Perhaps the simplest type of A.C. instrument is the old "Hot Wire" job, which depends on the expansion of a wire, due to the heating effect produced when a current flows through it. This type of instrument also possesses, another advantage is that its readings are uneffected by the frequency of the A.C., and it may be therefore used to measure the current (not "radiation") in the aerial circuit of a transmitter.

As may be seen from the accompanying sketches the construction of such an instrument is fairly simple.



Don't be alarmed because a few threads are to be cut, simply use the correct size of drill, and then carefully screw in the tap, holding it in a tap-holder or something similar, and using a twisting motion. A 9BA and 6BA tap will be required, both "second cut." These cost about 1/6 each.

For a start cut a piece of 3-16ths bakelite to the size shown and drill it, countersinking holes at A, B, C. This is for the base. Now get some odd pieces of brass and cut the three small brass blocks A, B, C, filing them up nice and square, to the dimensions shown in Fig. 2. These should have holes drilled upwards from their lower sides, and should be tapped 6BA to take the countersunk 6BA screws, which secure them to the base.

The saw-cut in B can be made with a fret-saw and must be wide enough to take S, which is a thin brass or german-silver spring. Lightly "tin" the end of S with a hot soldering iron. Now put a little flux in the saw-cut in B, which is then heated until the tinned end of S, which must be also heated in the flame, may be pressed into position as shown in Fig. 1. Don't heat S too much, or it may lose its springiness. On allowing the business to cool, a good, solid job should result.

Now for the pivot. In the original this was taken from an old "Boyproof" watch. The surplus brass should be cut away, care being taken to leave the two distance-pieces which separate the two plates. The balance wheel, with its two spokes, is used as the "movement." The rim is cut away as it is not required.

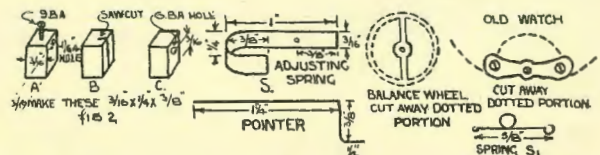
Our pointer consists of a very light piece of aluminium wire, although, if this is unobtainable, a piece of No. 30 copper wire may be used. Make it 1 1/2 in. long and flatten the end to make it more easily seen. Now bind the pointer on one spoke of the balance wheel and on the other, fix the counter-weight, which is made of several turns of heavy copper wire, and must exactly balance the needle. The pivot, together with the pointer, etc., may be now screwed down to the base, a piece of bakelite being placed under it to raise it as shown. The little brass blocks, A, B, C, may be now screwed down on the base in their final positions.

The hot-wire itself consists of a piece of bare No. 47 German-silver, or Eureka wire. Fasten one end of the wire to S with a tiny drop of solder, having passed the wire through the small hole in S. Now tighten up adjusting screw L, which is an ordinary 6BA by 3/8 in. screw, until it just touches S. Now give it four more turns and thread the wire through the hole in A, pulling it tight and clamping it with the clamping screw. Now for a ticklish job. Take a piece of very fine silk and make a very small S shaped hook of 38 copper wire, which is fastened to one end of the silk. Hook this to the centre of the hot-wire, and pass the silk twice around the spindle which carries the pointer, bringing the silk down the right-hand side of the spindle and up to the left, around spindle again, and finally terminating on the spring S1. This may be made of fine steel wire, such as guitar string or fishing-trace, and must be very weak. It must be tight enough however, to bring the pointer right across the scale.

The scale is made of thin white card, and is glued to the cork supports which are, in turn, glued to the base. Now cut out the front of the instrument. This is 1-8th inch bakelite, and the "window" may be cut out with a fret-saw, the edges being finally rounded off with glass-paper and a fine file.

This front is secured to the base by four long screws, which pass through four pieces of brass tube, which serve to keep the front at the proper distance from the back. No mention has been made of terminals, as their position is perhaps best decided by the constructor. Care should, however, be taken to take the leads off A and B.

The instrument may now be calibrated, if desired, and this may be quite well done on D.C., its deflection being compared with that of another ammeter placed in series with it. Care should be taken not to allow more than about .75 amp. to flow through the hot-wire, or it may be burnt out.



Let

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Protect Your Radio Set

Fire Insurance Companies require that an Automatic Lightning Arrester be fitted to every aerial line to protect your home and wireless set from lightning.

The SIEMENS Vacuum Arrester

The Siemens Vacuum Arrester is specially suitable for use in tropical climates, being contained in a hermetically sealed vacuum chamber, and thus, besides being highly sensitive, is also dust, damp and insect proof.

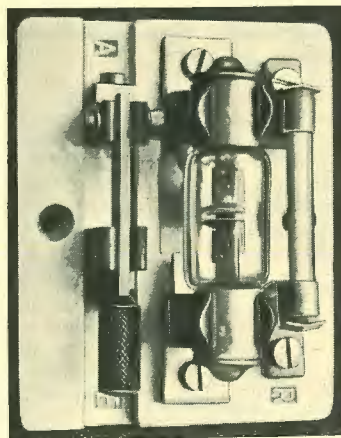
It also possesses the advantage that it will operate many times before renewal is necessary.

As illustrated, fitted with Earthing Switch and Fuse. **Price 12/6 each, complete.**

Also stocked without Earthing Switch and Fuse. **Price, 8/ each, complete.**

SIEMENS QUALITY HEADPHONES.

Siemens "Quality" Headphones, 4000 ohms, made by telephone experts and approved by the British Postmaster-General, have been specially designed for wireless work, and they are subjected to the most careful tests and examination before despatch from the company's works. **Price 25/ per pair.** For purity of tone they are unexcelled.



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DON'T Toy with Lightning!

An Ill-Designed Aerial is a Menace to Your Set and Your Property

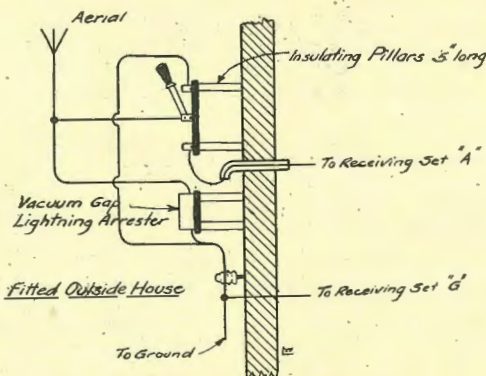
WITH the arrival of summer and seasonal thunderstorms, many radio beginners who bought their sets during the fine crisp winter months and found they could receive music on the crudest of aerials, are now feeling not a little uneasy when they see a vivid flash of lightning run along the sky, or hear a strange "rat-tat-tat" on the front door. Their sins of omission causes them to shake and shiver throughout a thunderstorm, or to dread the visit of the electrical inspector or fine insurance people. Absolute safety and peace of mind can be secured at small expense of time and money, and it is worth whatever it costs.

Although wireless aerials are seldom struck by lightning, it does happen, and it is so serious when it occurs that the mere possibility justifies the expenditure of a few shillings for protection. Besides the danger of a direct strike there is the possibility of very high potentials being set up in the aerial wires by induction from neighbouring power lines which have been struck by lightning, and the results the equally disastrous.

The aim of the radio enthusiast is to erect his aerial as high as possible, and to have it well insulated, so that it will hold and apply the strongest elec-

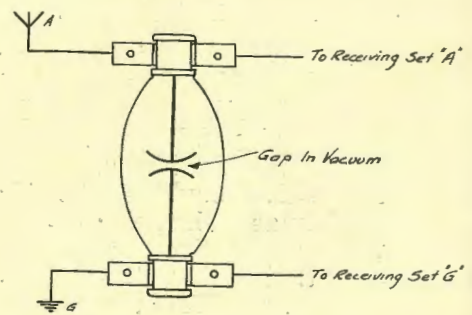
as can be made. Lightning discharges like all other discharges of a high frequency nature, are not governed by simple rules as are applied to currents at low frequency and voltage, but exhibit phenomena which is difficult of explanation in an article of this nature.

One of the simplest methods of protection is the lightning switch, which simply consists of a small capacity single pole change-over knife switch mounted on a porcelain base. Such an arrangement as this is so common that no further description is necessary, but one of the weak points about such an arrangement is that it is not automatic. That is, when the blade is in one position the receiving set may be connected direct to the aerial, in which position it is often left, and the result of lightning striking the aerial would mean not only disaster to the set, but to the house also. As a matter of fact, to avoid such results one of the underwriters' rules read: "Each lead-in wire shall be provided with an approved protective device properly connected and located (inside or outside the building) as near as practicable to the point where the wire enters the building. The protector shall not be placed in the immediate vicinity of easily ignitable stuff, or where exposed to inflammable gases or dust or flyings of combustible materials." Also: "The protective device shall be an approved lightning arrester which will operate at a potential of five hundred volts (500) or less." "The use of an aerial-grounding switch is desirable, but does not obviate the



— APPROVED ARRANGEMENT OF SWITCH AND ARRESTER. —

trical impulses to his receiving equipment, which in turn allows him to hear what is going on. In installing protection against lightning, the idea is exactly the opposite, the aim being to get rid of the impulses as quickly as possible, and by as direct a path to earth



— ARRANGEMENT OF VACUUM GAP ONLY. —

necessity for the approved protective device required in this section. The aerial-grounding switch, if installed, shall, in its closed position, form a shunt around the protective device. To supplement the switch it is consequently necessary to have a lightning arrester also, and one should be chosen with due regard to its construction and its capacity path to earth, otherwise a loss of signal strength might be experienced, due to this by-pass effect.

There are many types of lightning arresters on the market, but the principle incorporated is always the same, namely, to provide an easy path to ground when the potential of the aerial wires becomes so strong as to menace the apparatus and the house.

In purchasing a lightning arrester it is advisable to select one that has been approved by the Fire and Accident Underwriters' Association of Queensland. Any kind of arrester gives protection if it works, but if the house burns as a result of being struck by lightning, and it is discovered that an unapproved safety device was used, the insurance company may refuse to pay the loss, and the law may sustain the company.

It will, of course, be obvious that to instal a lightning arrester and switch correctly, and to have a poor earth is only courting direct trouble. For the reception of good signals, with stability of tuning the amateur should know by now that a good earth connection is even of more use than a good aerial. The regulations specify that the earth-wire shall not be less than 16 S.W.G. (1/.064), and it shall be protected against mechanical injury and shall be attached to a water pipe or other approved artificial ground, excluding gas piping, by means of an approved ground clamp. The lead-in wires shall not be smaller than No. 16 S.W.G. (1/.064).

Radio Motor Hunt

Novel Transmission by 4QG

Something exceptionally novel in the way of "stunt transmissions" will be effected by Station 4QG on Thursday, December 30.

The feature of the programme will be a novelty in the form of a radio motor hunt, and has been arranged by 4QG in conjunction with the Royal Automobile Club of Queensland.

A motor car carrying a party from the station will travel over a secret route of 30 miles through the thickly populated area of Brisbane. It will carry an illuminated distinguishing mark to enable listeners to identify it easily.

A full description of the car will be given at eight o'clock, and hints which should lead to the identification of its starting point will also be broadcast.

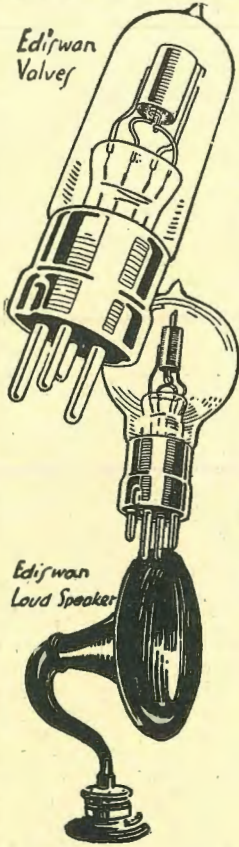
The station telephone will be connected to the transmitter, so that the voices of those calling the station will be broadcast.

All listeners sighting the car are requested to ring the station and, in their own way, describe its position. The names of all who ring will be noted, and at the end of the night will be drawn from a hat. The first one drawn will receive a prize of £1.

As the car tours Brisbane it may be hailed and will stop when called upon to do so. Each person stopping the car will be handed a card. These cards should be filled in and posted to the station, marked "Radio Motor Hunt." On Monday, January 3rd, those cards will be drawn from a container. The first opened will receive a prize of £2, and the second will receive a prize of £1.

Listeners should tune-in at 8 o'clock to receive full and final details regarding the "Radio Motor Hunt."

In impromptu musical programme will be provided from the studio during the evening.



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Jimmie Green's Selective Set



He connected up the batteries, adjusted the rheostats, and plugged in the loud speaker.

"Station 4QG Brisbane," said the voice. "The Savoy Orchestra will now play a fox-trot—'Valencia.'" The music began—"Now, listen!" said Jim, as he rotated the three dials just a little to the left. "Station 3LO Melbourne," came a voice from the loud speaker, "Mr. Norman Pill will now render a humorous elocutionary number—'The Wreck of the Strawberry Jam.'" "There," said Jim, "now be convinced. And if you want any more, just turn the dials another few degrees, and there is Farmers." A wisp of 4QG went by, and then the loud speaker gave out strong and clearly, "The item to which you have just listened was the 'Funeral March of a Marionette,' by Gounoud, played by the 2FC Studio Orchestra."

"Well," I had to admit, "it's a good job I heard it myself as I should not have believed it possible to cut out 4QG as close as this without any trap. Tell me, what is the circuit, and how long did it take to build?"

"The circuit is Wireless Supplies special Neutrodyne, and it took two evenings only to build. The panel comes already drilled and engraved, the base is marked where to put everything, and best of all, there is a print of how to wire the set up, not a scientific blue print no one could understand, but a drawing just how the wires are when the set is finished. If you can copy the alphabet you can copy this sketch."

"Send to Wireless Supplies Ltd. for their catalogue of sets to build at home, and if you go wrong they will give you free advice, or even rewire the set for a few shillings. Write right now," said Jim, "to WIRELESS SUPPLIES, LTD., QUEEN ST., BRISBANE."

ADVT

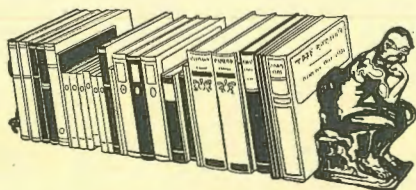
SOME days ago I ran into Jim Green in Queen Street. "Hullo," he said, "just the chap I'm looking for. I want you to come over to my place one evening soon to hear my new set." "What! another new one?" I asked, for Jim had made so many that I had lost count. "Yes," said he, "but this is a sure trimmer. Melbourne in on loud speaker without any trace of 4QG. How's that for selectivity?" "Easy," I said, "when Brisbane has closed down." "No, don't be silly—I really have built a selective set at last, and if you will come along I will let you see and hear what it can do."

Of course, with my curiosity thus aroused, I couldn't resist going over to Jim's place to see this wonderful new set.

"Here you are," said Jim, pointing to an imposing five-valve set. "Yes," I replied, "but where is the one you built?" "That is the one," he said indignantly. "Except for the cabinet, which cost me four guineas, I built up the whole set."

I hastened to congratulate him and smooth his ruffled feelings. "Splendid," I said, "it's a better looking set than my neighbour, Tom Brown, paid sixty guineas for last month." "And I bet it gives better results," cut in Jim, as he lifted the lid and exposed the interior of the set.

"What funny looking coils," I remarked. "Yes," he said, "they are the fellows that allow me to cut out 4QG, and get Melbourne on the Loud Speaker. Pass me the telephones, and we will see what is on."



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Why Must We "Earth" Our Sets?

We all know how very important and necessary an efficient earthing system is to good reception. Yet, strange to say, nobody has yet discovered why a wireless set will function better when "earthed" than when not "earthed!"

We to-day are still using the same principle of earthing as devised by Marconi in 1895, and scientists are now wondering if there is not still an improved method of securing better contact with the ground and so collect more wireless energy.

BACK in the early part of the year 1895, while Marconi was engaged on his first wireless experiments, which were then none too successful, it suddenly occurred to him to connect up one of the secondary terminals of his spark coil to an elevated wire and the other terminal to earth—and so the first earthed-aerial system came into being, with the result that the range of his transmitter was greatly increased.

What the "Earth" Did.

Previous to this the apparatus had only been capable of transmitting over level ground, and it had been found quite impossible to establish communication if any hills intervened between the transmitter and receiver. With the earthed system, however, hills made very little difference, and it may be said without exaggeration that the discovery of earthing was responsible for turning wireless from a scientific dream into a practical and very lucrative commercial proposition.

Although there are several theories on the subject, the exact reason why a wireless set will function more efficiently when connected to a good earth, than if not earthed at all, is not known. This ignorance on our part is due principally to two factors—the first being insufficient investigation into the subject of earthing, and secondly our lack of knowledge regarding the manner in which wireless waves are propagated round the earth.

Earthing was discovered nearly thirty years, yet our knowledge of the subject has hardly increased at all, and we still haphazardly join up our earth terminal to the nearest water-pipe in the same way as the amateur who first lifted the water-pipe-earth idea from the older branches of electricity, quite twenty years ago.

Now the water-pipe is undoubtedly a very good earth for electric-lighting wires and telephones, but there are times when it is practically and theoretically unsound for wireless. Of course, the water-pipe is almost invariably better than nothing, and may be passed off as good enough, but where real D.X. work is desired the water-pipe should be very thoroughly examined before letting it go as an efficient earth.

If, for instance, the aerial is erected in the back garden and the water-pipe runs to the front of the house, it is probable that a buried earth will be more efficient.

Testing an Earthing System.

To test the efficiency of the water-pipe remove the earth wire from the set and carefully tune-in again. If signals are only slightly weaker when the earth is disconnected, the earthing arrangement is just better than nothing and no more. A good earth

on a straightforward valve set should increase signals by a 100 per cent. In the case of a crystal set, disconnecting the earth wire will usually lead to no signals at all, but because the signals come in when the earth is again connected does not mean that the earth is the last word in efficiency. Comparing notes with other crystal users in the same locality will give an idea of the average efficiency of the earthing thereabouts. Do not be put off by some theoretical hypothesis that your aerial is screened, or that you live in a dead spot. Blame the earth every time, for a good earth makes all the difference in signal strength.

This fact is proved very considerably by the earth on a wireless land station. The ship's earth is, of course, the vessel itself, which, being of steel, makes excellent contact with the surrounding water—with the result that the ship's earth is far superior to the most elaborate land arrangement, and gives the ship a receiving range at least double that of the land station.

This applies when the ship is in port and is receiving entirely over land, thus eliminating the additional strength obtainable when receiving over sea water. An 80-ft. aerial 20-ft. high, when erected on a ship in port and connected to the ship's earth, will give infinitely better results than the same aerial ashore, no matter how perfect the shore earth, thus demonstrating the important part played by the earth in wireless.

Inefficient Water-Pipes.

A perfectly reliable looking water-pipe may be quite inefficient owing to some joint or other being painted with insulating paint. Where possible the earth lead should be connected to the water-pipe a few inches above the point where it enters the ground. But where the nearest water-pipe is a considerable distance from the ground, as in the case of a flat, the earth lead should be led to this. It may happen, however, that the portion of the pipe to which you are earthing is insulated from the ground part of the pipe by some insulating paint—and in this case it is preferable to use a long wire to the pipe where it enters the ground.

The ideal water-pipe earth is where the pipe runs below and parallel to the aerial. The advantage of this is apparent if we accept the idea that the aerial and earth (particularly that part which contains the water-pipe) are two plates of a condenser with the air as dielectric. In a condenser one likes to have the condenser plates, if not directly below each other, at least somewhere in the vicinity, which is not the case when the water-pipe runs to the front of the house and the aerial is in the back garden.

Three-wire Arrangement.

An arrangement usually much superior to the water-pipe earth consists of three ordinary aerial wires buried in the ground and running parallel to the aerial, one wire being directly under the aerial and the other two about eight feet on either side. All wires if possible should be longer than the aerial. This earth has been found excellent for amateur transmitting.

Curiously enough, there seems to be some definite relation between wave-length and earth. An earth which brings in signals strongly on 600 metres may be even better for shorter waves and quite inefficient for high wave-lengths. It is also a fact that the shorter the wave-length the more important the earth becomes, until on very short waves the aerial can be almost dispensed with and reception carried on by the earth alone.

Perhaps the most efficient type of earth for amateur use is obtained by driving a dozen (or as many as are available) metal pipes into the ground so as to form a circle having a diameter of about twenty feet or so. Three feet is a good length for each pipe, but it is worth while to dig a hole in the ground and see how far down it is necessary to go to obtain permanently moist soil—and cut the pipes accordingly.

Each pipe is then connected to a pipe driven into the centre of the circle, which is in turn connected to the earth terminal on the set by the thickest wire obtainable. A cage aerial may be used for connecting this centre pipe to the set.

This type of earth is very convenient, inasmuch as when it is desired to carry out any special experiments, such as listening for American or other amateurs, the resistance of the earth can be lowered for the occasion by pouring water down each of the pipes. This arrangement is greatly facilitated if the pipes are embedded in coke or cinders so that the water is quickly absorbed.

There is one school of thought which believes that the counterpoise earth is quite as good, if not better, than the ordinary earth, as least for reception. This is perhaps quite true for short-distance work, but investigation has fully demonstrated that no counterpoise can equal a good earth—although it is sometimes well worth while to install a counterpoise as well as the ordinary earth.

There are some places in Great Britain where to obtain a good earth is practically impossible owing to the dry, hard, rocky nature of the ground, and in these localities the counterpoise has given better results.

The fact that it is possible to receive well on a frame aerial shows, of course, that the earth connection is not absolutely essential. If, however, we are to believe the theory that wireless waves arrive at a receiver in two ways, i.e., via the atmosphere (space waves) and over the surface of the ground (the gliding wave), it follows that the frame aerial—as evidenced by the case of the uni-directional frame aerial—can only receive the space wave. Whereas the earthed aerial picks up the gliding wave in addition to the space wave, so that theoretically as well as practically the benefit of earthing is apparent.

Scope for Investigation.

However, as mentioned above, very little is known, as yet, about the function of the earth in wireless, and there is ample scope for investigation by the amateur. Some scientists are firmly convinced that we have not yet found out the proper method of earthing or using the earth, and it is possible that there is some substance in which we might bury our earth plate which would make perfect contact with the ground itself by setting up some sort of chemical action, and thus enabling us to collect far more wireless energy from the earth than at present. If we can discover such a substance it will enable us to do away with the elevated aerial once and for all, and receive and perhaps transmit by means of an earth connection alone.

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Club Activities



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- AUCHENFLOWER AND DISTRICT**—Secretary, L. Cribb, "Frampton," Ridley Street, Auchenflower.
CAIRNS AND DISTRICT—Secretary, Mr. Tarbit, c/o Mr. Les Fitzsimmons, Cairns.
EASTERN SUBURBS—Secretary, A. E. Newnham, Logan Road, Fiveways, Woolloongabba, Brisbane.
GRACEVILLE—Secretary, S. W. Keeping, Ettie Street, Sherwood.
IPSWICH—Secretary, S. J. Aspinall, Brisbane Street, Ipswich
SOUTH BRISBANE—Secretary, W. R. Gilbert, Gordon Street, Coorparoo.
TOOMBUL—Secretary, T. Starkie, Sandgate Road, Nundah.
WIRELESS INSTITUTE (Queensland Division)—Secretary, O. R. C. Runge, c/o Finney, Isles, Ltd., Brisbane.
WOOLOOWIN—Secretary, H. A. Jear, Lisson Grove, Woolloowin.
WYNNUM AND MANLY—Secretary, P. J. Golden, c/o Trackson Bros. Ltd, Elizabeth Street, Brisbane.

Woolloowin Radio Club

Little of note has occurred in our gang since our last Q.R.N. report, except, perhaps, the temporary absence of several members. Our worthy president, Mr. Kington, is up at Cairns or somewhere. Mr. Jear (secretary) is very busy with some mysterious business. It's a genuine excuse, alright, gang, because several of us have seen him up to his ears in books, papers, etc., and take it from us, the Stamp Act has almost driven him mad. I think that previous to this, Harry has never missed a meeting. Mr. Leo Feenaghty is also away enjoying himself in Sydney, visiting all the local hams. Bet he gives them a busy time. Just before leaving Leo invested in a U.X. 210 on which he has worked New Zealand for a start.

Talking of transmitting, we have two of these U.X. 210 bottles now, in the club. Mr. Grant has also been doing some buying, and last Thursday he brought down a so called 5 watt tube and a 50 Henry choke for us to see. We feel that a good deal of praise is due to Blaikie for this, as he brought along (a basin for dawg to drink from. You will perhaps remember that dawg used to amuse himself by drinking the electrolyte from our rectifier at odd moments.

Er, gang, did you see a little par about our 200 metre transmissions in one of the southern papers, advising us to go down to 80 metres? Say, Banana-lander, O.M. did you ever hear us on the 85 metre band? We've been there all along. Hi. Ho.

Perhaps our most important meeting during the past month, was a special meeting, held on Thursday 18th at head quarters. The business of the meeting was to discuss the idea of exchange of lectures between various clubs in the metropolitan area. Eastern Suburbs, Auchenflower, and our old friends Toombul were represented, and quite a long and a very interesting discussion took place. Many ideas were put forward, and it was decided that a committee be formed to control the whole thing. The committee decided to meet and lunch together at frequent intervals.

After the meeting the gang moved off, though several stayed on, including several dinkum hams from Eastern Suburbs, and demanded a demonstration of the transmitter. An interesting hour followed, and at eleven-thirty we reluctantly parted. The Eastern Suburb's men decided to hire a "Yellow" and take two of our men as balast. As everyone had missed their last tram this was a good plan. Our two men—Bill Rhode and Dud Winterford—landed home about 1 ack-emma—joys of radio. Oh, well, this about brings things up to date—a fairly brief report.

Oh, by the way! This is our last "Queensland Radio News" report before Christmas. Therefore, let us close, wishing you all the very best compliments of the season in good old 4WN style, or just the plain 73's of the radio man.

Toombul Radio Club

Owing to the increase of members in the club, a working bee was formed comprising the carpentry-inclined, and these gentry one sunny Saturday afternoon knocked up quite a respectable and commodious club-room. The room is painted white, and a bench has been made specially for the transmitting set.

At last our long-looked-for call-sign has arrived, and from now on the club will be on the air as station 4TC.

On November 5th our chief op., 4AW, took it into his head to visit the noble sec.'s place to see if the said person was indulging in any fireworks. He was so disappointed that the secretary took pity on him, and searched round and found some magnesium wire. He thought he would cause a sensation by fixing the wire to the halyard on his 60ft. splinter. Great was the vocal QRN and QRM when the whole business got tangled up and nearly strung our poor sec. to the top of his own mast. A case of "Hoist with his own Petard"—What?

During one meeting night our official photographer—none other than Mr. Thorpe Riding—caused quite a sensation by coming to light with a Baby Pathe cinematograph. With this nutty little instrument he entertained the members for a couple of hours. A couple of the films were very popular with the members, and the op. was persuaded to put the request reels over again (slow motion at times).

At a special meeting of the Woolloowin Radio Club two of the Toombul delegates were present to discuss the subject of interclub lectures. This is a very good idea, as it serves as a great means of instructing the members of the various clubs.

On Sunday, 21st November, the club had another field day, which proved very interesting to all concerned. One party, consisting of 4AW, the sec. and our official illustrator ("Sandy") acted as the hidden transmitter. Two other parties, who carried direction finding receivers, had the job of finding the hidden station. The first party got away first and drove about three miles away, and on arriving, installed the Xmitter and receiver with which they called up the second and third parties. These two parties, on hearing these signals, went in different direction and endeavoured to find the hidden station. One party guessed (Hi ! ! !), where the first party was, and got lost miles away from where the Xmitter was. The other D/F party traced the hidden party to about a mile from their location, but owing to the transmission from that direction having ceased, they



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had to abandon the chase and return to headquarters. Another attempt is being planned for the future. On arrival at headquarters the D/F "chasers" were surprised on finding the hidden party home first. Another stunt was then put over. The transmitter was rigged up, and the two chasers drove around the streets receiving the signals on their sets. The receivers were 3-valve sets in both cases. Telephony was used with the transmitter during operation.

The club meets every Tuesday night at the corner of Eton Street and Sandgate Road, Nundah, in the club-room. All visitors and intending visitors welcome.

Graceville Radio Club

The club met in the club rooms, Graceville, on Friday, 5th November, on the occasion of their regular monthly meeting. After disposing of the usual business a welcome was extended to the Eastern Suburbs Club, who had rolled up in force.

The principal item of interest for the evening was a lecture by Mr. W. Stephen, who kept us interested in a very fine lecture on valves. Commencing with their early construction, he dealt with the subject very fully: It is a pity our members do not turn up with notebooks and pencils.

A Morse class is now held during the month—one night at Graceville, the next at Taringa. Those interested should get into touch with the secretary.

The subject for our next meeting, to be held on Friday, 3rd December, is to be "The essentials of radio music reproduction." Mr. E. Brayne, the lecturer, is a member of the technical staff of Wireless House, and is also on our technical committee, and members and visitors are promised a very interesting night.

The inter-club lecture idea has taken practical form, and the first round takes place during January. Mr. Pat Golden, the busy secretary of the Wynnum and Manly Club, is down to give us a lecture on Friday, 21st January, the subject being, "The wiring and layout of sets." This should prove very valuable, and a good roll-up is assured.

Our lecturer is to visit Wynnum on the 14th January, to give a lecture on valves.

We have still room for members who wish to improve their knowledge of wireless, and who would like to get beyond the listening-in stage.

Wynnum and Manly Radio Society

At the recent monthly meeting of this club, held in the club room, Tingal Road, Wynnum South, a tentative set of rules was discussed by all the members present. Their adoption will be the probable outcome of the next general meeting, which takes place on the first Friday of December.

A suggested syllabus was then read out by the technical advisor, Mr. P. J. Golden, and consisted of Morse practice, Mondays and Thursdays; visiting lectures, Wednesdays; and Morse lessons and practice,

Friday evenings, which will be followed by a lecture on that evening.

A suggestion by the secretary that the club members approach the committee of the local band, in order that a little brightness might be infused into the young section of the district, by holding weekly dances out of doors on the club's spacious lawns. By this means the "Charleston struck" section of the district will be brought into closer contact with matters of vital interest to themselves in the radio world.

Members are advised to turn up in full strength on Friday, December 3rd, in order that a full discussion of the questions on the agenda paper can be discussed.

Inter-Club Lectures

At a recent lunch-hour meeting of delegates from the various radio clubs in and around Brisbane, arrangements were finalised for a series of inter-club lectures.

It was felt that the exchange of lectures bearing on wireless matters will be greatly beneficial and instructive to all club members, besides fostering a friendly inter-club spirit between the clubs.

The following syllabus was arranged and drawn up for the month of January, 1927:—

January 12th—Mr. V. F. Kenna (Woolloowin Club), to visit Eastern Suburbs Club.

Subject: "Battery Chargers."

January 13th—Lecturer from Eastern Suburbs Club to visit Woolloowin Radio Club.

Subject: "Aerial and Mast Construction."

January 14th—Mr. Stephen (Graceville Club), to visit Wynnum and Manly Club.

Subject: "Valves."

January 14th—Mr. Walz (Toombul Club), to visit Auchenflower Radio Club.

Subject: "Accumulators and their construction"

January 21st—Mr. Golden (Wynnum and Manly Radio Club) to visit Graceville Radio Club.

Subject: "The wiring and layout of sets."

A lecture is also to be given on a date to be fixed, by a member of the Auchenflower Club, in the Toombul Radio Club Rooms.

RADIO IN DENMARK.

Broadcasting progress in Denmark may be gauged from the fact that the number of listeners has increased from 30,000 to 90,000 since January. An interesting scheme is under review for extensive co-operation between the broadcasting authorities of Denmark, Norway, and Sweden.



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ARTICLE III.

Continuing instructions on the International Abbreviations

The signal **PRB** takes one back to the times before wireless was in common use, when the only means of inter-ship communication was by means of flags. Various combinations of letters in the flag-alphabet conveyed various phrases. Nowadays messages may still be coded in this international flag code and transmitted over the ether! For such messages the signal **PRB** is used.

Q SJ also needs a little explanation. It is used when a ship or coast station is not familiar with the land line charges of the telegraph system in the country in which is situated the station, of which the enquiry is being made, such knowledge being, of course, essential in order that a correct charge may be made against the originator of the message. To overcome the difficulty the ship operator asks the local coast station **Q SJ?** which is translated as a request for information as to tariff rates to a certain specified destination. Thus a foreign ship unacquainted with the Australian postal and telegraph regulations may call up **VIB** (Brisbane Radio) and ask the land line rate per word to Charleville, and so on.

QRL makes use of the signal (...-.) which is, of course, simply the sign for 'understood.' (See Article I.)

QSN—Note that this is the only abbreviation wherein the answer negatives the question. In all other cases the answer is affirmative of the question, and for this reason **QSN** is a possible stumbling block for unwary students.

The call **QST** is also not particularly plain. It simply means, however, that the calling station is asking a second station whether they have heard the general call (that is, the **CQ**). Many people seem to think that the **QST** is a general call in itself. This, however, is not so.

QSZ and **QTA**. The difference between these two abbreviations should be carefully noted.

As well as the above abbreviations there are two or three other signals recognised by amateurs, and now in fairly constant use. Of these **QSS** is the first and is usually regarded as meaning, "Are my signals fading?" with the usual affirmative answer, "Your signals are fading." Some transmitters in Australia use **QSS** to denote "swinging" and not "fading," but overseas the acceptance of the term is as shown, while "swinging" is denoted by **QSSS**.

Another amateur abbreviation is **QRLL**, meaning "Please stand by for five minutes until I adjust my gear," but as yet this signal is not in general use locally.

A newer signal still is **QRAR**—a ham signal meaning, "Is your call book address correct?" which should

serve a good purpose in eliminating much needless reception of **QRA** calls.

Of course, the other ham abbreviations **OM** (old man—familiar), **YL** (young lady), **OWOP** (owner-operator), **73's** (kind regards) **CUL** (see you later—being generally a loose way of saying, "will work you later"), **CUAGN** (see you again), and the like are well known.

Readers who have studied the signs and symbols given in Articles I. and II. have now learned almost all of the signals used in transmitting. All that remains to cover the requirements of the first paper of the Amateur Operators' Proficiency Certificate examination is to learn something of the rules and procedure of transmission. This we shall now deal with.

Priority of Traffic.

Certain types of messages have priority of transmission, chiefly for reasons of their urgency in comparison to other communications. There are five classes of messages ranking for priority in the order shown. They are:—

Firstly: Messages of distress (**SOS** messages).

Secondly: Admiralty message (**XIX** messages) or messages of other British Government departments, and communications of other Governments.

Thirdly: Navigation messages—dealing with the safety of ships at sea (**TTT** messages)

Fourthly: Messages dealing with the conduct of the radiotelegraphic service.

Fifthly: Public and other general messages.

Insofar as messages are not affected by questions of priority, they are transmitted in the order in which they were handed in to the transmitting station.

Control of Traffic.

(a) In the case of ship to shore traffic, the shore station is the controlling station and decides upon the order of transmission, whether messages shall be sent alternately or in series, and all such questions of procedure.

(b) In the case of inter-ship traffic the calling station is the controlling station.

The exception to these rules lies in the fact that in the case of a distress call, the distressed vessel making the **SOS** controls all traffic within its range of transmission.

Preference to Stations.

If a coast station receive calls from more than one ship, the coast station accepts the traffic of the ship that will, under normal conditions, first pass out of range.

Calling a Station.

The rules set down for calling a station are simple.

The first rule is that the operator of the station intending to make the call should tune his receiving apparatus to the greatest degree of sensitivity, and should listen on the wave-length of the station to be called to ascertain that such station is not engaged in traffic. Having satisfied himself on such point, the operator makes the preliminary call signal (—.—.—), followed by the call-sign of the station being called, three times repeated, in turn followed by **DE** (from) and the call sign of his own station three times. As an example take the case of the steamship "Canberra" (call-sign **VHO**) calling the Brisbane Radiotelegraph Station (call **VIB**). The complete call would be as follows:—

—.—.— **VIB** **VIB** **VIB** —...
VHO **VHO** **VHO**

Replying to a Call.

A station having been called, replies by giving firstly the Preliminary Call Signal (—.—.—) once, followed by the call-sign of the station whence the call originated, repeated thrice, followed by **DE** and its own station call-sign sent once. Then the signal —.— (Invitation to transmit) is sent as an indication that the called station is ready to take any message from the calling station.

Such a reply, using the call-signs given above, would be—

—.—.— **VHO** **VHO** **VHO** —... **VIB** —.—

Position Report.

After having received the "Go Ahead" signal (—.—) from a coast station, the calling station, if a ship, as in the examples already given, will transmit what is known as its **TR**. This signal **TR** is used as a prefix to certain information covering the ships distance from the coast station, its position, next port of call and the number of messages it has for such coast station.

The coast station will acknowledge this transmission and, being the controlling station, will decide which station will transmit first and in what manner.

Thus for example, using the same calls, Brisbane Radio Station having learned that the s.s. Canberra has 15 messages to transmit, and having, itself, say 10 messages for outward transmission, might decide to transmit and receive messages in groups of five, allowing the ship to commence. The signals passed across by Brisbane Radio Station would be as follows:—

—.—.— **VHO** —... (DE) **VIB** —.— (R)
—.—.— (TR) **QSG** —.— (K).

The **R** signal is, of course, the received signal described in Article I., and the **QSG**, on reference to the list of abbreviations in Article II., is found to mean "the transmission will be in series of five radiotelegrams."

The General Call.

This signal, usually known as the **CQ** signal (—.—.—.—) is used as a preliminary enquiry signal, when a station wishes to communicate with another station within range, but whose call-sign or name is unknown to the transmitting station. The usual rules for calling a station apply also to the use of the **CQ** signal; that is, the signal **CQ** is transmitted three times, followed by **DE** and the call-sign thrice of the transmitting station.

Communication with the calling station should be established by any station within range hearing the **CQ**, the reply taking the usual form described earlier.

The Wait Signal.

This signal (—...—) is necessary when a station called is busy with a third station. In such a case the busy station would, in all probability, respond to the first station with the **QRW** or the **QRX**, but for the sake of convenience may simply give the —...—

It is usual to add the length of time that the calling station will be required to wait. This waiting time is frequently sent by the employment of the system of short numerals. Thus, "Wait 10 minutes" would be signalled —...—

[Candidates for the A.O.P.C., who are studying this series of articles, are advised to put together a small short-wave receiver, one or two valves being large enough, and to listen in on the 80-metre band to the various Australian amateurs engaged in the interstate tests. Two tests have been concluded, and the third is scheduled to commence early in December.—Editor.]



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The Making of Headphones

New Australian Enterprise

PROBABLY the largest manufacturers of radio parts is the Electricity Meter Manufacturing Company, Ltd., whose many and varied lines are marketed under the name of Emmco.

Quite recently the company decided to add to their already extensive plant special apparatus for the manufacture of headphones, and these are now being turned out complete in large quantities. This article is a brief description of how these headphones are made.

First Operation.

The first operation is the manufacture of the ear-piece cup which is constructed of drawn aluminium. This is drawn, or stamped, to the proper shape and size, after which the necessary holes for the screws are punched. In a separate operation the company's name is stamped on the back of the cup.

Next the threads are rolled on to the bakelite cup, a special process being employed to insure a perfect



Section of Assembly Department.



Coil Winding Department.

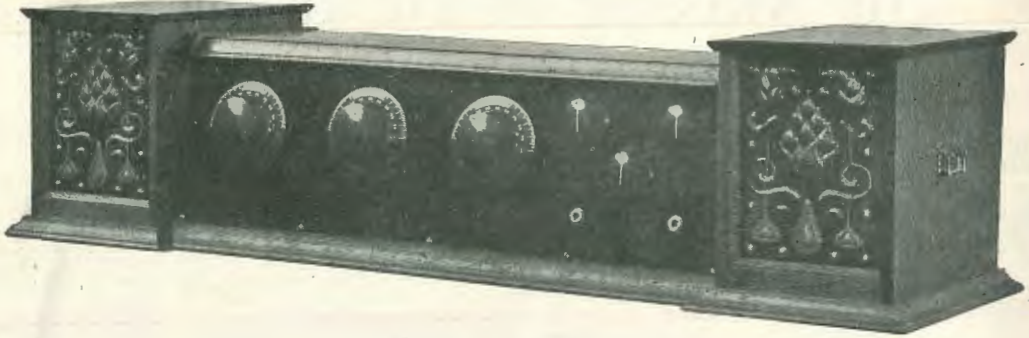
thread. The cups now go into the paint department to undergo the process of painting and baking, the latter being designed to harden the paint on the cup so as to make it an absolutely permanent job. The cups are now ready to receive the magnets, coils, and the internal fittings.

Magnets.

These are constructed of special magnet steel, which is cut off to the correct lengths, and formed to shape in a specially constructed die, which turns out each magnet exactly the same size and shape. From this operation the magnet emerges, bent to a half-moon shape to allow it to be fitted flush with the inside of the cup.

In each end a hole is drilled to take the screw which clamps it tight, after which the magnet is heated in a muffled furnace, and from there goes into a special solution quenching bath, which leaves it absolutely glass-hard, this being essential for proper operation of the telephones. Emerging from this bath, the magnets are ground, mag-

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metised, and stored in racks to season. Seasoning is necessary for each magnet to remain of unit strength after the assembling.

Coils.

The most delicate part of the whole construction of the headphone is the winding of the coils, which consists of wire as fine as hair. It is interesting to note that approximately 250 yards of this wire is used in each pair of headphones. The bobbins are wound on a core of special iron which, in turn, forms a portion of the complete block, which is ultimately fitted into the cup. The coil winding is carried out on most delicate winding machines, which are adjusted to the finest degree to insure even revolutions and consequently no breakages and perfect insulation.

The most important part in the assembling of the phone unit is the grinding of the pole pieces, to insure that they are both exactly the same size and a suitable distance from the diaphragm. The machine which effects this grinding operation is a marvel of simplicity. After winding, the coils are tested out with separate instruments for insulation and correct resistance and ingenuity, being locally designed and manufactured within the factory.

Assembling.

The coils, magnets and bakelite terminal blocks are now fixed into the cups. Connecting leads are now joined through the holes in the cup to the terminal block and the completed ear-piece subjected to blowing out with an air pressure machine to thoroughly cleanse all the parts. The diaphragm is then fitted and held in place by the bakelite cap, which screws on over the cup. The cleanly-moulded thread in the cup is a splendid example of Emmco bakelite mouldings. The ear-pieces are coupled with a head-band constructed of sprung wire, so as to allow for easy fitting, and the wire is covered with leather, presenting a most attractive appearance. The adjustment is such that the ear-pieces may be easily moved up or down to suit any shape or size of head.

Before being packed into their cartons each pair of headphones is thoroughly tested out for signal strength and tone. It is most gratifying to know that the whole of the parts used in the construction of the headphones (with the exception of raw material, such as Tungsten steel for magnets, enamel copper wire for coils) are manufactured at the works.



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1 Set Engraved Terminals, mounted	2/9
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1 Advance Lightning Sw. and Arrester ...	2/0
100ft. 3/20 Aerial Wire	3/
Total	£9/17/6.

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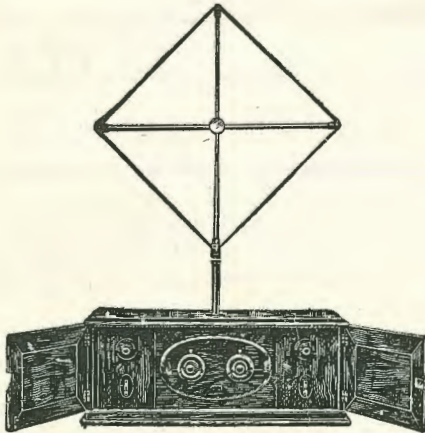
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The Low Frequency Transformer

(BY COURTESY PHILIPS GLOWLAMP WORKS, SYDNEY)

One of the most important accessories which is used almost universally today in radio work, is the low frequency transformer. Its function is to amplify the current as it receives it from the detector to the first amplifying valve, and between this and the next valve, and so on. A transformer of this type is constructed with 2 coils wound on a soft iron core. These 2 windings are called the primary and the secondary windings. The secondary winding has 3 to 6 times the number of turns to that of the primary. The 4 ends of the windings are led to 4 different terminals.

There are a great many different types in use at the present time. For the most part they all look alike, and the amateur has nothing by which to be guided in his choice, but guess work. Or again, he may have the idea of winding his own audio transformer, or inter-valve transformer as it is sometimes called; using say, 10,000 to 15,000 turns of wire. However, it often happens that as soon as the purchased transformer, or the one he has constructed himself; is connected up to his apparatus, he finds that it does not come up to his expectations.

This is not at all surprising, when one considers the numerous conditions which such a transformer has to fulfill.

Firstly, it is called upon to transmit what it receives without altering the quality. This alone, is a condition which it is somewhat difficult for the transformer to fulfil successfully, as we will endeavour to show. Supposing the "G" string of the violin is caused to vibrate in front of the microphone, a fundamental tone is produced which has a frequency of about 200 vibrations per second. In order to produce this tone in our receiver, it is necessary that a current having the same frequency be transmitted by the transformer to the following valve; and this is the whole crux of the matter. If the transmission is composed principally of this fundamental tone, there will be no difficulty experienced with the transformer. This latter condition is however, unfortunately seldom met with. The notes of a piano have a vibrational range of from 3,000 to 3,500 vibrations per second, and certain other instruments produce tones having somewhere about 4,000 vibrations per second. The consonants of spoken speech are composed of tones having a very high period of vibration.

In general, it has been found that a large number of tones are always combined, and their intensity is augmented or diminished considerably.

Now it is the duty of the transformer to transmit these variations, as also the variations of intensity of the current, without any distortion whatever. Every construction of electrical apparatus will tell you that it is almost impossible to construct a transformer for such a broad range of frequencies. However, this is the primary condition which a transformer used for this purpose must successfully fulfil. It is necessary moreover, to wind a large number of turns on its core, and in so doing to take care that the self-capacity of the turns does not become excessive. The

winding should be sub-divided into several sections, and at the same time the space which they occupy should be reduced to a minimum. The insulation must be perfect, as tensions of 100 volts and more are used in the plate circuit. In order to economise space, the wire employed should be of a very fine section; but on the other hand this must not be too fine, as it has to carry plate currents to the final valve, and these attain very considerable values at times, as for example in the case of the (Philips Valve Type B.406.).

When we consider that a transformer for this class of work must be adaptable to all the different types of valves used, that its soft iron core must have sufficient sections and at the same time a very low magnetic dispersion, even without a consideration of its price being reduced; we arrive at the conclusion that it is practically impossible to construct a transformer of this kind.

Up to the present, it has not been possible to construct a transformer which complies absolutely with these conditions. For instance, it has been found that a constant transformation of all the audio frequencies which the ear can perceive, is scarcely to be hoped for.

One good thing is however, that the imperfection of the transformer in this instance, does not necessarily cause bad reproduction. As a matter of fact, our ear possesses a consideration power of adaptation, and is not too sensitive to tone differentiation.

As an instance, a transformer of this type only transmits the bass notes very imperfectly, together with the notes of a higher register. The notes which are missing are instinctively added by us in our mind—whether we know it or not.

A study of the different types of transformers has shown over and over again, that the even reproduction of all tones is not feasible, and certain tones are transmitted much louder than others. Even in the best types, the sounds in the neighbourhood of 200 vibrations per second and those above this, are delivered somewhat out of truth of their real tone. If multiple transformer amplification is used, i.e. the same type of transformer coupled between the intermediate stage valves; the trouble is increased, since the phenomenon follows the law of an exponential variation or progression.

If one experiments with diapason organ pipes before the microphone of a transmitting station, the sounds received will serve to give us some idea of the low frequency transformer's properties in this particular instance.

Apart from the insufficiently true reproduction of a receiver caused by a faulty transformer function, there are other troubles due to the transformer.

Sometimes the wire in one of the turns of the winding is defective (this is more often the case now than formerly), as the wires have a very fine section, e.g. 1-500th of an inch. A strong and sonorous reception requires alternating currents to flow

through the primary of the transformer which have a value of 5 milliamperes and more. The instantaneous production of loud sounds, and the equally sudden interruption of the plate current; set up in the wire electrical and mechanical forces which may cause its breakage or burn-out if it has a weak point.

An amateur will sometimes tell you that his transformer has gone out of action. But when this happens, in the majority of cases what has really occurred is that a contact more or less imperfect is taking place at the faulty point in the winding. When contact is absolutely broken, of course we get no result from the transformer. But if the contact is imperfect, it can soon be detected by the crackling sounds produced when the set is in action; are not always due to this particular defect. However, if these noises cannot be attributed to any other cause, it is always well to take a look at the transformer.

If the transformer only presents this particular trouble and no other, it may be remedied by connecting the primary winding with the anode battery, or with a H.T. circuit generating apparatus. In doing this it is well to place a pocket torch lamp in series in the circuit, so as to avoid short circuiting the battery. The two ends of the wire at the fault in the winding, weld themselves together automatically.

The insulation of the turns is sometimes burnt out by the use of a high plate voltage. Generally the amateur can do nothing in this case, and it means re-insulation.

These two latter troubles are very unfortunate, as what happens in the primary winding, also generally happens beneath in the secondary winding. The secondary winding contains 4-5ths of the total quantity of wire used in the transformer. In other words, to effect a slight repair costs nearly as much as re-winding the whole transformer. Frequently it happens that the soft iron core is not of sufficient section to enable the transformer to be used continuously with final stage valves. When using a valve such as the Philips Valve Type B.406, a continuous current of about 5 milliamperes flows into the winding of the transformer following, thus magnetising its core. If this is not of sufficient section, it becomes saturated magnetically. In the reproduction of music, as the plate current varies as a function of the audible vibrations, it produces in the secondary winding which is connected to the following valve, a tension which will be out of proportion to that of the primary winding; with the result that the reproduction will be very imperfect, i.e. distorted.

It is evident that distortion is not solely due to the transformer. You can prove this, (except in the case of very loud music), if you take away the loud speaker and listen in near the last L.F. transformer. When the soft iron core of the transformer is too small, and in consequence overloaded; the high notes are those which are brought out most.

If the core has a section of $\frac{1}{4}$ th of a square inch, it will be quite sufficient to give a powerful reproduction of sound.

When a transformer is constructed without subdivided windings which reduce its self capacity, it always has too high a selectivity for a well determined tone.

In a great measure this fault, which produces whistlings and howlings in a multi-stage amplifying set, can be eliminated by putting a resistance in the grid circuit of about 100,000 ohms (1-10th of a megohm), in parallel with the secondary of the transformer. Obviously this will cause a slight diminution in sound.

Let us turn our attention now for a few minutes to the method employed in coupling transformers. In general we may couple the terminals of the primary winding to the plate circuit of the valve, and the secondary terminals to the grid and to the filament of the following valve. It is important that the exterior extremity of the secondary winding, (in the case of a non-subdivided winding), is connected to the grid of the valve; and the interior extremity to the filament.

If the terminals are not marked, it will be necessary to make a personal inspection to see which are the exterior and which the interior leads running to the particular terminals.

It is not of very great note what connection is used in coupling the primary winding to the plate circuit of the preceding valve, and if whistlings are experienced a reversal of your connection will often prove a remedy.

Finally, it has not been possible to completely eliminate magnetic dispersion. This phenomenon is a magnetic influence or a magnetic leakage of the transformer, caused by stray lines of force from the core passing through the objects (especially metallic objects), placed near it. For this reason it will be obvious that it is not wise to install transformers in a station or set, too close to one another; as the mutual induction produced gives rise to whistlings, etc., and diminishes the purity of the reception.

By the construction of transformers specially suitable for use with definite types of valves, (which has already been achieved), and by specialised technical attention to the requisites of each type of transformer; the amateur is now in a position to be guided in his choice of a good transformer, which will enable him to obtain better amplification and therefore greater clearness and purity of reception.

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It carries a beautiful full colour cover, and is simply brimming over with good humour.

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The SANDMAN

"Christmas again! How soon it has arrived! I am looking 'orward to having a glorious time, and I am sure that all my little listeners are doing the same. I just want to take this opportunity of wishing every little boy and every little girl a very happy Christmas and a bright New Year."

UNCLE BEN

"I am sure everybody is happy and full of fun because Christmas is almost here. What a wonderful time Christmas is. I am go.ng to enjoy myself immensely, and I know that all my radio pals will do the same. Here is my message to you—"Be good, don't eat too much plum pudding, and all be happy. I wish you the very best of everything."



A Merry Christmas



Little MISS BRISBANE

"Glory to God in the highest; peace on earth and goodwill towards men' has been the Christmas wish for many years, and this year is no exception. Little pals, Christmas is meant to bring all sorts of happiness. It comes at the end of the year, when the happness of twelve whole months is squeezed into one beautiful day. It is near the death of the Old Year, which brings soon after, the birth of the New Year. When Mr. 'Old Year' dies, bury all your little faults with him, and make Mr. 'New Year' happy by making up your minds to be better boys and girls. My wish for you all is, 'A Merry Christmas and a Happy New Year.'"

The Bedtime Story-tellers at

4QG

Send Their Greetings to the Children through

"The Queensland Radio News"



UNCLE JIM

"Christmas comes but once a year, and when it comes it brings good cheer—that is what we used to say when I was a little boy, and I know it is very true. I just want to say to every little listener to 4QG—I wish you a very, very merry Christmas, and I hope you all get just what you want from Santa Claus."



SAMBO

"Ooooh, little ones, don't you forget to hang up your stockings, and then get up early on Christmas morning to see what Father Christmas has put in them. What a fine time we are all going to have. Pete and I are feeling real fine because Christmas is here. My love to all of you, and don't forget to be real good."

PETE

"Sambo always does all the talking for me, and this time he has just said what I wanted to say, so I can't talk much, can I? Just let me say with all the others that I wish happiness and joy to every girl and every boy."





Conducted by Uncle Ben, of Station 4QG, Brisbane.

TO ALL MY LITTLE SWEETHEARTS.

"Hello, children! Here we are again. My! how the time does fly! This is the December issue of the "Queensland Radio News," and in a few weeks time we will all be sitting around the Xmas dinner table eating turkey and plum pudding, having a wonderful time. I'll bet you'll all be very pleased about it, too.

I remember how delighted I was when the time came for breaking-up school—I think it was the happiest time of my life, and I often look back and think of those wonderful days I had when I was a little boy.

"Anyhow, sweethearts, I am very pleased that holiday time has come again for you all, and I hope you will have an enjoyable, long holiday.

"Do you know that some of the bedtime storytellers will be telling the stories from Coolangatta on Xmas Day? Yes, we are going down to the seaside on Xmas morning, and we will be talking to you on Xmas night—from the Kirra Life Savers Surf Shed. from 6 p.m. until 7 p.m.— If you all listen carefully you might even hear the waves lashing in on to the beaches.

"Now, little ones, before I say good-bye to you, I must tell you all about my Book o' Fun. The printer man has now finished his work, and the book looks just lovely. I hope you will all like it when you get it. Tell your daddy to remind Santa Claus not to forget to bring it on Xmas morning. Now, sweethearts, I must leave you all again, and I hope that you will all have a very merry Xmas and a happy and prosperous New Year.

"Cheerio, little ones, until next month."

Yours fondly,

UNCLE BEN.

P.S.—"Don't eat too much Xmas pudding."

HOW MANY WORDS CAN YOU MAKE FROM THESE LETTERS ?

Here is a competition that will make you think. It is really surprising the number of words you can make from a few letters of the alphabet—especially when you are allowed to use the same letters over and over again.

UNCLE BEN LOVES LETTERS

To the boy or girl who sends in the greatest number of words compiled from the above letters, a prize to the value of 10/ will be awarded.

Remember you are allowed to use the letters as many times as you wish, provided you do not use the same letter twice in any one word.

Send in your attempt to the Editor, "Queensland Radio News," Brisbane, marking your envelope—"Uncle Ben's Competition."

The competition closes on December 20th.

LAST MONTH'S PUZZLES.

The answer to last month's puzzles were:—

- (1) CORNWALL
- (2) BLACKSMITH.

The first correct solution to be opened came from

JEAN CARTMILL,
WOLFFDENNE,
VIA BEENLEIGH.

to whom a storybook (value 7/6) will be forwarded.

The second correct solution opened bore the signature of

WILLIE MOORE,
SILVERTON STREET,
WINDSOR, BRISBANE,

to whom a storybook (value 5/) will be posted.

The best and funniest answer received to the question, "Why is Uncle Ben's Book o' Fun like a doctor?" came from

GORDON GENTNER,
ANNIE STREET,
NEW FARM, BRISBANE.

Gordon's answer was:—

"Because with it you need no pills to chase your ills."

"Quite true, Gordon, a prize of 5/ will be sent you.

HOSPITAL RADIO PARTY.

The concert party formed by Broadcasting Station 2FC, Sydney, have arranged to visit Lithgow Hospital on Saturday, December 11. In the evening the artists will entertain the patients in the hospital, and the concert will be broadcast, so that all outside listeners in the State can hear. Uncle Monty and Uncle Rus. will entertain the children, the latter being assisted by the inimitable "Jerry," the ventriloquist doll, who is so amusing to listen to.

During the evening after the concert the party will inspect the blast furnaces, which will be described over the air, and the party will sing the anvil chorus and other appropriate items. While at Lithgow the party will visit Mr. Jones' noted Zig-Zag Brewery—and no doubt their singing will be none the less brisk on that account. On December 18 a trip will be made to the Waterfall Sanatorium in conjunction with the "Smith Family of Joy Spreaders."

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If you want to take the safe, sure road to lasting success, write today for full information about a Mingay's Wireless Dealer Agency in your district.

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The A.B.C. of Wireless

A Simplified Description of Wireless for Beginners

CONDENSERS—Fixed and Variable

This month we will deal with what is perhaps, the most difficult part of a receiving set to understand and to give a simple explanation of.

Condensers consist of two or more conducting surfaces, generally parallel with each other, and separated by a dielectric (or, in other words they are electrically insulated). In a fixed condenser the conducting surfaces are generally tin foil while the dielectric is of mica.

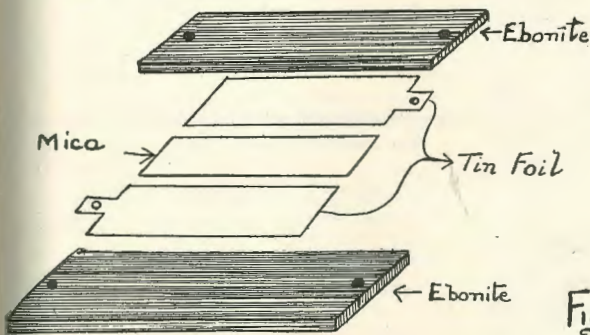


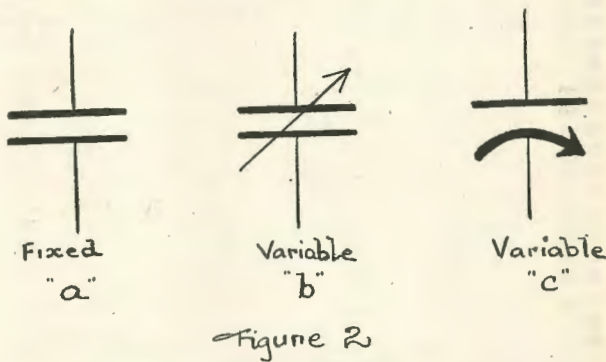
Fig 1

This illustration explains how fixed condensers are constructed. It will be seen that the tin foil sheets are so mounted between the mica that half of them make connection with one terminal while the other half are fastened to the second terminal. These terminals are inserted through two strips of bakelite which serve to bind the parts together.

If a variable condenser is examined it will be seen that it consists of one set of vanes electrically connected together and spaced so as to allow another set of moving vanes to pass between them. These two sets of vanes are electrically insulated from each other and are usually made of aluminium or brass, and mounted on bakelite brass or glass ends.

The signs used to signify condensers in circuits are shown in Fig. 2. The fixed condenser (a) is represented by two parallel lines while the variable condenser sign (b) has an arrow through this symbol. The sign (c) is also used in some circuits to represent a variable condenser, the arrow denoting the moving vanes.

Faulty condensers are responsible for a fair percentage of poor results from the receiving set. A common happening is the accumulation of dust on the vanes. These dust particles cause a leakage between the fixed and moving plates with a consequent loss of



signal strength, and sometimes cause a grating noise when the condenser is turned. The best method of cleaning away this dust is with ordinary pipe cleaners or bellows.

Sometimes the moving vanes are bent and touch the stationary vanes, which causes the set to stop functioning.

Owing to the sharpness of the tuning-in many modern circuits it is necessary to have condensers that allow of very fine adjustment. Vernier (or fine movement) condensers sometimes consist of three extra vanes (two fixed and one moveable) mounted on the end of the ordinary condenser and controlled by a small knob projecting through the centre of the large dial. Another idea is the fitting of geared wheels which allow of up to an 100 to 1 movement.

The popular idea nowadays is to fit a slow movement dial to the ordinary condenser. These dials, of which there are several excellent makes on the market, are very effective, and add to the appearance of the set.

Condensers are described according to their capacity measurement, just in the same way as we describe the capacity of a tank, i.e., 500 gallons, 1000 gallons, etc. The unit of capacity is the farad, but as in practice this is much too large for convenience, the unit of one microfarad, or one-millionth of a farad, is taken. This is written as "mfd." The most common volumes used are .001, .0005, and .0003 in variable condensers, and .001, .0003 and .00025 in fixed condensers. The number of vanes in variable condensers vary according to the area and thickness of the metal used.

Have you seen THE WONDERFUL WATERBURY "TELECELL"

"The Dry Wet 'A' Battery"

The Telecell is a self-contained compact unit—all parts being sealed in a glass jar. It is made operative by simply adding water.

It has a guaranteed capacity of from 55 to 70 ampere hours depending upon the rate of discharge.

The Telecell does not require Recharging.

There is no deterioration when not in use, and no polarisation while being used, giving a constant, even flow right to the end of its useful life. The voltage of the Telecell is .6 when in use. A battery of cells will give

250 Hours' Actual Use.

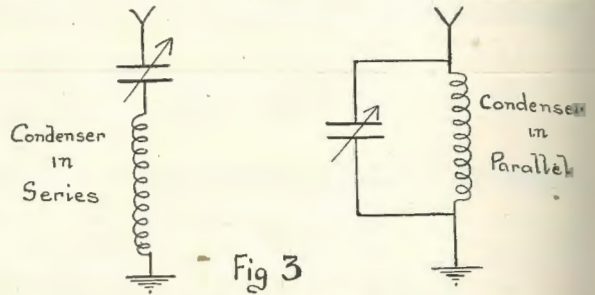
Using 5 valves consuming not more than .06 amps. each, a battery of these cells would give you 250 hours' actual use.

No Deterioration; you simply add Water.

Price 7/6 each

If your dealer cannot supply you, write direct to

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When a condenser is wired in series with the aerial coil the wave-length obtained is approximately half of that reached when the condenser is in parallel.

Figure 3 shows these two wirings. Series-parallel switches can be obtained by which the condenser can be placed in either position by simply turning the knob. This, of course, allows of a large band of wave lengths to be covered without changing the coils.

The one golden rule to observe in regard to condensers is to use only the best. Cheap condensers are not "just as good," and the small extra outlay involved fully repays in the better results obtained. Our next month's talk will be on "Transformers."

NO GOOD AT SPELLING. But Fond of Radio.

Among the hosts of persons who write to radio stations praising or objecting to the programme, are all sorts and varieties of listeners. Some pen dignified epistles on expensive paper, others tear a sheet of note paper and appear to scribble with a burnt stick. Some spell as well as a dictionary, others—

But here is how one man in New Zealand writes to 2BL, Sydney:—

"Dear Sir,—I have much pleasur in writing a few lines to you on the transmittion of Station 2BL. I am very please to say I have better reception from your station than I have from any other station in Australia, such as 2FC, 2GB, 2UW, 3LO, 4QG all the stations I have marked above I receive very clear and plain but 2BL is high above them all for volum and strenght and very clear. I hear the Sidney clock strike the hour of 8 o'clock each night as if it were only half a mile away. The programme Eligh was very good. Many thanks for the past. Wishing your station 2BL all success in the futcher,
Yours, truly, _____."

RADIO BOY CHOIRS. Marist Rivals.

Lovers of boys' voices are promised an opportunity of judging between the respective merits of the choirs of the Marist Bros., Ridge Street, North Sydney, and the Marist Bros., of Mosman. Each church has a boys' choir numbering 100, and on December 7 the Mosman boys, under the conductorship of Brother Barnabas, will give a special programme from their own school at 8.30. On the following Monday, December 13, the Ridge Street boys, conducted by Brother Adrian, will be on the air. There is great rivalry between these two choirs, who will now be heard for the first time throughout the length and breadth of Australia.

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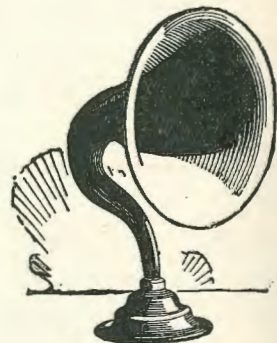
By their consistent high quality, long life, and ability to stand up under heavy service, American Bright Star "B" Batteries have won popular approval with radio enthusiasts the world over.

45 volt **26/-**

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Speakers **30/-**
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BRANDES Table Talker

An attractive, efficient Loud Speaker which is the greatest value in speakers at the price. The goose-neck horn means clearer and more rounded tones, and the patent material of which it is constructed eliminates any suggestion of harshness and metallic resonance. A nicely-finished and reliable speaker at all times.

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vibration would cause the wave to "shimmy" badly. The trouble, however, was ended by springing the coil on to a piece of plate-glass. The secondary (aerial) coil is a temporary affair wound with ten turns of 14 gauge copper wire on a 4-inch waxed cardboard form.

Two R.F. chokes are used in the H.T. line, and have been found indispensable for 30-metre work. It was found, that to be effective, these chokes had to be kept as close as possible to the oscillator tube. Browne is of the opinion that inefficient R.F. choking is the principal cause of "ham" interference with B.C.L's., and so many of the rotten QSB's we hear on the air.

High and low tension power is derived from the 240-volt A.C. house service supply. For H.T. this pressure is stepped up to 750 volts and put through a 24 jar chemical rectifier, coming out at 600 volts pulsating D.C. This is put straight on to the transmitter, minus any filtering chokes or condensers, the input current varying between 50 and 70 milli-amps. Although the H.T. is unsmoothed and is just "raw R.A.C.," so to speak, the note has been reported by a number of stations to be of a good D.C. tone.

Although it is often that 4RB has occasion to operate between the hours of 8 and 10 p.m., owners of all types of broadcast receivers, within a few hundred yards radius of the station, report not the slightest interference from the transmitter. One com-

plaint was lodged some time ago reporting QRM on three consecutive nights. It may have had been taken to heart had not the log book shown that 4RB was well off the air during that period, with a "blown-up" transmitting tube!

The short-wave receiver is the usual 3-coil Weag-ent regeneration control affair with two stages of audio, though only one is generally used. This outfit has been credited with "pulling in" signals from every civilised country on the map.

The aerial "as is" consists of a half-wave Zepplin-Hertz type, which is a voltage feed system, employing a double line R.F. feeder. No earth connection is used with either transmitter or receiver.

4RB is the holder of several long-distance, low-power records for Queensland and Australia. This station was the first in Queensland to establish two-way communication with Europe and Africa, and to become eligible for membership of the "Worked All Continents Club." He was also the first Aussie to work Great Britain on a five-watt tube. This latter record was done with an input of 20 watts, G-2DX, Surrey, England, being the station at the other end.

Other countries from which 4RB has received cards and letters reporting reception of his signals are:—Sweden, Italy, France, Germany, Norway, Morocco, India, Chile, Cuba, U.S.A., Japan, China, Philippines, and Borneo.

A Personality of the Wireless World

Depicted here is Mr. Chas. E. Forrest, Managing Director. International Radio Company Ltd. His experience in the radio industry in Australia and New Zealand extends over many years and he founded one of the pioneer radio concerns in New Zealand, where he was also actively interested in the foundation and operation of the broadcasting stations which were responsible for the development of the industry in the Dominion.

Although comparatively a young man, he has brought to bear a wide business knowledge and understanding of radio to the popularising of the well-known De Forrest Valves and Sets throughout Australasia and has been closely associated with some of the most progressive moves towards the development of radio in Australia. He was one of the N.S.W. delegates to the recent Federal Conference of the Association for The Development of Wireless.

Discussing the radio position in this country, Mr. Forrest said:—

"I have the greatest confidence in the future of radio in Australia, and I believe that the fringe of a very big industry has not yet been touched. Broadcasting is fast becoming stabilised and is quickly taking its place as an indissoluble part of the national life of this country. Latest developments show that the time is not far distant when European and American broadcasting stations will be received out here, and the music and voices of the world's greatest artists will be heard in Australian homes. The tendency towards better parts and better sets is a clear indication of the permanency of radio, and it is inevitable that eventually inefficient apparatus will disappear off



the market. Educational facilities, outback developments, international friendships—these are merely a few of the products of radio of the future."

USE YOUR HEAD

Cut Prices, Slander, Hearsay, Habit,
may cause you to buy other Valves

BUT—

for the sake of your sanity and best results

Buy **DE FOREST VALVES**

and have no regrets

FOR SALE EVERYWHERE

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TYPE D.V.5.—Takes 5 volts
at $\frac{1}{2}$ amp. on filament.

12/-

Plate voltages, detector 18-22 $\frac{1}{2}$
volts.

Plate voltages, amplifier, 60-
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D.V.5.
Filament 5 volts
25 amp.



D.V.3.
Filament 3 volts
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Type D.V.3.—Takes 3 volts at
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Plate voltage, 16-22 $\frac{1}{2}$ volts,
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Plate voltage, 60-120 volts,
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Both Types Fit Standard American Socket.

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Notes from 4QG

Items Past and Present

The December and January programmes from 4QG will include contributions by a new party which has recently been organised by the station and which will be known as "The Scottish Entertainers." This party comprises three artists, "Rab," "Tam," and "Jock," and solos, vocal duets, vocal trios and humorous Scotch items will be provided by its members.

Uncle Ben of bedtime story fame at 4QG, has lately been working very hard in connection with the production of a "Book O' Fun". This book which is well printed and splendidly illustrated, has been designed as a Christmas treat for kiddies, and is now ready. A most attractive cover design has been arranged. The "Book O' Fun" contains stories written by the bedtime story tellers at 4QG, and also a whole host of good reading for the little ones. The price of the book is 3/- post free.

Early in December 4QG will broadcast a description of Queen Street, Brisbane, at night time. A microphone will be mounted on the balcony of the Hotel Carlton and an announcer stationed near it to describe the scene. Street noises will be picked up and reproduced.

On several occasions recently 4QG has relayed from the Brisbane Botanical Gardens, concerts provided by the massed bands of Brisbane. Special programmes have been provided on each occasion and listeners have been given a real musical treat. Arrangements which have been made between the Queensland Band Association and 4QG will result in further performances being relayed.

A novel transmission will be affected by 4QG in the near future. Acting in conjunction with the Harbours and Rivers Department, which controls the buoys and lights along the Queensland coast, a party from the station will accompany the diving plant down Moreton Bay to the Pile Light. A full description of the bay will be described, and an announcer from Station 4QG will make a descent in 40 feet of water. A full description of the bottom of the bay will be given by him. This "stunt" has been effected by Station 2FC, and 3LO and 4QG, profiting by experience, has made a slight change which should ensure perfect reproduction. The ordinary microphone will not be used, but a special microphone has been designed and built by the station engineers. It will not be fitted in the diver's helmet, but in another portion of the diving suit. This arrangement should do away with echo effects, which would tend to muffle the announcer's voice.

The vogue of the waltz has given to us many captivating tunes, and made some enviable reputations. One great musician has expressed the opinion that he would be far prouder to have given the world Strauss's "Blue Danube Waltz" than his own more academic

conceptions. A writer who has stepped to fame by medium of the waltz is Waldtnefel, whose works are played everywhere there is an orchestra. Station 4QG will broadcast a sample in his waltz "Espana," on December 13th, to be played by the Clarwin Orchestra.

NEW GUINEA GOLDFIELDS—BULOLO FIELD.

Establishment of Wireless Communication.

Wireless equipment shipped to Salamao, in New Guinea, in August last by Amalgamated Wireless (A'sia), Ltd., for erection on the goldfields, safely reached its destination, and has now been erected and tested.

Reports to hand indicate that effective communication has been established, and that the service is entirely satisfactory.

To ensure the equipment from damage through the excessive rain that prevails on the mountains each unit of the equipment was packed in special tin-lined boxes.

The only means of transport was by native carriers who, though normally only carry loads of 50lbs., in this case were called upon to transport loads of 100lbs.



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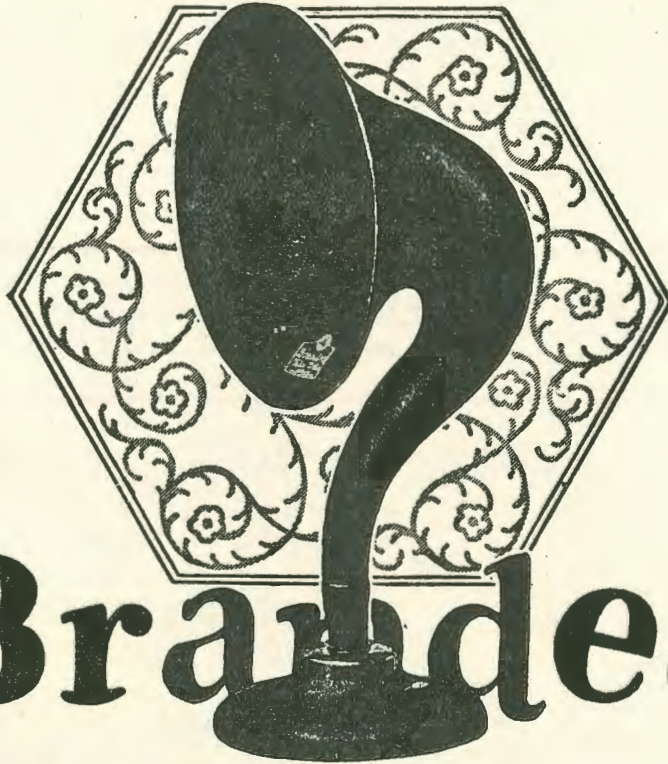
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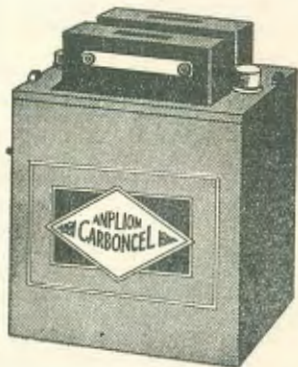
Queensland Distributors: HOME RADIO SERVICE LTD., Courier Buildings, Brisbane.

Something New in Radio

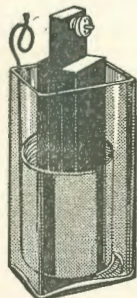
Messrs. Amplion (Australasia) Limited, have now placed on the market an entirely new type of battery, for high tension and low tension purposes, known as the Amplion "Carboncel." The main thing about these particular cells is that recharging can be effected at home in a few minutes by the addition of Salamoniac. The problem of high and low tension batteries, especially in the country districts, may be claimed to be very considerably reduced by the use of these wonderfully efficient batteries.

The special feature of the cell is the total absence of any chemical depolarising mixture in the carbon element. The cell is of the carbon-zinc-salamoniatic type, the action of which produces, as is well known, ammonia and hydrogen. These gases are collected in extremely porous carbon blocks, the special construction of which enables them to remain perfectly dry in spite of their immersion in the electrolyte, so that the gases generated can mix freely inside the blocks with the oxygen out of the air.

The "Carboncel" thus belongs to the class of primary cells which use the air as a depolariser, but its superiority lies in the great porosity of the carbon, which renders possible a very rapid circulation of the gases. The result is that the "Carboncel" is capable of producing heavy currents, such as are impossible to obtain from other primary cells of similar description. At the same time, the E.M.F. is maintained practically constant during discharge on a given external resistance, provided that the size of the cell is adapted to the ohmic value of such resistance.



No. 222.



No. 270.

Foremost amongst the "Carboncels" are the Nos. 222 and 229 radio pattern. They are designed for very heavy duty, and on account of their efficiency, long service, and extreme simplicity, commend themselves to the discriminating buyer of low tension batteries. There is no frequent recharging—they are made active with salamoniac electrolyte just like an ordinary bell-battery, and when operating from four to eight dull-emitter valves, will remain in service up to twelve months without the slightest attention. The carbon electrode will last the life of three zincs at least. It is not possible to

give here a comprehensive table that would cover their wireless application, but it will be quite apparent that their field is a large one, seeing that such large outputs can be maintained over long periods of continuous use. The table shown here should assist materially to determine the number of cells required to give a certain specified voltage at the requisite drain.

"Carboncel" No. 222 is a large power cell for heavy semi-continuous discharge. Overall size $9\frac{1}{2} \times 7\frac{1}{2} \times 6\frac{1}{2}$ inches; voltage, 1.45; capacity, 500 ampere hours at: 1 ampere for 8 hours per day, 2 ampere for short periods, 10 amperes 5 seconds 100 times daily; internal resistance, 0.025 ohm; salamoniac charge, $2\frac{1}{2}$ to 3 lbs.

"Carboncel" No. 229 is a small power cell for semi-continuous discharge. Overall size, $10\frac{1}{2} \times 7 \times 7$ inches; voltage, 1.45; capacity, 300 ampere hours at: 0.3 ampere for 8 hours per day, 1 ampere for short periods, 3 amperes 5 seconds 100 times daily; internal resistance 0.2 ohm; salamoniac charge 1lb. 5ozs.

"Carboncel" H.T. Batteries: Size 2 3-8th x 9-16th x 19-6th inches; weight, approximately 4 ozs.; charge, $\frac{1}{2}$ oz. salamoniac; capacity, 10 ampere hours; output, 20 M/A, semi-continuous for 5 hours daily; E.M.F., 1.45 volts.

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IN the use of Masts to carry Wireless Aerials, Rosenfeld's Oregon has proved to be the most serviceable. The Oregon for these masts is specially selected. Call, 'phone 5991, or write to us for further particulars and prices of Wireless Masts.

You can purchase your Masts in one length of Oregon Pine, from 30ft. lengths of 3 x 3, to 80ft. lengths of 6 x 6, also 4 x 4, and 5 x 5 to any length.

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A Short Talk on Radio

Delivered to members of the Institute of Architects of N.S.W., at a general meeting of the institute, on 2nd November, 1926, by Mr. R. Burgin, ex-President of the Electrical Employers' Association of N.S.W., on behalf of the Radio Broadcast Bureau.

So much has been published regarding radio, as wireless transmission is designated, particularly in association with broadcasting, during the last few years, that one does not propose to trace its history in this country at the moment, but rather to draw attention to some of the opportunities which members of the architectural profession have of serving their clients by providing better and more extensive facilities for taking advantage of the broadcasting service in operation to-day, to say nothing of the increased benefits and pleasures which will surely come in the immediate future in view of the rapid development and extension of broadcasting in Australia.

In suggesting that the progress to date justifies the architect in taking radio reception into account when planning a new building, the extent to which same is likely to be of service can be gathered from a few figures, without taking up a lot of time in considering extensive statistics. Broadcasting has been



in general use in Australia now for a little over two years. During that period in the State of New South Wales the number of broadcast listeners licenses in force has grown to approximately 45,000 at the end of September, 1926. Other recent figures indicate that an increase is taking place at the rate of about 6 per cent per month. If this rate of increase is maintained, and it might easily be a more rapid increase judging from the experience of other countries, in the course of the next two years we shall have licenses to the extent of one for every three or four homes. Such a proportion as this will, no doubt, confirm one in anticipating that in any new building equipped for convenient use of radio reception, sufficient use of the facilities provided will be made to justify the small expenditure incurred.

Now as to the provision which should be made in new buildings for radio reception. Let us take the

average residence first. It is suggested that when carrying out the general electric wiring of the building provision should also be made for a separate circuit of wiring between the different parts of the house so that headphones or loud speakers may be conveniently used at some distance from the location of the receiving set itself. This special wiring would comprise a similar grade of wire and casing to that used for ordinary electric light service, and at each "listening-in" point the wiring should be connected to one of the many standard types of electric wall plugs in common use. The detachable portion of the plug is connected by a small cord to the loud speaker or headphones in a similar manner to that in which a radiator or other electrical appliance is connected, and with the same facility the radio apparatus is connected up from room to room. It is necessary to mention here that precaution should be taken to see that the type of wall plug used for the radio service is not interchangeable with those used for the ordinary light and power wiring in the same premises. The receiving set itself, having been installed in say, the living-room, library or other convenient position, the number of other positions in which the broadcasting programmes can be heard will only be limited by the number of plug points, and other apparatus available. Installations of this kind already carried out have proved themselves well worth the small initial cost, as they have provided a rapid means of taking the entertainment to the position where same can be best enjoyed, either to the fireside on a winter's evening, or to the verandah on a summer's night, to the dining-room during meals, or to the bedrooms, kitchen, etc. The cost of installing a circuit of plug points as suggested could be estimated at approximately 50 per cent of the rate payable for ordinary electric lighting points, the exact figures varying according to the different quality or type of material used, flush plugs being, of course, more expensive than ordinary surface type, etc. It will be seen, however, that for the expenditure of say, £5, a sufficient number of outlets in the average home could be installed during the erection of the building.

Another radio provision which should be made in the home is an additional standard electric power supply outlet in the room where the main receiving set is to be operated. The ordinary electric supply of 240 volts, or other standard pressure, is becoming extensively used for the purpose of charging, from suitable apparatus, the accumulator batteries and also providing the "B" battery or high tension current required for radio reception, thus avoiding the necessity of dispensing with the use of dry cell "B" batteries. As the usual power plug installed in the room may be wanted for supplying an electric radiator or other appliance, at the same time this additional plug will then be available for the sole use of the radio apparatus. As the two plugs could be fixed quite close together the cost would be reduced to about half the usual rate per point, providing the circuit was not in this way overloaded.

Mention has just been made that the various parts of the house where "listening-in" plugs could be fitted include the bedrooms. This brings to mind the class of building which is composed almost entirely of bedrooms, that is, our various hospital buildings throughout the suburbs and country. Abundant evidence is available as to the great boon radio has been to sick folk lying in hospitals, the service being provided by means of ordinary headphones (not loud speakers), so that the reception can be made available just to those patients fit and able to appreciate same without causing any interference to others. Some of the larger hospitals have been fitted, and others are in the course of installation. It is suggested to the architect that in planning hospital buildings in the future much expense will be saved if the provision of plug points is made to each bed position in the course of the general equipment of the building. An allowance of from 10/ to 15/ per bed will be sufficient to cover the supply and erection of plugs and wiring, terminating in a central distribution position ready for connection to the receiving set any time.

In connection with "apartment" or "flat" buildings, where the tendency is always to provide a maximum of facilities for the tenants, the provision in each suite of an additional power plug for battery charging purposes, &c., as already suggested is recommended, as well as the provision of some means of obtaining an efficient aerial and earth connection for the receiving set. The more expensive types of receiving sets can, of course, be operated efficiently without either an external aerial or earth connection, but the types more commonly in use, and within the means of the average person, still require an efficient earth connection to the water service and some form of aerial outside the set itself, but not necessarily outside the building. A length of insulated wiring fitted behind or above the picture rail is a method largely adopted with good results. If this wire and the earth wire are terminated in the respective contacts of an electric plug base as before mentioned, everything is ready then for connecting up the receiving set without any trouble or probable damage and disfigurement to the finished interior of the room. Another practicable scheme is the installation of several "listening-in" plugs in each flat all connected to a central position in the building, where one common receiving apparatus may be installed and more or less automatically controlled.

Residential hotels provide still further opportunities for a suitable scheme of radio wiring to the various rooms. As the broadcasting service of to-day starts off with 7 a.m., health exercises and morning news, and finishes with a late news service about mid-

night, with a great variety of information and entertainment throughout the day and evening, many hotel guests would welcome a radio speaker in their own bedrooms as they now welcome the private telephone and other conveniences, even if at a small extra cost sufficient to cover the outlay incurred providing the necessary equipment.

Passing on now to the modern office buildings being erected in our larger cities, the provision of a radio service from a central point right into the office of the busy commercial man of to-day will well justify the small outlay necessary. With a properly planned equipment for the outlay of a very few pounds per annum, the commercial man could sit at his desk and hear the latest stock exchange business announced, day's livestock and produce prices reported, along with much other valuable commercial intelligence, which is broadcast throughout the day.

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Ediswan valves are the product of the greatest electrical company in Great Britain. Ediswan made the first radio valve, and it is but logical to assume that having attained their leadership they are still in the position to retain it.

Ediswan valves make splendid Xmas gifts to radio fans. If you would make him happy, give him an Ediswan valve or two. Priced from 5/ to 18/6 each at all reliable radio dealers.

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Do away with dry cells and costly replacements—buy an Accumulator.

U.S.L. 2-volt, 20 amps. . . 12/ each.
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(For 3 to 6 Valve Sets.)

Recharging the small type, 1/ each.

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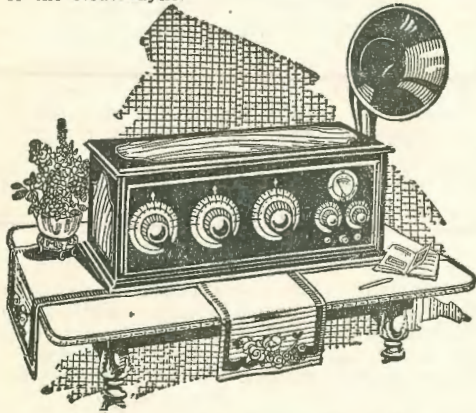
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High Tension Radio Batteries

Many owners and users of valve sets realise that their "B" battery is a frequent expense, and that it cannot be relied upon with any degree of certainty. In towns where the radio dealers are easily accessible this is not noticed so much as in the country.

The manufacture of batteries have had experts investigating the possibility of obtaining a "B" battery that would be economical, reliable, efficient, and that would require no technical knowledge or special attention to handle and use.

In most cases it has been found that one of the above features have been sacrificed in consideration of the others. For instance, a dry cell battery of the cheap class is economical to instal, but after a few months use may become unreliable and fail without much warning, leaving the set useless until replaced. In the course of a couple of years these replacements will have cost a considerable amount.

In the case of accumulation "B" batteries, they need skilled attention while recharging, and have to be charged at comparatively frequent intervals, and will not stand any neglect or mishandling.

Any form of primary battery, either wet or dry, has the advantage over the accumulator type, in that it has not to be taken to and from the charging station, but is always with the set. The cause of primary batteries running down is either that the zinc is eaten away by the oxygen generated within the cell or that the carbon has become coated with hydrogen, which obstructs the passage of the current. It should be noticed that the quantity of hydrogen and of oxygen gas generated within the cells is proportional to volume of current multiplied by the time the current is flowing. Therefore it is obvious that the greater the surface of carbon and zinc the thinner will be the coating or hydrogen and the effect of oxidation will be less marked on the zinc.

To prevent the hydrogen being deposited on the carbon plate has also been the study of manufacturers of batteries. The most efficient method at present is to surround the carbon plate with granulated carbon and bioxide of manganese. The manganese, containing much oxygen, comes in contact with the hydrogen flowing to the carbon plate, and thereby combines with it and forms water. This tends to keep the carbon plate free from hydrogen.

From this brief explanation it should be quite clear that the cell containing the largest quantity of granules between the carbon and zinc should have the longest life, while the zinc lasts.

The Silvertown Coy., of England, have constructed a cell which fulfils the previous named requirements as much as possible. These cells have 1½ozs. of special quality zinc, so arranged as to present a large surface to the existing liquid. The carbon has the depolariser firmly attached in such a way that the hydrogen cannot reach the carbon without passing through it. These elements are assembled in a strong outer cell, which is sealed in at the top excepting for a small gas vent, which makes the cell as convenient to handle as a dry cell battery.

After the cells have been in use for several years they may be re-made up at a small cost without expert attention.

Whispers from Maoriland

Recently a Wellington firm that deals in radio apparatus ordered a supply of "egg-cup insulators." A few days later it complained that these had not been delivered. The supplying agency produced proof of delivery, but the goods could not be found. Eventually they were located in the crockery department, whither a wise youth, noting the name on the parcel, had placed them alongside the china eggs.

A proposal has been placed before the Auckland City Council that permission be granted for the broadcasting of municipal organ and band concerts, a proposal that drew from the city organist the comment that the broadcasting of organ music in England had been distinctly unsatisfactory. It was, he added, more or less a caricature of the real thing. The city bandmaster was strongly favourable to the scheme, which, he said, was good publicity for the Auckland Municipal Band. Eventually the council decided that all Sunday night concerts, organ and band, should be broadcasted. Councillors expressed the opinion that the public would not be so critical of the technique of broadcast music as the organist himself.

Many N.Z. listeners are familiar with the talks on racing and tips by sporting experts, broadcasted by the Australian stations. In New Zealand the publication of racing tips and dividends is prohibited, so we will have to be content with Australian news in this connection.

Recently 3YA, Christchurch, and 2BL, Sydney, endeavoured to relay a concert transmitted by KDKA, the Westinghouse Company's famous station at East

Pittsburgh, Pennsylvania, U.S.A. Super-power was being employed by the Yankee station, but owing to various circumstances, mostly atmospheric, the relays were unsteady. The distance spanned by 3YA was over 8000 miles, and the "stunt" was quite interesting, even if not a complete success. In the case of 2BL Sydney the music from Pittsburgh came a distance of about 9500 miles, and Wellington amateurs received it relayed back a distance of 1240 miles. Static was busy, and rather mangled the reception at 2BL, and further spoilt reception of the relay from 2BL.

A few more N.Z. radio statistics:—There are 597 licensed dealers in the Dominion; also ten broadcasting stations, four toll and six private. The grand total of licenses issued to date is 7,304, and it is estimated that these have yielded to the New Zealand Radio Broadcasting Company, some £11,000.

The poor old Wellington station has been coming in for some criticisms lately—partly as the result of comparison with the new transmitters at Auckland and Christchurch, and partly because it has fallen from grace lately. It had a particularly bad spasm one Sunday night recently. Usually the Sunday band concert is splendidly put out, but the last one, owing apparently to a trouble in the relay system, was a terrible failure. It would have been much better to have closed the station down than to have allowed the public to listen to the vain struggle that went on between the operators and the apparatus. There is a rumour that a new station is to be provided shortly, but how long "shortly" means is a question.

Improve Your Reception

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EDISWAN Valves

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Reduced Prices of the Famous "R" and "A.R." Valves **5/-** ea.

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Plate Voltage, 30-80.
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TYPE "A. R. 06."

Filament Voltage, 2.5.
Plate Voltage, 20-50.
Filament Current, .06 amperes. Price, 13/6 each.



Lily Street, Stone's Corner, 3/11/26.
(To the Editor.)

Dear Sir,—I would like to bring under the notice of your readers a rather unusual incident which happened to me recently whilst erecting an aerial at Albion Heights. I had run the aerial from pole to pole, and was busy inside the house putting in switches, &c., ready for installing the set, when I got a shock off the aerial wire which, so to speak, made me see stars. It was so severe I thought there must have been a short in the electric light wiring of the house, so I switched the main off and tried the aerial out with a screwdriver, obtaining a nice, fat spark of half-an-inch. I then put a voltmeter across and obtained a reading of ten volts. Not having an ammeter I was unable to obtain the amperage, which would have been interesting.

Now, sir, there was no sound of thunder whatsoever, and as far as I could see no lightning flashes although cloudy and raining. I have had several conversations with gentlemen well up in electricity since then, and they put it down to a static discharge, which may be local or spread over a large area, caused by a highly charged strata of cloud. Now, sir,

you can guess what would have happened had the set been receiving. I have no hesitation in saying "good-bye tubes." This kept on for nearly fifteen minutes except when the switch (aerial and earth) was grounded when everything, of course, went direct to earth. My advice to everyone is—whether using an outside or an inside aerial—use a good lightning arrester, and earth and aerial switch, and when finished with your set, see that the switch is grounded, as lightning stands not upon the order of its going and coming.

I am, yours truly,

G. H. BUSBY, Aerial Erector.

XMAS RADIO GIFTS AT HARRINGTON'S.

Messrs. Harrington Ltd., Queen Street, Brisbane, advise that their radio section is just brimming over with gift suggestions for Xmas gift giving.

The name of Harrington has been long associated with all that is best in radio and photographic goods to need much emphasis on the benefits and advisability of purchasing radio supplies there. The qualities and values alone entice the business. One satisfied customer makes another, and so from day to day they are making new friends.

Readers would be well advised to inspect Harrington's Christmas stock.

Strong, Silent POWER

Twenty years ago when the motor-car industry was in its infancy, PREST-O-LITE gave the automobile its first dependable headlights.

To-day, PREST-O-LITE Radio Batteries are giving wireless enthusiasts the world over, wonderful service and satisfaction.

Prest-o-Lite Batteries are the Rolls-Royces of the Battery Field. They outlive other makes by years, and give a steady and constant discharge under all conditions.

Write for full information and prices.

Prest-O-Lite 'A' and 'B' Batteries

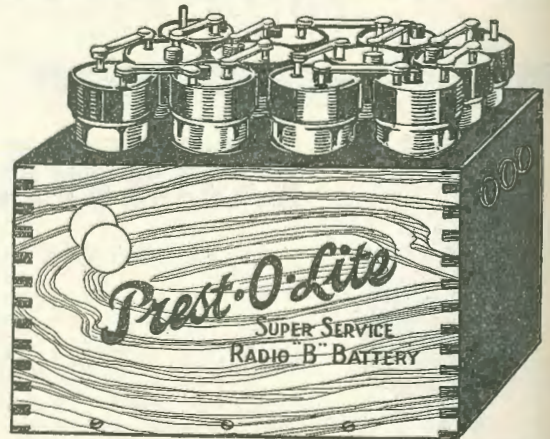
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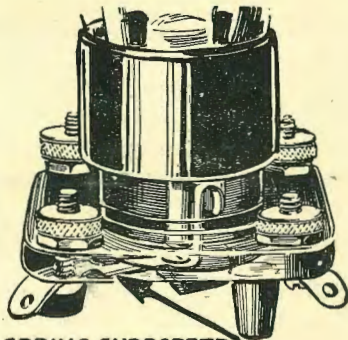
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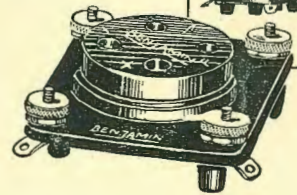
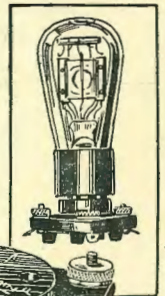
BENJAMIN CLE-RA-TONE Push Type Socket.



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Some of the outstanding features of this socket are:

1. It is compact and neat appearing.
2. Side wiping contacts, insure perfect electrical connections to the tube prongs.
3. Suspension spring and contact member are made in one piece, thereby eliminating the high resistance joints.
4. All metal parts are heavily nickeled.



By replacing the old type of socket in your set with the Benjamin Cle-Re-Tone "Push" Type Socket, you positively eliminate tube jar and resultant microphonic noises.

No. 9049 is without lower mounting base and is intended for direct panel mounting. They include a drilling template and four machine screws withnuts for attaching.

Description.

No. 9040 with mounting base. Price 5/-

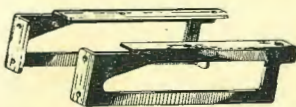
No. 9049 without mounting base (for direct mounting to 1/8 inch panel). Price . . 3/6



Benjamin Self Supporting Bracket

The Benjamin Self Supporting Brackets are designed for use with sub-panels and are of such depth that all wiring and mounting of small radio parts can be done underneath the sub-panel, thereby decreasing the hazards of short circuiting and blowing of tubes. Brackets are intended to be attached to the front panel.

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