

ISSUED EVERY — —
SECOND WEDNESDAY

SIXPENCE

RADIO

IN AUSTRALIA
& NEW ZEALAND

Registered at G.P.O., Sydney, for transmission by post as a newspaper.

VOL. II

OCTOBER 29, 1924

No. 42



" HIS MASTER'S RADIO "

(With apologies to the well-known Gramophone Company.)



IS NOT COMPLETE WITHOUT THESE "WIRELESS PRESS" PUBLICATIONS.

THE WIRELESS ATLAS OF THE WORLD.

Comprising 75 Maps in a Handy
Book Form.

Numerous requests for an Atlas of the World, showing all Wireless Stations, have been reaching us. We have, therefore, reprinted from "The Year Book of Wireless Telegraphy and Telephony," the Map Section, which has proved so useful.

Every station is keyed so that at a glance you can differentiate between Public, Direction-Finding, Official, Military, Private, Aviation or Broadcasting Stations.

PRICE 2/-. Postage 3d.

PRACTICAL AMATEUR WIRELESS STATIONS.

An "Experience" Book.

By J. A. WHITE.

Containing the best suggestions of thirty-three experimenters on Building, Installing and Operating Experimental Stations for Radio Communication. 136 Pages Profusely Illustrated.

PRICE 4/-. Postage 3d.

"THE WIRELESS AGE."

America's foremost Radiophone Review, is the most popular American wireless magazine published monthly.

PRICE, 2/-. Annual Sub., 24/-.

AN INTRODUCTION TO RADIO

Vols. 1 and 2.

Here is the real beginner's book — language not too technical — illustrations carefully selected — diagrams right — comprehensively dealing in Vol. 1 with an introduction to Radio, radio telephony and transmitting and receiving outfits. Vol. 2 gives an explanation of technical terms, vacuum tubes, and shows how to set up receivers and transmitters.

Price TWO VOLUMES **6/-**

OTHER PUBLICATIONS INCLUDE:—

"CONQUEST,"

England's popular magazine of Science, Invention and Industry, different from all other similar magazines. It is the "story" magazine of accomplishment in many different fields. Monthly.

PRICE, 1/6. Annual Sub., 18/-.
per copy. 6 months, 9/-.

"THE WIRELESS WORLD"

England's Pioneer Wireless Journal, liked by all experimenters. Weekly.

PRICE, 6d. Annual Sub., 26/-.
6 months, 13/-.

POCKET DICTIONARY OF TECHNICAL TERMS USED IN WIRELESS.

By HAROLD WARD.

Do you ever come across wireless terms you cannot understand? This book, which will comfortably fit your vest pocket, contains over 1500 definitions. It's a handy little companion every wireless man should have with him.

PRICE 3/-. Postage 3d.

HOW TO CONDUCT A RADIO CLUB.

By E. E. BUCHER.

Covers Parliamentary procedure, indoor and outdoor experiments, 5,000-mile receiving sets, vacuum tube amplifiers and detectors and many other subjects.

Paper Cover. 148 pages. Fully illustrated.

PRICE 4/-. Postage 3d.

OBTAINABLE FROM ALL LEADING BOOKSELLERS OR

THE WIRELESS PRESS

(Specialists in Wireless Books and Magazines)

"Gloucester House,"
44 Market Street,
MELBOURNE.

97 Clarence Street,
SYDNEY.

Australasia Chambers,
WELLINGTON,
N.Z.

RADIO

IN AUSTRALIA
& NEW ZEALAND.
Incorporating Sea, Land and Air.

CONTENTS

Copyright Registered.

Volume II.	OCTOBER 29, 1924	Number 42.
Radiatorial—		Page.
Should Great Artists Broadcast?		419
The Carborundum Crystal Receiver		420
The Construction of Plugs and Jacks		422
Unit Control Receivers		423
How to Build an Inductive Wave-trap to Eliminate Interference		424
Looking for Trouble		425
An Adaptor Made from "Junk"		426
Broadcasting from the "Ventura"		426
Wireless in the Apple Isle		427
Broadcasting and Listening-in		428
How to Increase Range and Selectivity		430
The Meter to Use with Your Valves		432
Another New Zealand Radio Record		432
United Distributors, Ltd. Move to New Premises		434
The Control of Radio in New Zealand		434
Some Tool Hints for Panel Working		438
Broadcasting in America		440
An Appreciation of the Weco Valve		444
British High-power Station		444
Calls Heard		444
Changing Variometer-Variocoupler Set to Reflex		446
The Report on Wireless Telegraphy in New Zealand		448
Three Methods of Using Audio-frequency Amplification		452
The Why and the Wherefore		452
Queries Answered		454
Movements of Marine Wireless Officers		455

Published by

THE WIRELESS PRESS

Gloucester House,
44 Market Street, Melbourne.

97 CLARENCE ST.,
SYDNEY.

Australasia Chambers,
Wellington, N.Z.

PRICE, 6d. per Copy.

Subscription Rate: 10/- per annum (26 issues) throughout Australia and New Zealand; Foreign Rate, 12/6 (26 issues).

Obtainable from all Booksellers and News Agents, also the N.S.W. Bookstall Co., Ltd.—all branches.

Canada and U.S.A.:
The Wireless Press Inc.,
326 Broadway,
New York City.

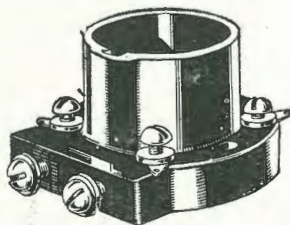
Wholesale Distributing Agents:
GORDON & GOTCH (AUSTRALASIA), LTD.,
Sydney, Melbourne, Adelaide, Brisbane, Launceston, Perth,
Auckland, Wellington, Christchurch, and Dunedin, N.Z.

Great Britain:
The Wireless Press Ltd.,
12-13 Henrietta St.,
London, W.C.2.

**YOUR DEALER
HAS THEM ALL!**

You may select Frost Parts with the assurance that they will give you long and perfect service. It is because of their flawless quality that they are **GUARANTEED!**

Always ask for
**FROST
GUARANTEED
PARTS**



FROST-RADIO
612. Bakelite Socket for C.299 and U.V.199 Valves, 107 for Standard Valves, 5/-.

FROST-RADIO JACKS



FROST-RADIO JACK No. 131
A double-circuit jack of superb quality. 5/-



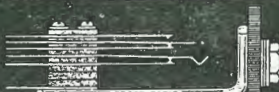
FROST-RADIO JACK No. 133
A dependable first quality open circuit jack. 4/6



FROST-RADIO JACK No. 134
A closed circuit jack that is widely used. 5/-



FROST-RADIO JACK No. 135
The ideal jack for filament control purposes. 6/-



FROST-RADIO JACK No. 136
Another high quality filament control jack. 6/6

**SEE THEM AT
YOUR DEALER'S!**

Frost Parts are the most complete and up-to-date line of guaranteed radio parts ever sold in Australia. They fulfil every requirement in the best and most reliable way.

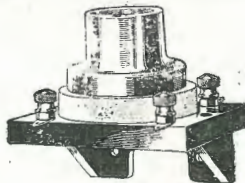
Always ask for
**FROST
GUARANTEED
PARTS**

United Distributors Limited

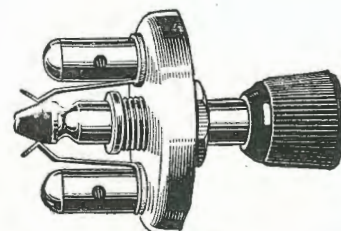
(Wholesale only.)

72 Clarence Street — Sydney.
592 Bourke Street, Melbourne.

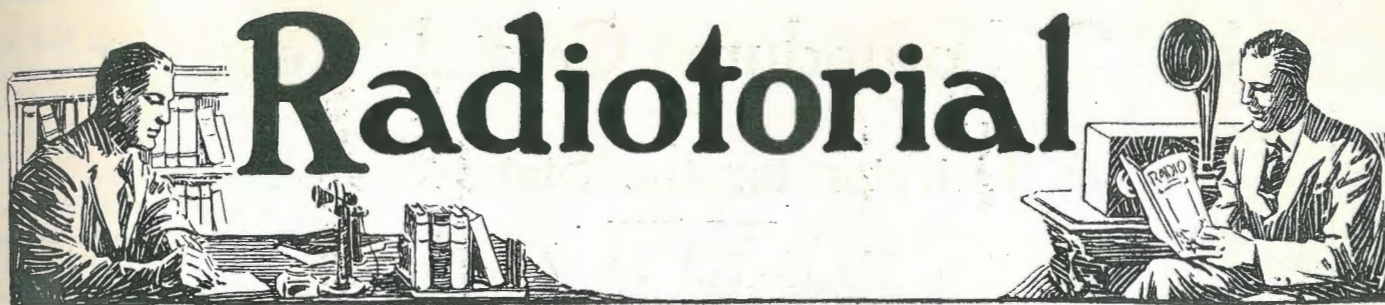
And at Adelaide, Perth, Hobart, Brisbane, Wellington.



FROST-RADIO
617. Single Shock Absorber Socket for 199 Valves, 618 same for Standard Valves; 6/3.



FROST-RADIO
608 Push-Pull Battery Switch, 4/-.



Should Great Artists Broadcast ?

“**B**ROADCASTING is all right for unsuccessful artists and ‘Zoo’ hyenas, but no first-class artist ever sings in a broadcasting studio and none ever will, and, at the same time, retain the power to draw an audience”—thus is the manager of a world-famous singer reported recently by cable to have said in London.

WHICH, to put it mildly, seems an extraordinary statement to make.

IT is something on a par with that made some years ago now by a prominent English theatrical manager when the motion pictures first came into prominence. He vehemently denied that any of *his* artists would ever lower their ART by gesticulating dumbly before a movie camera. Before two years were out these self-same artists were appearing for something like nine months a year in every picture theatre in the land while the West End theatres saw them for perhaps three. Nor was that the least of it, for most of them were earning double their salary and many of them three times as much.

NO, the *entrepreneur* who is credited with this sweeping statement is obviously wrong, for one has only to look to other English and American artists of all kinds. The best of them have been broadcast and will continue to be so.

FROM a publicity point of view—which is an all-important point of view where entertainers are concerned, it being their very life-blood, radio broadcasting is the finest and most far-reaching medium that has ever been devised.

SUPPOSE that a famous singer appears at a concert at the Town Hall. Perhaps, at the most, several hundreds of people will be able to crowd in, although many more would if there were the accommodation. The concert is held and the singer is a huge success. The only real way in which further record box office receipts will be assured is through the reports of those few hundreds of people who heard her.

BUT supposing the microphones are installed on the platform. For at least one portion in the evening

every crystal and valve set within range is tuned into this concert. On an average, it is calculated that three people listen-in to one set. That means, then, that three times the number of people who would ordinarily be there are there in everything but actual person.

IN fairness, then, we will not say all, but a good many of those who heard the concert are music-lovers or are interested in the personality of the singer alone. They have heard but they have not seen. Their natural curiosity will make them want to set eyes on the person from whence those golden notes have come. “I wonder what he or she is like,” they say. “Let’s go and see; when is the next concert?” and there you are. Interest has been aroused which could in no way have reached the same intensity through the reports of friends or eulogistic newspapers’ critiques.

AS has already been pointed out in these columns, broadcasting has never injured an entertainer’s reputation yet. Providing that their voice is suitable for broadcasting there is no great difference between entertaining on a stage or a concert platform and a wireless studio.

THERE is not the ringing applause which sometimes “lifts the roof,” but, on the other hand, the written appreciations which come daily from listeners all over the country seem to our mind to be more sincere and lasting. It is a simple thing to clap and employs very little physical effort—and less mental, but to sit down and take up pen and paper and write an appreciative letter is a different matter altogether and such an act must be backed by the writer’s real desire to put on lasting and actual record his pleasure at the entertainer’s efforts.

AS regards first-class artists not remaining a draw after having been broadcast from a theatre or a studio, we have only to go back to the recent Grand Opera seasons in Sydney and Melbourne. There seemed to be no falling off in the capacity houses which were the order of the day and night when the voices of Signorina Toti dal Monte and Signor Borgioli were transmitted to many a far-flung corner of Australia.

The Carborundum Crystal Receiver

A Detector for the Static Season

Reception Unaffected by Atmospherics

MUCH has been said of late, in many ways, of crystal receivers, single and double slide tuning coils and loose couplers, but we have been forced to the conclusion that there is still a great demand for something new, something better, in the crystal receiver field.

Those of our readers who have built and operated the various receivers described in past issues, know the value of a good piece of crystal, and a

periods happen after a crash of thunder or a flash of lightning. It is most annoying admittedly, but it *will* happen, and, furthermore, cannot be entirely remedied. The trouble is, the "rectifying properties" of that particular spot of the crystal on which the "Cat's Whisker" was resting, have been destroyed.

You then search the crystal on top and all sides until another "good point" is found, and you once more hear your friends of the ether.

Those who have not been fortunate enough to become the possessor of a really good piece of crystal should connect a small buzzer operated by two dry cells between the aerial and earth terminals of the receiver. This will set up oscillations that will enable you to find without trouble a good crystal point. The buzzing will be heard in the telephones, and if the "Cat's Whisker" is tried in several places over the surface of the crystal, the position giving best buzzer signals generally gives best incoming signal strength.

As it is impossible to wholly eliminate the atmospherics, we must adopt the next best thing, a crystal that is more stable than Galena under the atmospherical conditions mentioned.

Carborundum, a chemical product of crystalline structure, composed of silica and carbon, will fulfill the needs, as it is less liable to be affected by atmospherical discharges than most other crystals in use.

A great advantage of a receiver using carborundum, over other types, is that there is no "Cat's Whisker" or similar frail connection to the crystal. It is usual to have the carborundum soldered into a cup, and connection is then made by means of a piece of metal, as described later.

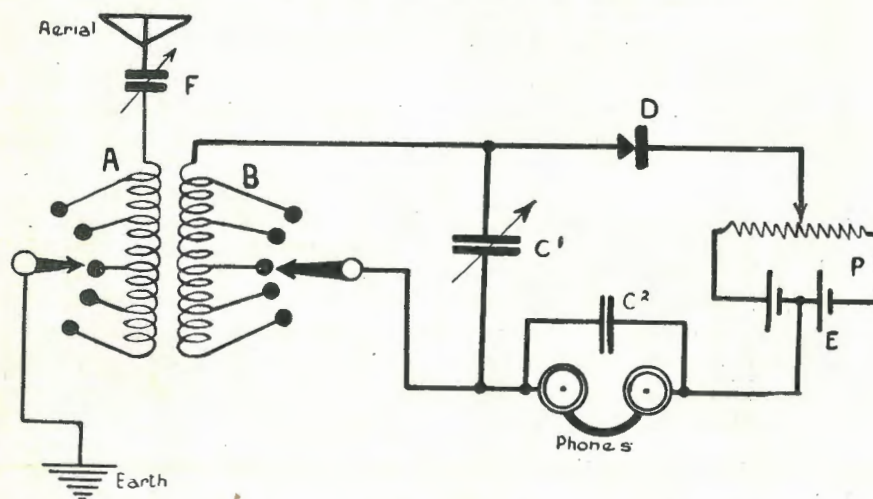


Fig. 1.—Wiring diagram of the Carborundum Crystal Receiver. Index: A and B, Primary and Secondary of the Loose Coupler; C1, Secondary Tuning Condenser; C2, Telephone Condenser; D, Carborundum Detector; E, Battery; P, Potentiometer, and T, Telephones.

circuit that will enable them to secure good results with it. But, how many in the past fortnight have experienced the sudden cessation of all music and speech without the usual Good-night wishes of the Hullo-man? Many, we believe. And why? That is the question asked by your friends who are with you, enjoying the programme.

On a normal, clear night the trouble most likely would be located in your receiver—a loose connection or an open circuit—but of late you no doubt have noticed these blank

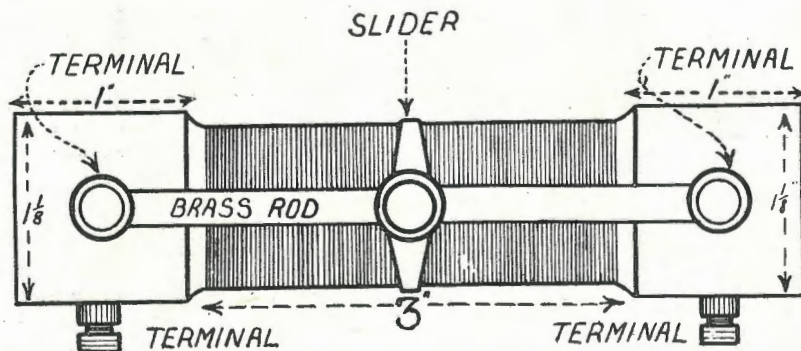


Fig. 2.—Diagram of Potentiometer. Particulars are as follow:—Approximate resistance, 250 ohms. The 3in. base is wound with No. 36 Eureka resistance wire and the over-all length of the slate base is 5in. End-pieces are 1in. x 1 1/8in. Base for winding 3in. x 1in. x 5/16in.

It will now be seen that, no matter what amount of vibration a receiver may be subjected to, it will be practically impossible to lose a point once secured.

The writer used a similar receiver and retained the same point for a period of five months, receiving over distances of 3,500 miles. It is usual to have a buzzer handy to facilitate the finding of "good points," but it is no more necessary for the latter purpose in this receiver, than in any other.

Those already in possession of a loose coupler set will be able to satisfy their desire for something new by making a few slight alterations to their present receiver.

The only additional components necessary are a potentiometer of 250 ohms and a dry cell battery of three volts. The receiver is very simple and easy to operate.

Fig. 1 shows the connections of the circuit when carborundum is to be used as a rectifier. F is the usual

the variable, primary and secondary, also the coupling of the two coils. The primary coil consists of a 4in. cardboard former carrying 200 turns of No. 26 D.C.C. wire tapped every 40

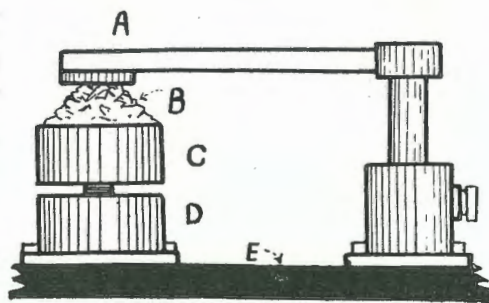


Fig. 3.—Diagram of the Carborundum Detector. A: Iron connecting strip. B: Carborundum Crystal soldered to C, the Cup. D: Cup Holder. E: Ebonite Base.

turns, the tapplings being taken to a radial switch on the face of the receiver. The secondary coil consists of 200 turns of No. 30 enamel wire wound on 4½in. cardboard former

the crystal is made by means of a piece of iron strip about 3/8in. wide and 1/16in. thick.

The potentiometer has a resistance of approximately 250 ohms and could be wound by the experimenter, if any should wish to do so, but some people would prefer to buy one as they are not an expensive item. The measurements of the potentiometer's slate base are as follows:—

End pieces: Length 1 inch, width 1 1/8 inch. Base for winding 3in. x 1in. x 5/16in. This should be wound with No. 36 Eureka resistance wire, the over-all length of the slate base will be 5in.

The battery consists of two dry cells supplying three volts.

The telephones may be of any well-known make and must be wound to 2,000 ohms resistance or more. The telephone condenser has a value of .001 mfd. fixed capacity.

Care should be exercised when purchasing carborundum crystals, as

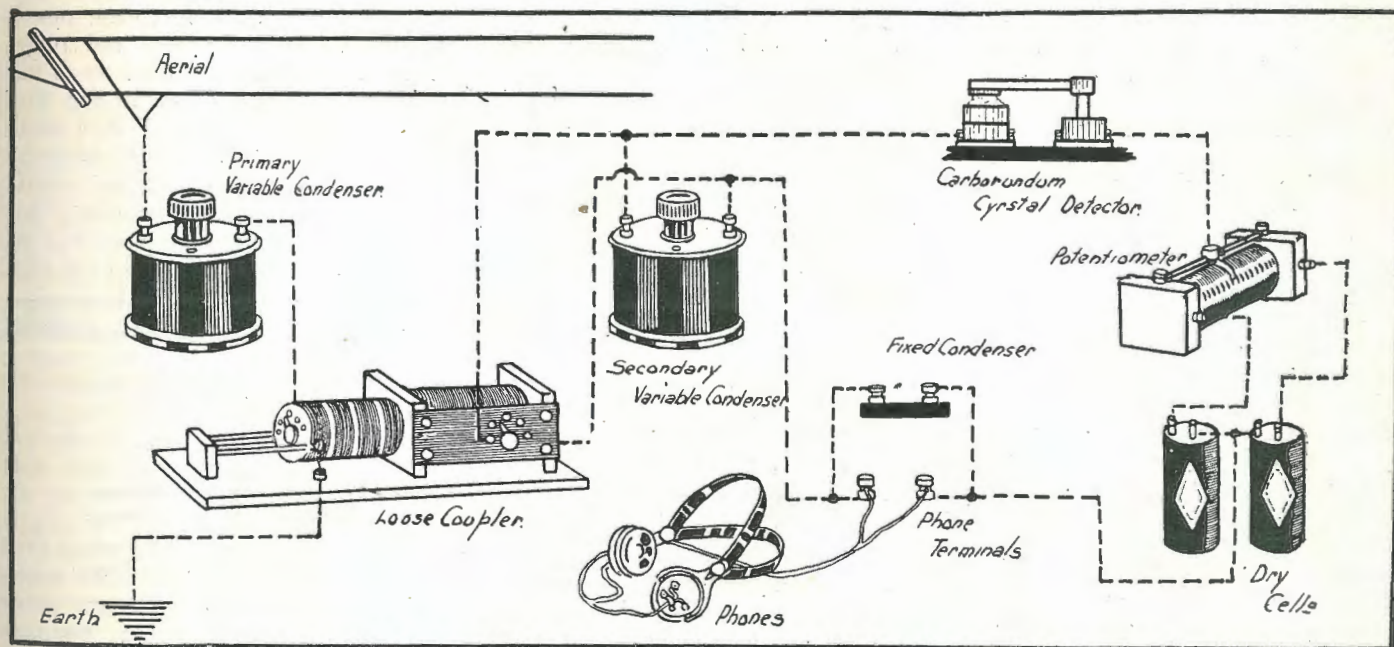


Fig. 4.—Showing the lay-out and connections of the component parts of the Carborundum Crystal Receiver.

aerial tuning condenser, A and B, primary and secondary of loose coupler; C1, secondary tuning condenser; D, carborundum detector; P, potentiometer; E, battery; C2, telephone condenser, and T, telephones.

The aerial tuning condenser may be .001 or as small as .0003, this not being an important matter, there being ample means of adjustment with

tapped at the 35th, 50th, 75th, 100th, 150th and 200th turn, and also connected to an external radial switch.

The secondary condenser, which must have a value not exceeding .0003 mfd. capacity is connected across secondary coil.

The detector, carborundum, is usually soldered in a brass cup similar to the one shown, and the connection to

they vary considerably both in composition and properties. The hard, grey quality, frequently covered with pure graphite gives crystals of high resistance and low sensitivity. Highly coloured carborundum is too soft, it breaks easily and is a bad rectifier. Although colour is no reliable indication of quality the best crystals are usually green or bluish-grey.

The Construction of Plugs and Jacks

By "Radion."



ORDINARY telephone plugs and jacks often prove to be very useful pieces of apparatus to the wireless experimenter. The operation of inserting or withdrawing the plug forms a very easy method of

connecting or disconnecting various pieces of wireless apparatus: it is far easier than having to screw up or unscrew a collection of terminals, which soon becomes trying to one's patience. In addition to being useful, a well-made jack and plug, fitted to a set enhances its appearance, and also its efficiency.

connecting or disconnecting various pieces of wireless apparatus: it is far easier than having to screw up or unscrew a collection of terminals, which soon becomes trying to one's patience. In addition to being useful, a well-made jack and plug, fitted to a set enhances its appearance, and also its efficiency.

The jack to be described, while somewhat different to the usual type, is not difficult to construct, and providing it is carefully made, works quite as well as the orthodox article. This jack should appeal to those amateurs who wish to make as much of their own apparatus as possible.

Figure 1 is a side elevation of the jack, with plug inserted. Figure 2, side elevation of jack. Figure 3, plug construction.

The construction is as follows:-- The piece marked A, which carries the contacts, is cut out of sheet brass, 1/16th inch thick, to the shape as shown in Fig. 4. A 3/8 in. diameter hole is cut through the large end, as shown, so that when the plug is in position, it will not make connection with the brass. The six other holes in the brass strip are drilled to take 1/8 in. brass screws. B is a piece of ebonite 3/8 in. thick, and 1 in. square. A 3/8 in. diameter hole is drilled through the ebonite panel of the set

on which it is intended to mount the jack; four 1/8 in. diameter holes must be drilled and tapped to take the four screws which hold the jack in position. The contacts, CC and DD, are cut to the shape as shown in Fig. 5. They are held in place by two

1/8 in. diameter bolts. Strips of ebonite, E, are placed between the strips, in order to separate them for the correct distance, and to insulate one from the other. Quarter inch diameter holes should be drilled through the contacts, CC, and DD, where the bolts pass through, so that they do not touch the bolts.

When assembling, care must be taken to see that the contacts do not

tact lug projecting from the ebonite insulated strips as indicated in the figures.

The plug is made from a piece of brass tube 3/8 in. diameter, and 1 1/4 ins. long. The handle is a piece of 3/8 in. diameter ebonite rod 1 1/4 ins. long. A 3/8 in. diameter hole is drilled half-way through the ebonite, and the tube inserted in it. Four 1/16th in. diameter countersunk screws (S in Fig. 1) are then fitted in the positions shown in Fig. 1. The tube is removed, and split along its centre with a hack saw; each half should then be filed until both pieces of tube, when in position in the handle, are separated by a gap of about 1/4th inch.

The nuts in the countersunk bolts are then soldered in their correct positions on the inside of each piece of tube which now form the plug contacts. At the same time must be soldered the "feather" (F in Fig. 3), which is a strip of brass 1/16th inch thick and 1/8 in. wide. A slot, or key-way must be cut out of the panel, and out of the piece B to accommodate the feather. The object of this feather is to insure that the plug is inserted the right side up, otherwise it might inadvertently be plugged in upside

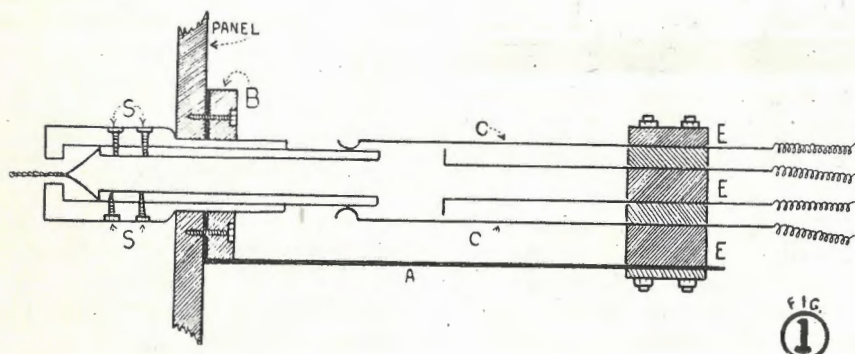


FIG. 1

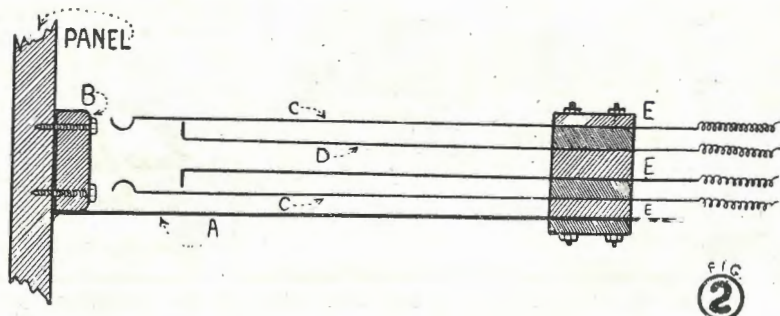


FIG. 2

touch the bolts; if ebonite washers 1/8 in. diameter and the same thickness as the contacts are inserted, all risk of "shorts" is avoided. The contacts, CC, are made of spring brass 1/64th inch, or slightly more, thick; DD, are made of 1/32 inch thick sheet brass. An insulated connecting lead should be soldered to each con-

down, thus reversing the connections, with perhaps, disastrous results. The slot, or key-way can be cut to the required depth with a piece of broken hacksaw blade, and trimmed with a thin file.

A length of twin flexible wire is inserted through a hole in the plug handle, one wire of which is soldered

to one piece of the tube, and the other wire to the other piece of tube; it will probably be easiest to do all the soldering at the same time.

The whole should then be carefully assembled, due precaution being taken

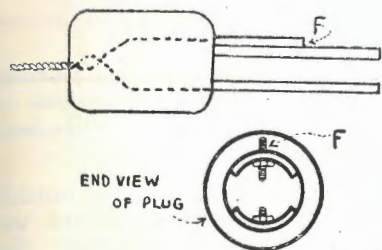


Fig. 3

be well separated from DD. When the plug is withdrawn, the contacts CC and DD must make a perfect circuit contact, but CC, of course, must not touch each other, as this will "short" the leads, and make a faulty connection. A good plan is to solder small

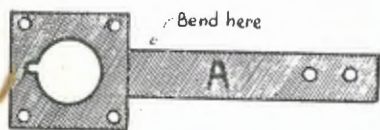


Fig. 4

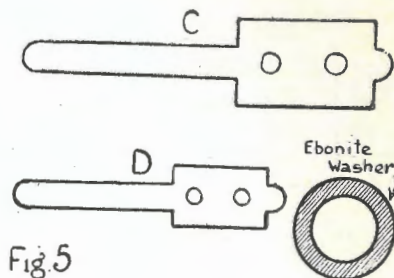


Fig. 5

to prevent short circuits; liberal use of shellac will probably improve the insulation. All sharp edges and corners should neatly be rounded off. The contacts can then be adjusted to make proper contact. When the plug is in position, the contact CC should

pieces of platinum wire, where the contacts are made and broken, as, if any sparking take place, a coating of oxide is apt to form, and so impair good connection. The contacts from any old electric bell would do excellently for this purpose.

Before putting the jack into use, the insulation should be tested with a dry cell and galvanometer. It should be made sure that CC and DD make no short circuit, but are thoroughly

insulated from each other. If the experimenter intends building a multi-valve set, the jack comes in very useful. At will, he can disconnect or connect any valve with very little trouble.

Unit Control Receivers

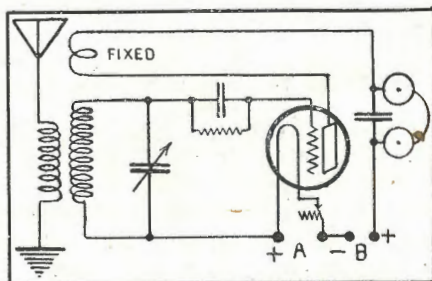
WHEN you hear anyone speaking of a unit control receiving set, you naturally think that there is one control and nothing else to do after the valves have been lit, but let us analyze some of them and see where the unit control comes in.

Take for example, two nationally advertised four valve reflex sets using a loop aerial for reception. The tuning part of each set consists of a variable condenser connected in shunt to the loop aerial. That gives you a single control for tuning, but they both use a potentiometer or stabilizer, which must be adjusted, for best results, whenever the wave-length is changed. Thus the unit control is a two-control set, after all.

The same can be said of all regenerative sets. Some of them have a fixed primary, fixed secondary, shunted by a variable condenser and a tickler coil. Tuning is done with the variable condenser, and as in the case of the loop aerial, you only have one tuning unit, but control of regeneration is another matter, and you must use your other hand to adjust the tickler coil and even though the tick-

er coil is fixed, you must then control regeneration by means of the filament rheostat on the detector.

Take the straight radio frequency set, using a loop aerial for picking up the energy, and a variable condenser for tuning. If you do not use a potentiometer on the radio frequency tubes, you are not procuring the cor-



rect grid bias on these valves and therefore not getting best results.

The super-heterodyne type of sets have two controls. One for tuning to the wave-length desired and the other controlling the oscillator. No matter what set you pick out, you will find, if it is efficient, that you have more than a single control. Various sets

have only one wave-length control, but when you have other knobs to turn to control regeneration or grid bias, then it ceases to be a unit control set.

It is said that a prominent amateur has developed a neutrodyne set that has a common dial for the variable condensers and which makes it a real unit control set. However, those of you who have neutrodyne sets will find there will have to be final adjustments made on the variable condensers to tune in most stations, due to the fact that all stations do not come in on the same degree of the condenser dials. For example: You may get 2BL on 21, 21 and 21, but you may get 2FC on 31, 30 and 31, and a common geared arrangement will not bring 2BL in well, although you may hear them.

If you make your set a unit control one, you must sacrifice some regeneration in the case of regenerative sets, or operate the radio frequency valves without the proper grid bias. To do this is not getting the best results your set is capable of securing and is far from satisfactory.

How to Build an Inductive Wave-Trap to Eliminate Interference

By T. C. VAN ALSTYNE.

(Reprinted from *Radio News of Canada*.)



RADIO enthusiasts who are unfortunate enough to live within a few miles of a powerful broadcasting station are constantly complaining of the interference set up by it. It is, indeed, very discouraging to tune in a distant station with great care, only to have it completely blanketed every time the local station breaks in. The number of transmitting stations is being continually added to and the interference problem is increasing every day. Those who operate receiving sets thirty-five or forty miles distant from the broadcasting stations find that the natural

wave of an undesired frequency and dissipating it in another circuit to the extent that waves of a different length will be little, if any, affected by it. It is practically a necessity in the large cities that boast their own broadcasting stations. New York has eight! This instrument, if properly made, will prove itself to be a valuable adjunct to any set and will improve conditions of reception materially. Stations only faintly heard through a local interfering one will be strengthened when the interfering wave is ejected.

THE REQUISITE PARTS.

The only parts required are: A variable condenser of about .0005 mfd.; a filter coil, which can be constructed in a few minutes, wound with No. 24 DCC copper wire on an impregnated cardboard tube; two binding posts or terminals and some $\frac{3}{8}$ -inch hardwood for a panel and a piece of $\frac{1}{2}$ -inch hardwood for a base. For the cardboard tube, the writer used a section of a discarded cereal container. Every home has a few of them somewhere. It should measure about four inches in diameter and be cut to a length of four inches. Draw a line with a pencil and cut along it with a sharp knife to insure a straight edge. Shellac the tube and allow it to dry before winding.

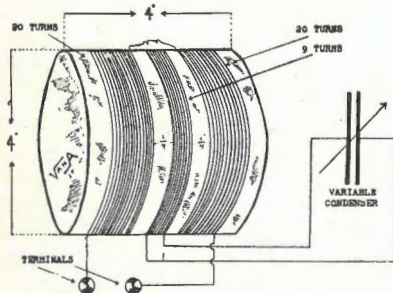


Fig. 1.

selectivity of their apparatus is sufficient. This article is prepared mainly for those living in close proximity to an active broadcaster; they constitute the majority of our listening public.

There is one kind of interference that cannot be eliminated by any ways or means; that is, the whistling noise occasioned by two broadcasting stations on the same, or nearly the same, wave-length. This can be distinguished by its own peculiarity; the pitch of the incoming signal is not altered by turning the dials on the receiving set. The stations causing this are directly responsible and should be notified that their frequency has dropped or raised, as the case may be.

THE PURPOSE OF A WAVE-TRAP.

A wave-trap, as its name implies, is simply a device for trapping a

wave together. Wind them as uniformly as possible. Make all connections on the inside of the tube; it will look much better.

Join the inside ends of the outside coils together. They should be soldered to obtain best results. See Figure 1. The free ends of the outside coils are connected to the binding posts, as shown in the same figure. The ends of the middle coil must be connected to the condenser, as is also shown in Figure 1. It will be noticed that the two outside coils are connected in series and the middle one is in inductive relation to both of them. Shellac the turns to hold them

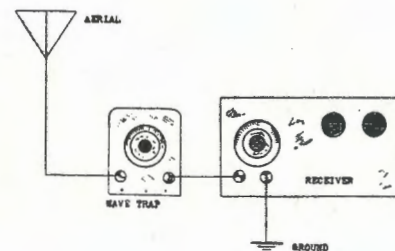


Fig. 2.

firmly in place and to keep out moisture.

PANEL AND BASE.

These parts may be made from any radio composition, such as Condensite Celoron, etc., but hardwood will be found satisfactory if well seasoned. When a three-inch dial is used on the condenser, the panel will be nicely proportioned, if cut 5 x 6 ins. The base will be about 9 ins. long and 5 ins. wide. Dimensions of these parts should, however, be determined by those of the parts used.

INSTALLATION AND OPERATION.

Figure 2 shows the electrical relation of the wave trap to the receiver. The outside coils of the wave-trap are in series with the receiving set proper. Figure 3 shows how to connect the unit as a whole to the receiving set.

WINDING THE FILTER-COIL ON TUBE.

Three coils are wound on this tube. Before starting to wind about one inch from the edge, make two small holes in the cardboard and loop the end of the wire through them once or twice to fasten it firmly. Leave a generous length for making connection. Repeat this operation at the start and finish of each of the three coils. These coils, by the way, are not physically connected. They are related by induction only. The first is comprised of 20 turns, the second of nine, and the third of 20. Leave a space of $\frac{1}{4}$ -inch between the coils and push the turns of each coil close-

Tune the receiving set in the ordinary way to the wave-length of the station you wish to eliminate. Then turn the dial of the wave-trap condenser slowly, listening for the point where the interfering station is cut

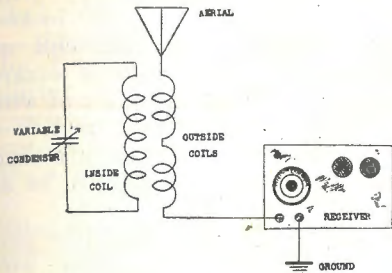


Fig. 3.

out or is weakest and leave it set there. Now turn back to the receiving set and tune in the stations you wish to hear.

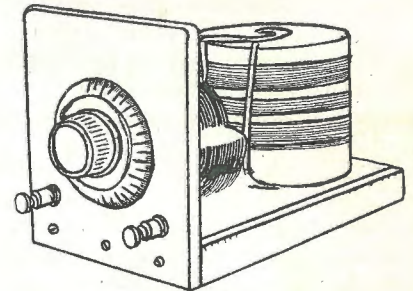
HOW IT FUNCTIONS.

The waves must pass around the outside coils of the wave-trap to reach the receiving set. The condenser circuit of the trap is adjusted so as to be in resonance with the outside coils. Energy is absorbed by induction from the outside coils into the condenser coil and allowed to oscillate there in a harmless route. Waves of a reasonably different frequency pass on unimpaired. Only one station at a time can be eliminated. If there is more than one station that interferes, make a trap for each and connect them in series.

A wave-trap is not exactly a new device, but the inductive type is vastly superior to the old ones, which consisted of a single coil of wire shunted by a variable condenser. The latter were used with some success by

commercial men, but the losses of signals sustained by their use made them unpopular.

No difficulty should be experienced in constructing this trap if instruc-



Completed Wave-trap.

tions are faithfully followed. The instrument shown in the photograph was made by the writer in about two hours, working leisurely.

Looking for Trouble

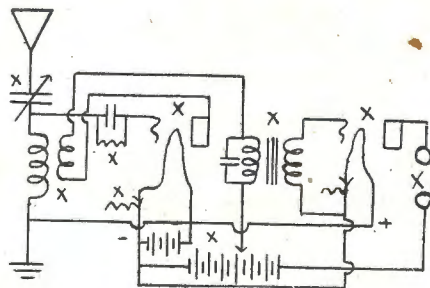


UNTING trouble on a receiving set as a rule is very easy but at other times it is a big job, and it will repay you to tear the set down and re-wire it, as far as time is concerned.

If, after you have built your set and checked the wiring to see that it corresponds with your blue-print, and do not hear a sound of any kind, you can look to your plate circuit for an open circuit. If the circuit consisting of the grid, filament and plate wiring is correct and not open, you will hear sounds without any aerial or ground. Probably not radio signals, but noises of the tube due to regeneration.

If the wires are all intact, with good connections to their respective contacts, the trouble may be that either the grid or plate prong of the socket is not making good contact with the tube. If the filament does not light up, the tube is burned out or one of the prongs not making proper contact. It does not have to be much of a poor contact for the low filament voltage to be prevented from not getting through. If you are using more than one B battery, you may have the

batteries connected wrong and one bucking the other, that is, have negative to negative. If the prongs are not making good contact, bend them up with your fingers or a piece of wood, BUT never use metal, as it may short-circuit the filament across the B battery. Another point to look for trouble is a defective tube. Occasionally but not frequently, the grid touches the filament and makes the



tube inoperative. If this occurs, it should be returned to the dealer.

If you hear slight noises but regeneration is not obtained, the tickler coil may be bucking, and reversing its connections will bring it around. You may require a larger value of fixed condenser across the telephones. The capacity of this condenser will vary between .001 and .005.

Intermittent noises in your set with the aerial and ground disconnected indicate poor contact somewhere, usually in the filament or plate circuits. A steady hum is due to a poor connection in the grid circuit. When using amplification and you get a howl, try reversing the primary connections of the transformer.

Cheap jacks are a constant source of noise, due to improper contact when the plug is pushed in or out. They do not have enough spring in them and very soon a poor connection results.

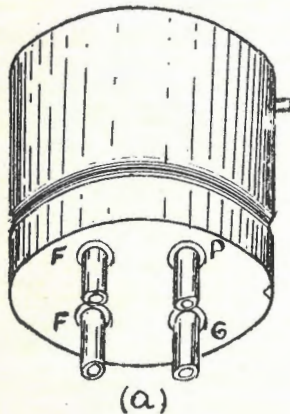
Bent diaphragms in telephones cause signals to be sort of smothered due to the diaphragm striking the magnets. The best remedy is a new diaphragm, but if none are available try turning the diaphragm over.

If your tube sounds something like the exhaust from a distant motorboat (put-put-put) it is due to the tube blocking. Try a lower value of grid leak and the trouble will be remedied.

Sometimes a loud speaker will set up a continuous howl. This can often times be stopped by moving the loud speaker away from the set, especially if it is near the aerial side of the receiving set.

An Adaptor Made from "Junk"

THE experimenter very often wishes to compare different makes of valves on his set, and on account of the entirely different methods of plugging-in adopted by the various manufacturers, he has to improvise, and usually finds himself with a disconcerting mass of wire hanging around and probably minus a valve. Such an experimenter who has passed through the mill, will welcome par-

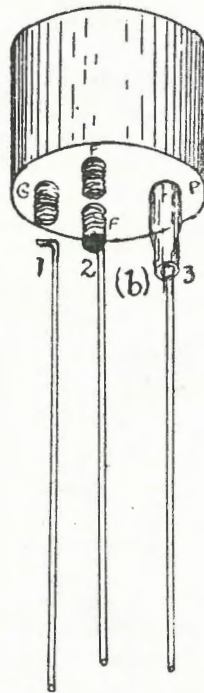


ticulars of how to make a neat adaptor from junk.

The material required is as follows:—1 old UV201A, or similar type of valve; 1 Standard R socket; 2 ft. of No. 20 bare copper wire; 2 inches of rubber tubing (old flex); and a small quantity of insulating compound from the top of an old dry cell.

Break the globe of the old valve and remove all pieces of glass, also

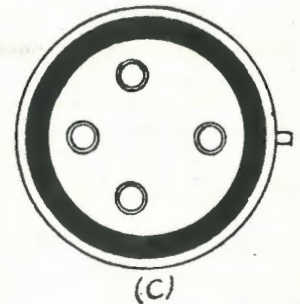
remove the small piece of wire from the pins with a hot soldering iron, working the wire up and down to ensure leaving a passage through the centre of pins to pass your wire through later.



Now place the base (a) in its correct socket and mark on the porcelain near each pin on the inside of the base, F, F, P and G respectively. Take the R socket (b), cut off the studs to within about 3/16in of

the socket, then cut the copper wire into lengths of about three inches. Then thoroughly clean one end of each wire and bend over a square 1/8in. (b1). Solder one piece of wire on to each stud as at (b2), and then cut rubber tube into 1/2in. lengths and pass one piece over each wire as at (b3).

The next operation should be performed very carefully. Pass wire G, F, F, and P attached to (b) through the holes in correspondingly



marked pins on (a); pull wire through gently and adjust (b) about 1/16in. above the top of (a), and equi-distant from all sides. Solder the wire to the outer tips of the pins on (a) and cut off the surplus wires.

Next melt your insulating material in a ladle (an old, seamless tobacco tin is excellent for this purpose), and pour into the space between (a) and (b) until almost level with the top of (a). Allow to cool for about 15 minutes, and the job is completed.

Broadcasting from the "Ventura"

"CHIRP" writes:—The interesting letter from Mr. Chambers (*Radio*, No. 39) has revived the memory of an experience of mine, which, although coming later in the era of experiments, is none the less interesting. I have forgotten the exact date; but it was around about December, 1916, that Ken. Ormiston, operator on the U.S.S. *Ventura*, when about 500 miles

to the west of Sydney, gave us two gramophone selections, "God Save the King" and "The Star Spangled Banner." As this was the first music I had heard on the ether, you may depend that it was something not to be forgotten. Many experiments were carried out by the same operator using a "Roome" oscillaudin valve (double fill), which were then being

imported to Australia at a cost of £1. That they were efficient goes without saying. My farthest distance on the 600 M. during daylight was 1,300 miles; whilst the night range was in the neighbourhood of 6,000 miles, and in those days there were no "Vernier" condensers or grid leaks, nor any of the trick circuits such as we have nowadays.

Wireless in the Apple Isle

EDUCATION IN WIRELESS.

A COMPREHENSIVE scheme has been put in hand by the Minister for Education (Mr. A. G. Ogilvie) during the last few months and recently the first of a series of demonstrations was given at the West Hobart State School, where a party of Parliamentarians journeyed to listen-in and were delighted. It is intended to extend the scheme to country schools, where listening-in to mainland and local broadcasting will undoubtedly be a great boon to the children.

IN THE COUNTRY.

THE big sheep men of the Midlands (Tas.) are rapidly falling into line with their city brothers and are installing efficient receivers. The latest acquisition by Mr. A. W. Burbury, a well-to-do grazier at Antill Ponds, is a five-valve Federal DX4 with which he has been picking up Melbourne, Sydney and Adelaide stations, as well

as Westralian Farmers, which is something of a record. Another

DOWN, DOWN, DOWN!

Not long ago, at the Ashington Colliery, England, a series of experiments were carried out, the purpose of which were to ascertain the possibilities of subterranean wireless. A party, together with a three-valve receiving set, went down the Carl Pit, and set up a 20-foot aerial on the baulks supporting the roof. But one 'phone was used, and the reception was so clear that all five members of the party heard every word distinctly. This experiment was carried out at 1,900 foot level, and it is expected to continue these investigations to further depths up to a mile.

sheep man to instal a set is Mr. Rupert Watchorn, of Kempton. The country areas are now well served

with radio and the results achieved by these sets—so far removed from high power mains and "squeakers"—are in nearly every case remarkable.

AMATEUR STATION PRAISED.

2RJ, Sydney's amateur broadcaster, is almost as popular as 2FC or 2BL in Tasmania. He called up Mr. F. W. Medhurst at Sandy Bay, Hobart, recently, asking for a report. The number of "squeakers" trying for his wave is sufficient indication of the popularity of his transmissions. The air these days is full of them, states a correspondent.

EXPERIMENTAL TESTS.

EXPERIMENTAL tests are now being arranged between the mainland and Tasmanian amateur transmitters and readers interested are asked to communicate with "Loud Speaker," c/o. *Wireless Weekly*, Hobart, who is organizing the Tasmanian efforts.

Experience is the Vital Factor in Excellence —

The first "talking machine" became a finished reproducer of speech and music only by years of experience devoted to gradual development.

BURGINPHONE

RECEIVERS

are the result of years of devoted experience in Wireless and Telephone Engineering—a tribute to the skill of Australian Engineers. Each part of the "Burginphone" Receivers is the result of the best known engineering experience, and these parts are assembled in a manner that is possible only to experienced Wireless Engineers.

MODEL 95

is the latest creation of the "Burginphone" Wireless Broadcast Receivers, and has proved itself to be just what the discriminating Australian requires. Simplicity of operation, wonderful tone, receives over great distances, and is an acquisition to Australia's finest homes. Loud Speaker reproduction over 8,000 miles is no mean achievement.

Guaranteed 1,000 miles range from "A" class Broadcasting station.

Behind this guarantee there is our reputation which we jealously guard.

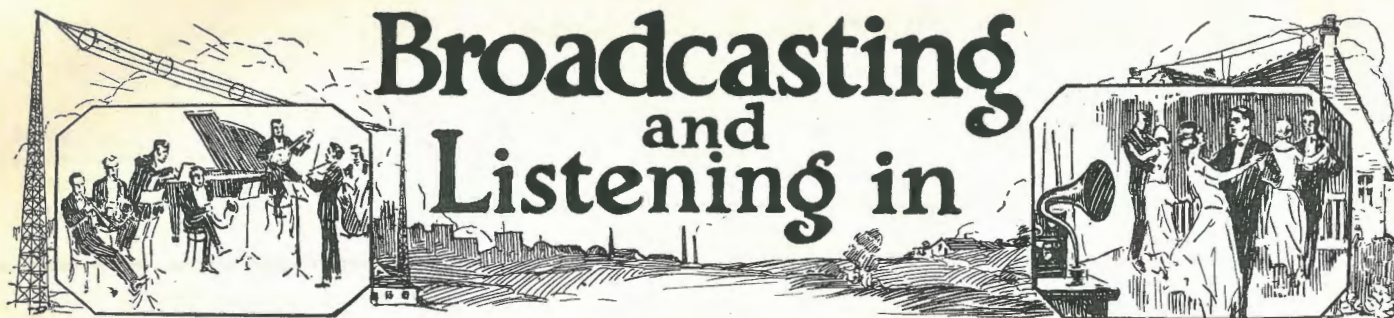
Our success has been built on the foundation of Service, Quality and Satisfaction.

Illustrated Catalogue now ready.

BURGIN ELECTRIC COMPANY LIMITED

WIRELESS ENGINEERS AND SUPPLIERS.

Showrooms and Sales Dept.: 1st Floor, Callaghan House, 391 George St., Sydney



Broadcasting and Listening in

DX records follow so fast one upon the other that it is almost impossible to keep track of them all, but one of the latest is that put up by Mr. H. B. Comtis, of Timaru, N.Z.

though not strong, the signals were quite clear and readable.

IT is stated that an American broadcasting company is making arrangements for the transmission of the roar of the waters of the Niagara Falls. It is not thought that this will in any way damp the ardour of the confirmed listener-in.

length was about 100 metres. A special short wave receiver was used." However, our Controller of Wireless, Mr. Malone, has said that it was impossible to trace this station from these particulars and he thinks

2FC

BROADCASTING TIMES.

Sydney Mean Time.
Wave Length: 1100 metres.

Midday Session:
12.55 Tune in to the Studio Chimes.
12.58 Time Signals from Farmer's Master Clock (Sydney Observatory Time), Stock Exchange Intelligence, Weather News, "Sydney Morning Herald" news and cable service, "Evening News" midday news bulletin.
1.15 Close down.

Afternoon Session:
3.30 Studio Chimes.
3.33 Musical programme by Farmer's Orchestra broadcast direct from Farmer's Oak Luncheon Hall. Numbers will be played at intervals to 4.45.
4.45 Stock Exchange, weather, afternoon news.
5.0 Close down.

Early Evening Session:
6.30 Studio Chimes.
6.33 Children's Hour.
7.0 Dalgety's Market Reports, Fruit and Vegetable Markets, Stock Exchange, Shipping News, Sussex Street Markets, Late News.
7.15 Close down.

Night Session:

8.0 } Entertainment.
to }
10.0 } See list hereunder.

EVENING ENTERTAINMENT.

As far as possible the following schedule is adhered to:—

Monday: Theatre Night.
Tuesday: Popular Concert
Wednesday: Studio Concert.
Thursday: Studio Concert.
Friday: Classical Night.
Saturday: Jazz Night.
Sunday: Semi-Sacred Concert (7.30 to 9.30 p.m.).

He is an amateur operator and recently succeeded in copying signals from the exploring ship *Bowdoin*, at Etah, North Greenland, with the Macmillan North Pole Expedition. Al-

NOW that wireless broadcasting has been used with such effect at the British elections it is interesting to note that at a recent meeting of the National Federation, Sir James Barrett suggested the adoption of this method of spreading election propaganda. It was eventually decided "that it is necessary some scheme should be considered and finalised by the executive whereby more speakers could be supplied with the object at elections of a greater number of meetings being addressed on the same night and generally, greater platform support to National candidates."

BY arrangement with the Broadcasting Company of Australian church sermons are soon to be broadcast.

A REPORTER of the *Berliner Tagelblatt* travelling on an express wirelessly telephoned his office and dictated an entire article. Later this was re-transmitted to him when he called back his final corrections.

IT is stated in a recent cable that Mr. R. W. Galpin, of Herne Bay, Kent, England, believes that on October 6 last he received wireless signals from Australia. When interviewed, he said, "The station may be identified by the international identification letter A prefixing a general call CQ and then a station call A2ADJ. The wave-

BROADCASTING TIMES.

Perth Mean Time.
Wave Length: 1250 metres.

Midday Session:
12.30 Tune in to Sonora.
12.35 Market Reports of The Westralian Farmers, Limited.
12.42 News Service.
12.55 Weather Report.
1.0 Time Signal.
1.1 }
to } Sonora and Pianola.
1.30 }
1.31 Close down.

Afternoon Session:
3.0 Tune in to Piano Player (Duo-Art).
3.5 }
to } Special programme, comprising talks, Sonora and Pianola.
4.0 }
4.1 Close down.

Early Evening Session:
7.0 Tune in to Sonora.
7.5 Bedtime Stories.
7.45 Market Reports.
7.55 Weather Reports.
8.0 Time Signal.
8.2 News Cables.

Night Sessions:

NIGHT SESSIONS.

Monday: 8.10, A Lecture; 8.45, Music, Pianola and Sonora.
Tuesday: 8.10, Professional Concert.
Wednesday: 8.10, Concert Evening.
Thursday: 8.10, Professional Concert.
Friday: 8.10, Talk on Wireless to Amateurs by a Representative of the Affiliated Radio Society; 8.45, Concert Evening.
Saturday: No Saturday afternoon, only from 12 to 1, and again at 7.0, 8.10, The Wesfarmers Studio Cabaret Jazz Orchestra, under the direction of Irwin Lawrence.
Sunday: 7.30, Mr. C. H. Coff's Choir. Close down at 9 p.m.

With the exception of Saturday, when the station closes down at 10.30 p.m., all other evening sessions conclude at 10 p.m.

that the message was mutilated in transmission.

MR. GEORGE A. TAYLOR, of Sydney, in demonstrating in London

his invention for transmitting colour pictures by radio, said it was already possible to send a reproduction of a man's signature from London to Australia. He added that newspapers would shortly print colour pictures of events happening simultaneously on the other side of the world.

NO fewer than 800 applications were received for the position of announcer at 3AR, Melbourne's new broadcasting station.

FINDING out that through their use drugs were being smuggled into the prisoners, the authorities of the Eastern State Penitentiary, U.S.A., have banished radio sets from the prison.

TESTS held for amateur and professional artists who desire an engagement to entertain from 2BL Broadcasters, Ltd., Sydney, take place at the studio on Tuesday and Friday mornings and any who think that they would be successful "on the air" should go along and be tried out.

AMATEUR transmitting pirates are rampant in France and from be-

lengths using the weirdest of call signs. This state of affairs is put down to the long delay which occurs in France before authority for amateur transmission can be obtained.

2BL

BROADCASTING TIMES.

Sydney Mean Time.
Wave Length: 350 metres.

Midday Session.
12 to 2 p.m. } Musical Programme, with News Reports supplied by "The Guardian."

Afternoon Session.
3 to 5 } Musical Programme, with News Reports supplied by "The Guardian."

Early Evening Session.
7.45. Pitt, Son & Badgerly Stock Exchange Reports.

Night Session.
8 Nightly Concert.

EVENING ENTERTAINMENT.

Monday: "Jazz" night, with vocal items from the Studio.
Tuesday: Classical Studio Concert.
Wednesday: Dance Night.
Thursday: Broadcasters' Popular Concert.
Friday: "Jazz" night, with popular items from the Studio.
Saturday: Popular Concert.
Sunday: Classical and Operatic Concert.

fore midnight to early morn the air is full of amateur signals on all wave-

THE growth of broadcasting may be readily judged by the large number of wireless stations now being opened on the Continent. In Great Britain there are now eight main stations and six relay stations in operation and two or three more nearing completion. These operate on wave-lengths between 303 metres and 495 metres. And scattered over the Continent are some forty stations which have been received with ease in England. Two years ago the number must have been nearer four than forty, and it is to be hoped that by the time another two years have passed the number will have increased still further. However, there still seem to be a few places where broadcasting reception is not favourably considered by the authorities, such as Venice, Italy, but probably in due course even such places will have to come into line with the rest.

Have You Seen The new Gramophone Attachment for utilising your Gramophone as a Loud Speaker. It is simply fitted to the Tone Arm in place of the ordinary speaker. It has a beautiful tonal quality on account of its adjustable Mica Diaphragm.

NOW, ABOUT VALVE S AND HEADPHONES!



C.I.C. Loud Speaker Gramophone Unit. £2/2/6

We make a Special Carton for sending Valves to the country. It is almost impossible for the postal people to break a valve packed in this carton.

The New Prices of Valves.

PHILLIPS, D1, D2 and E	18/6
MARCONI, R	19/-
MULLARD	19/-
DE FOREST	35/-
RADIOTRON	30/-

Headphones of High Quality that we Stock.

PEERLESS, 2000 ohm	30/-
TRIMM, 2000 ohm	32/6
TRIMM, 3000 ohm	45/-
RED SEAL—the Aristocrat of all Headphones	45/-



WE HAVE ALL OTHER BRANDS.

SEND FOR OUR PRICE LIST.

RADIO HOUSE, 619 George Street, Sydney
THE QUALITY RADIO STORE.

How to Increase Range and Selectivity

(By J.M.W.)

THE standard single-circuit reaction set, as shown diagrammatically in Fig. 1, though simple to tune, is not particularly selective. To sharpen the tuning, and, at the same time, to increase the range of such a set is not at all difficult. The only alteration necessary is the addition of an extra variable condenser, and the results obtained by this addition will more than compensate for the added difficulty in tuning.

to anyone who has had a little experience with a one-valve set. To tune in telephony, firstly, connect the batteries and plug in suitable coils giving the desired wave-length, according to the table given below. Secondly, turn on the rheostat fairly full, and swing the reaction coil moderately near the primary. Thirdly, put the anode condenser at about zero, and adjust the primary condenser till a thud is heard in the 'phones, which

mary condenser round the scale, at the same time adjusting the anode condenser to keep the set at maximum oscillation point, providing the receiver is adjustable to the wave-length of a transmitter. A whistle should be heard which is the carrier wave of a sending station. Fifthly, now loosen the reaction coupling and adjust the condensers till the carrier almost disappears. Then adjust the primary condenser till the silent point on the carrier is found. Lastly, slightly reduce the filament current till the set just stops oscillating and clear reception should result.

The writer has been using the reaction receiver here described for several months and has had excellent results. KGO comes in clearly on a good night and both 2BL and 2FC are heard clearly and loudly at Hamilton, New Zealand, besides all the New Zealand stations, and a great many amateurs.

The following is a table of suitable coils, for use with a .001 primary condenser in series with the AT1 to cover the various broadcasting wave-lengths.

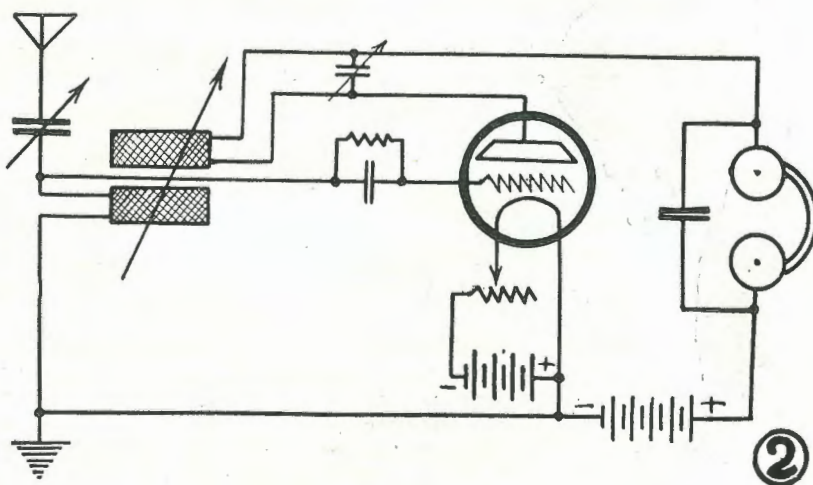
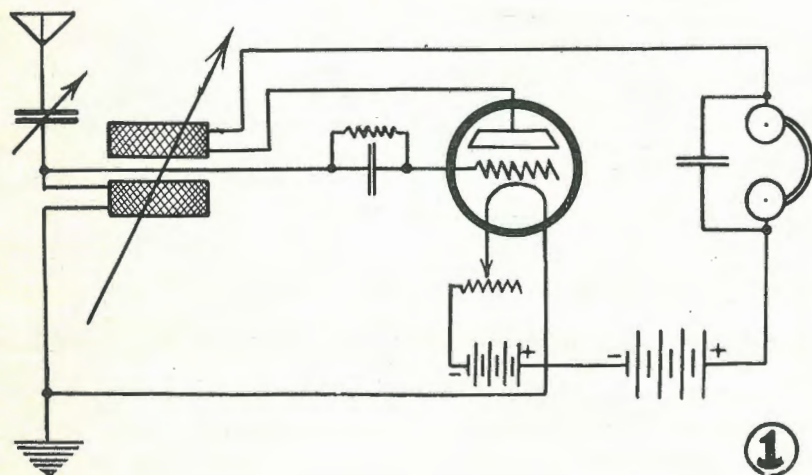
Fig. 1 shows the diagram of a standard regenerative receiver, and Fig 2, the same receiver with the addition of a variable condenser in the anode circuit. By the addition of this condenser a combination of tuned anode and re-action is obtained, which gives a greater amount of amplification, and, consequently, a greater range. The alterations to obtain this increased range and sharpness of tuning are very simple, as can be seen by comparing the two diagrams.

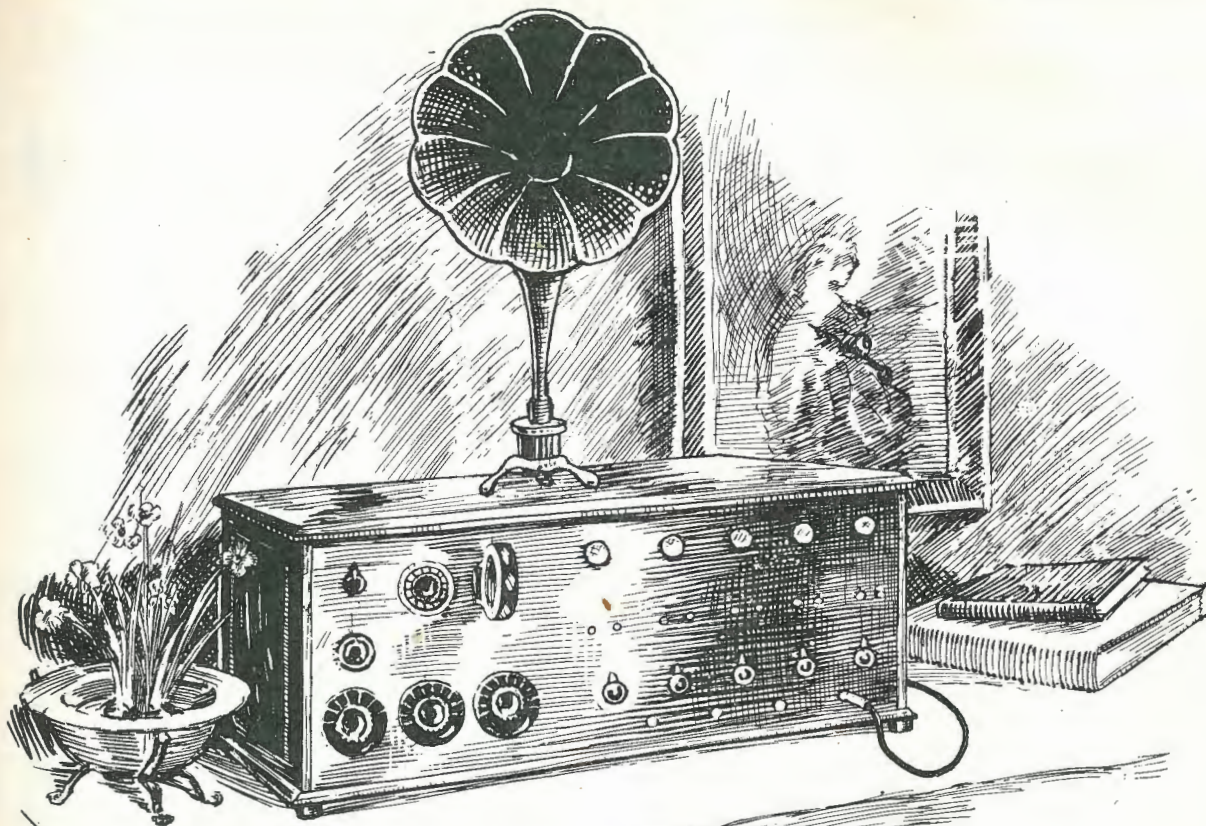
It will be noticed that the added condenser is shunted directly across the reaction coil. This condenser should be a variable one of .00025 mfd. capacity, and may be mounted in any convenient position on the panel where it will add to the attractiveness of the set, particularly if the knob and dial is of the same design as that of the primary condenser.

The tuning should be quite simple

should also be heard when the finger is placed upon the grid binding post of the receiver. This thud shows that the set is oscillating. Fourthly, with the set still oscillating, move the pri-

Wave-length in metres.	Primary turns.	Reaction turns.
180- 300	35	50
300- 700	75	100
1000-2500	200	250





This illustration shows the COLMOVOX 5-VALVE SET.

THE COLMOVOX RADIO RECEIVERS.

Built with First-Class material, each part the best of its kind, and assembled by Australia's foremost Radio experts.

The COLMOVOX RADIO RECEIVING SET as illustrated, but with 6 valves Complete with aerial wire, insulators, and all necessary accessories and with Amplion Loud Speaker for **£75**

OUR GUARANTEE.

The above set carries full COLMOVOX Guarantee—Money Refunded without question should this set, within a radius of 500 miles of Sydney, fail to pick up the programme broadcasted from Sydney.

Address your Radio Orders to:

This COLMOVOX Radio Set may also be had in highly polished Maple, DE LUXE, Gramophone Cabinet for £87/10/-.

COLVILLE-MOORE
WIRELESS SUPPLIES, LIMITED,
 10 ROWE STREET (NEXT HOTEL AUSTRALIA) SYDNEY

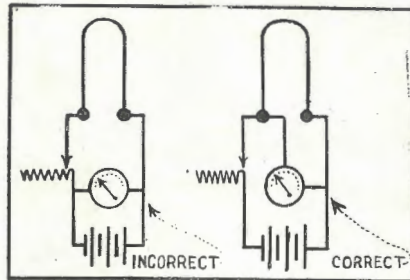
The Meter to Use with your Valves



HOSE of you who strictly follow printed instructions may have wondered whether you should use a voltmeter or an ammeter in connection with the filament of your valves. The printed instructions that come with the UV201A tell you to use five volts and a current of one quarter ampere. If you use both an ammeter and a voltmeter you will sooner or later be confronted with the problem of having to change either the voltage to build up the current or reduce the voltage to cut down the current. As the valve is in service, the filament gets thinner and this increases the resistance, which automatically reduces the current. In order to supply the correct current you increase the voltage and this shortens the life of your valve.

The best plan is to use only a voltmeter. Do not worry about the ammeter if you are using a good voltmeter, as the current will take care of itself. Laboratory experiments have shown that the electron emission from the filament is very nearly uniform during the life of the valve if a constant voltage is impressed on the terminals.

When the valve gets "old" the filament is thinner due to the electron emission and if we insist on keeping the current at .25 ampere the electron emission is increased, which further shortens the life of your valve. It is a good plan to always burn the filaments as low as possible consistent



with good reception, unless, of course, you do not mind spending money for new valves.

Just how the voltmeter should be connected is another point that bothers some experimenters. The idea of the voltmeter is to measure the voltage being impressed on the filament of the valve or valves. This means that the voltmeter should not be connected across the A battery, but

from one side of it to a point between the rheostat and the terminal of the valve. To make it clearer, the voltmeter should be connected across the terminals of the valve.

If more than one valve is to be used, such as when amplification is employed; the voltmeter should be connected to the positive side of the A battery and a multi-point switch with leads running from the various negative terminal of the valves connected to the other side of the voltmeter. If you also desire to take a reading of the A battery, a lead should be brought up from the negative side of this battery. In this way, the voltage of this battery can be read at any time and its stage of discharge noted. When taking a reading of the battery, the valves should all be lighted. A "no load" reading does not mean anything. Your battery will more than likely read the full six volts on no load and may drop to less than five when the valves are lighted.

The correct and incorrect way of connecting the voltmeter is shown in the drawings.

Another New Zealand Radio Record

YET another N.Z. record has been put up, the successful aspirant for honours this time being Mr. Frank D. Bell, a nephew of Sir Francis Bell, and a most enthusiastic amateur. Mr. Bell (4AA) is manager of a large sheep station at Waihemo, in the South Island. He succeeded in getting into touch with two different persons, Mr. E. A. Atmore, at South Paula, and Mr. K. L. Reidman at Long Beach. The conversation between them as recorded by Mr. E. A. Shrimpton, chief telegraph engineer of N.Z., is to the effect that Mr. Bell congratulated Mr. Atmore on winning a gold boomerang offered to the first

American who succeeded in establishing connection with N.Z., and Mr. Reidman congratulated Mr. Bell on being the first N.Z. amateur to get through. The New Zealander's power was 120 watts and the wave-length 120 metres, whilst the American used 150 metres.

It is significant to note that about the same time Mr. J. Orbell, who left for England in the steamer *Port Curtis*, succeeded in communicating with Mr. J. O'Meara, at Gisborne, about 5,000 miles away, and the Gisborneite also got into touch with an amateur at Buenos Ayres.

Speaking of Mr. Bell's splendid achievement, Mr. Shrimpton said that several Australians also tried to "reach" America the same evening but did not succeed. "The New Zealander had now," he added, "broken the world's record, and I consider our amateurs have done more for long-distance wireless than amateurs in other part of the world."

Mr. Bell's feat establishes a record for what is called two-way working. Messages have been picked up over greater distances one way, but the difficulty has always been for the New Zealand station to get back to the other side.

United Distributors Ltd. Move to New Premises

MUCH interest has attended the removal of this popular wireless firm from their premises 28 Clarence Street, Sydney, to their central four-storey building at 72 Clarence Street.

Always noted for the promptness and efficiency of their service, they are now in a much better position to meet the ever-increasing demand for their reliable goods.

The Company state that they are receiving in all over £40,000 worth of Radio parts and accessories, the greater part of which was landed early in October, and that they expect to land from £30,000 to £50,000 worth each month for the rest of this year, so as to have ample supplies on hand to take care of the demand of their 823 customers, all of whom are anticipating a large Spring and Christmas trade.

Many visitors have already made a tour of inspection of the various departments and have evinced approval and surprise at the care with which every detail has been considered to increase the convenience and comfort of selecting goods.

The floor space of the new building covers 1,500 square feet and every inch of this has been carefully planned on the most modern lines.

The ground floor, with its handsome show windows, is occupied by the Sales Department, with special facilities for the prompt delivery of



The new home of United Distributors, Limited, 72 Clarence Street, Sydney.

Radio goods over the counter and ample show space and demonstrating rooms for Radiovox Sets, an exclusive

production of United Distributors, Ltd.

On the first floor are found the executive offices and the bookkeeping department, while the second floor is devoted entirely to stock; the third floor is utilised for the manufacture of Radiovox Sets and Signal Home Assembly Sets, the output of which is now 285 sets weekly.

The stocks at the new building include every possible requirement in Radio sets, parts and accessories and are so complete that all orders can be fulfilled to the moment.

United Distributors Limited are issuing a cordial general invitation to all interested in Radio, to pay a visit and to become acquainted with their excellent arrangements for most satisfactory service to their clients.

We understand that there are some very excellent Coronas also to be sampled, but this is a mere detail in the interest which is certain to result from a visit to their very pleasant wholesale Radio shopping centre.

In addition to their new quarters at Sydney, United Distributors, Ltd. have offices and carry stocks at Melbourne, Perth, Adelaide, Brisbane, Hobart and Wellington.

The Control of Radio in New Zealand

CONTROL over wireless dealing and broadcasting is contained in the amendment to the N.Z. Post and Telegraph Act. On and after April 1 next, dealers in wireless equipment are to be licensed by the Minister of Telegraphs. They shall keep a full record of all sales and the names and addresses of purchasers. Power is given to revoke licenses and the penalty for a breach of the provision is a sum not exceeding £50. Clause 6 of the measure states that a portion of the dealers' fees and license fees for wireless installations may be paid to

persons or companies who agreed to undertake a broadcasting service. For this purpose the Post-master-General is authorised to enter into an agreement with any person or company for a period not exceeding five years, subject to periodical renewal for a similar term, it being a condition that the recipient of the fees undertakes during the currency of the agreement to maintain a broadcasting service to the satisfaction of the Minister. The term "broadcasting" is defined to mean transmission by wireless of approved programmes of entertainment

and instruction, or information of general interest, capable of being received by apparatus, for the use of which licenses have been issued. Power is given to prescribe by regulation licenses for the operation of wireless outfits which may be classified according to their purpose and location from the broadcasting station or other relevant consideration, and regulations prescribing fees to be paid in respect of the broadcasting service may differentiate as between licenses and classes of licenses.

ALL WIRELESS SETS AND REQUISITES

ARE OBTAINABLE AT — LOWEST PRICES — FROM

SWAINS, 119a and 123 Pitt St., Sydney

A FEW DOORS FROM THE G.P.O.

CRYSTAL RECEIVING SETS, from 25/-. Operative up to 25 miles from Sydney.

ONE-VALVE RECEIVING SETS, from 25/10/-. Operative up to 100 miles from Sydney.

TWO, and UP TO SIX VALVE, from £28, Operative up to 5,000 miles from Sydney.

To INCREASE THE EFFICIENCY of YOUR CRYSTAL SET BUY OUR ONE-VALVE AMPLIFIER—Ready to connect up—Price 27/7/-; or the TWO-VALVE AMPLIFIER—which will operate a Loud Speaker—Price 210/10/-.

— WE SELL —

THE FAMOUS FROST FITTINGS, all makes of 'Phones and Loud Speakers — THE UNITED DISTRIBUTORS, LTD., HOME ASSEMBLY SETS and RADIOVOX SETS — STERLING 4-VALVE and 2-VALVE SETS, Loud Speakers and Phones — GALENA, ZINCITE, BORNITE, MOLYBDENITE, IRON PYRITES, AUSTRALITE CRYSTALS.

ALL THE LATEST BOOKS and MAGAZINES on WIRELESS in Stock.

OBEY THAT IMPULSE!

Why lose your temper and waste your time searching all over town for the latest copy of RADIO?

Make sure of it now for a year ahead.

Insure your prompt receipt of each and every copy for the next twelve months by filling in this form:—

The Circulation Manager,
"Radio in Australia and New Zealand,"

97 Clarence Street, Sydney, N.S.W.

Dear Sir,—

I enclose herewith 10/- (ten shillings) for twelve months' subscription (twenty-six issues) to "RADIO," commencing from the next number.

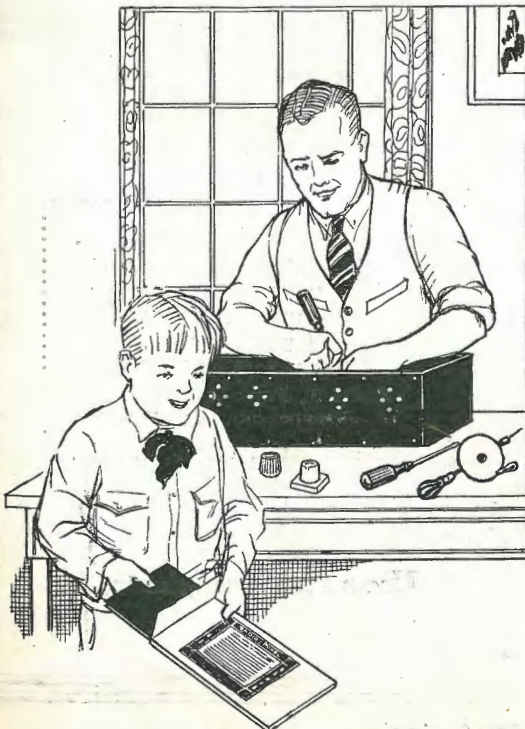
I fully understand that by taking this course of ordering my copies in advance I shall be receiving them at a cost price of a little over 4d. each.

Please forward each issue of "RADIO" to:—

Full Name

Address

Over Twenty Standard Sizes of "RADION" Panels Ready For Use



The convenience of Radion Panels is an important consideration. Radion Panels are made in 20 different stock sizes, each panel packed in an individual envelope printed with full instructions for mounting. This means you can buy just the size panel you want and there will be no additional charge for cutting to size.

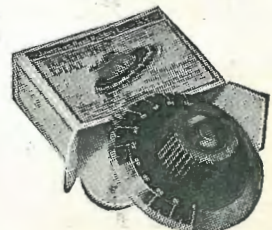
Radion offers the set builder maximum insulation. It is made expressly for radio and far excels any other material in every required characteristic. In addition, Radion is easily worked and is truly beautiful in appearance. In cost it is more economical than any other material and will prove to be far more efficient in every way.

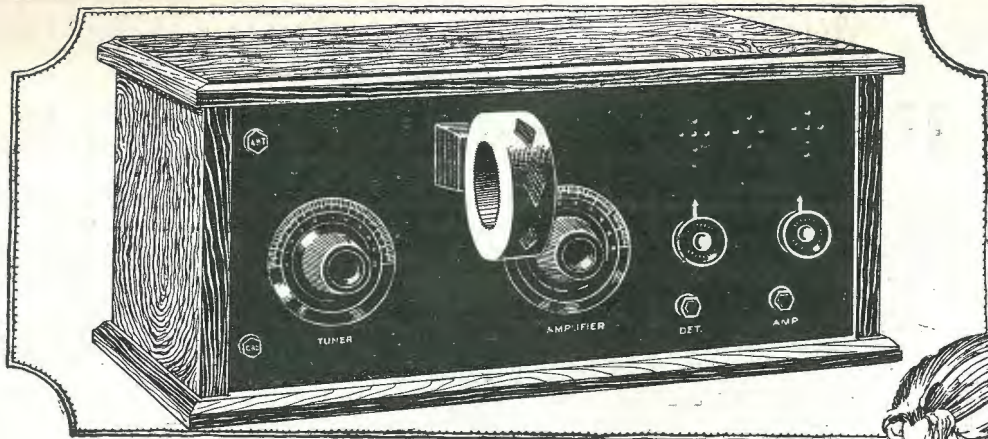
Insist upon genuine Radion Panels and Parts (dials, knobs, sockets, insulators, etc.). Inferior material cannot possibly give you the same satisfactory results. Look for the name on every piece, it is your assurance of complete satisfaction.

International Radio Co., Ltd.

200 Castlereagh St.
Sydney, N.S.W.

91-92 Courtenay Pl.
Wellington, N. Z.





Here's a simple way to have a Perfect Receiving Set

A Set you can put together yourself in a few hours with a screw-driver and a pair of pliers. A set you will thoroughly understand, and which will give you the best results at a far smaller cost than that of a Shop-assembled set.

SIGNAL Home Assembly SETS

comprise everything with the exception of valves, batteries, headphones and aerial equipment. They are thoroughly tested and completely standardised. Supplied with each one is a clear diagram and full, easily followed directions.

**See them at your dealer's!
Ask him to show you also the
Signal Amplifying Unit.**

It is ready for assembly, comprising two valves, two valve sockets, rheostat, two transformers, a bakelite panel, and a neat cabinet. It will increase the volume of your set considerably.

United Distributors Ltd.

(Wholesale Only),

72 Clarence Street,
SYDNEY.

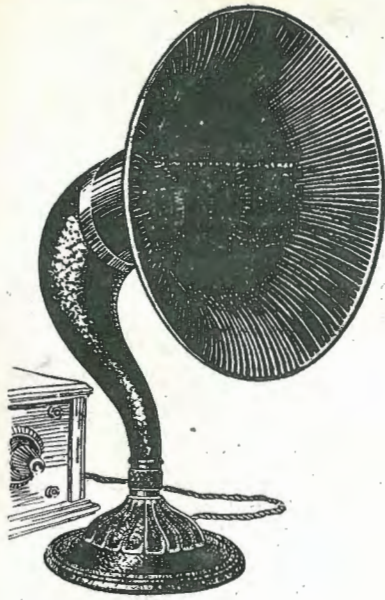
592 Bourke Street,
MELBOURNE.

And at Adelaide, Perth, Brisbane, Hobart, Wellington.



Model P, One Valve, £5/10/-.
Model Q, Two Valves, £9/9/-.
Model R, Three Valves (Audio
Frequency), £11/11/-.
Model S, Three Valves (Radio
Frequency), £11/11/-.
Model T, Four Valves (Radio
Frequency), £13/13/-.

Use a Pico Headphone, 25/-



Loud Speakers

that give you radio as you OUGHT to hear it!

United Distributors Limited

hold the exclusive Agency in Australia of some of the World's Best Loud Speakers. They offer

A CHOICE OF SEVERAL — EACH ONE PERFECT.
ASK YOUR DEALER TO LET YOU HEAR THEM ALL.

MUSIC MASTER LOUD SPEAKER: This has a resonant wood amplifying bell which neutralises all mechanical effects, and produces a remarkable volume of clear, pure tone, free from muffling or distortion—a life-like re-creation of the original.

As illustrated above £12/-/-

ATLAS LOUD SPEAKER—the "Musician of the Air." Its scientific design, with careful fabrication and assembly, goes far to compensate for any shortcomings of broadcasting. It gives you the programme clearly, sweetly and naturally £7/10/-

SIGNAL LOUD SPEAKER—of special shape and construction, as illustrated on top of Radiovox Cabinet at foot of page. Strong and sweet £4/15/-

BRANDES TABLE TALKER — known the world over £4/15/-

HEAR THEM AT YOUR DEALER'S.

Hear the most fascinating programmes without stirring from your chair or without adjusting earphones. You will appreciate this in the warmer weather. All the family can listen-in if you choose one of the superb Loud Speakers quoted on this page.

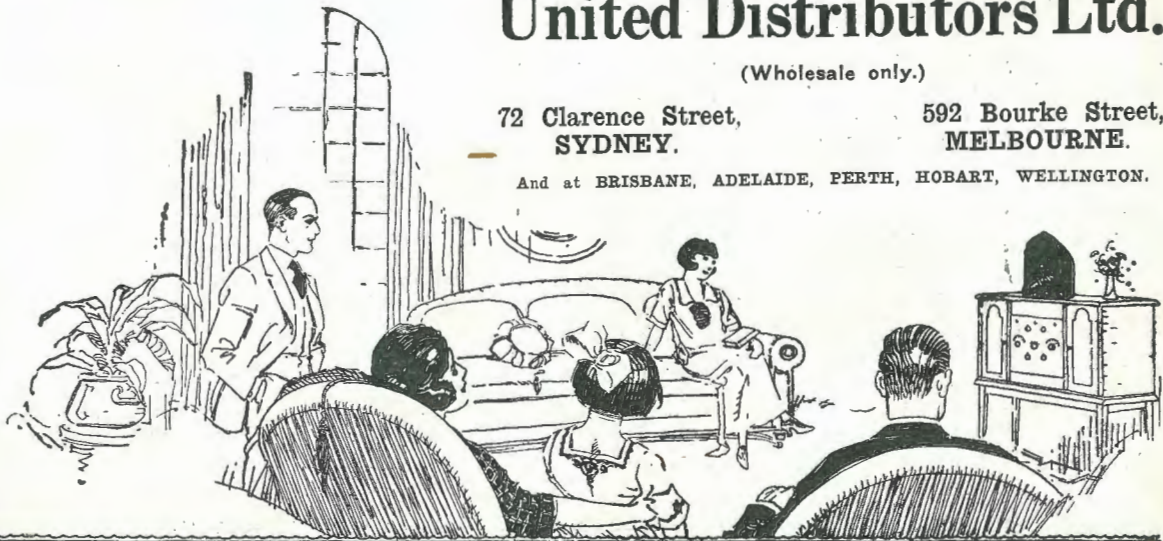
United Distributors Ltd.

(Wholesale only.)

72 Clarence Street,
SYDNEY.

592 Bourke Street,
MELBOURNE.

And at BRISBANE, ADELAIDE, PERTH, HOBART, WELLINGTON.



Some Tool Hints for Panel Working

THE home-made tuning coil and paper condenser are getting to be things of the past. It's better, easier and cheaper to buy radio instruments factory-built, where manufacturing convenience make it possible for the makers to supply apparatus which is more durable, more efficient and more economical as well than those contrived by one's own lamplight. Hence, the job before the radio set constructor is one of drilling and mounting. And now that such an efficient and workable insulation material as Radion panelling is available in many standard sizes, the assembly of a radio set becomes more pleasure than toil, even to the inexperienced.

dozen brass machine screws with plenty of nuts ready also of the following sizes:—6-32 one inch flat and round head; 6-32 half inch flat and round head. The "6" refers to the size of screw, and No. 6 and No. 8 screws are most commonly employed in radio receivers. These have 32 threads per inch of length and are called 6-32 and 8-32 respectively. The No. 18 drill is used for making a hole for a No. 8 screw, while for the No. 6 screw, the drill size is No. 27. The wheel brace is the tool into which the twist drills are fitted, and during the drilling process, the panel should be laid on a flat, wooden surface and the wheel brace held vertically to insure a straight hole.

inch drill is employed. A special diameter may be bought for drilling holes to accommodate 'phone jacks, or another simple "stunt" may be used. This consists in drilling through with the 5/16-inch drill, then countersinking on each side of the panel to the required diameter, and filing through with the rat-tail file until the hole clears the jack sleeve easily. All clearances for screws and the like should be a bit loose.

In laying out the set, it is best to cut a piece of drawing-paper or thin cardboard to the exact size of the panel, and lay out the holes on this paper. This process must be done with care, so that there is sufficient

"This Very Excellent Magazine"

From Mr. T. P. WATSON, Devonshire Street, Sydney.

I must congratulate you upon the very excellent magazine which you are producing. A feature much appreciated by me, and, I am sure, by many others as well, is the explicitness of diagrams. In particular the figures and instructions shown for the one-stage amplifier of some issues ago, and also the P.1 circuit, single valve. The figure in which the actual articles themselves are pictured makes it impossible for the veriest beginner to go wrong.

The fan may appreciate, however, some suggestions as to the tools he requires for handling a Radion panel so that the completed receiver will present a neat and workmanlike appearance and, at the same time, support the instruments in a sturdy and lasting manner. First of all, what tools are necessary?

The following tools find application in most radio set assembly tasks:—1, small wheel brace; 2, auger brace; 3, machinist's square; 4, carpenter's countersink; 5, twist drills No. 27, No. 18, No. 1 and 5/16 inch; 6, strong but small screw-driver; 7, small pair of pliers; 8, rat-tail file; 9, flat file; 10, blunt centre punch, and 11, machinist's scale.

By way of further equipment, it is well to keep on hand one or two

Flat head machine screws should be selected for fastening rheostats, etc., to the panel, and the hole countersunk, so that the head of the screw will be flush with the panel. The auger brace is to hold the fluted countersink, and this task should be done carefully, so that the countersinking will not be too deep. If the screw head is touched up with black lacquer later on it will scarcely be visible. For fastening sub-panels it is hardly necessary to countersink, and for this work the round head screws are suitable.

For most rheostat shafts the No. 1 drill is used, since the shaft is usually 3/16 inch in diameter, while for variable condensers and other instruments having 1/4-inch shafts, the 5/16-

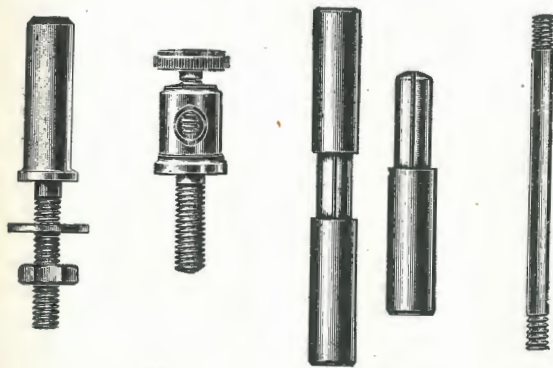
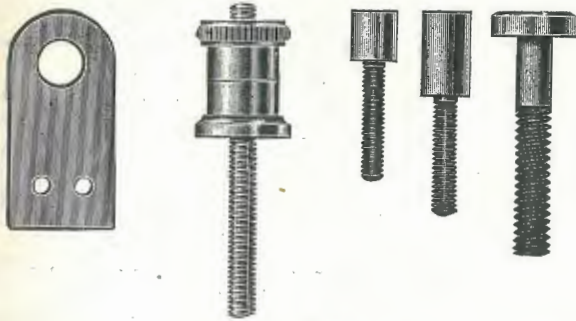
clearance above, below, alongside and behind each instrument mounted. The "fit" of each should be tried on the cardboard plan first. Then the paper is clamped tightly to the panel, and ALL holes punched through with the centre punch. This tool not only shows where the holes are to be drilled, but also starts the drill in the right place and prevents it from slipping until it has got well on its way. The drill sizes should be marked on the plan to insure correctness.

A careful mounting and assembly job with one's Radion panel will be well rewarded with a handsome-looking receiver, screws fitted accurately, instruments firmly placed and smoothly operating.

ORMOND'S Components for the Experimenter

*May all your troubles
be little ones—*

Let Ormond's Components rectify them! Made only from finest quality materials, with minute care to every detail of construction. We know what's wanted and we know how to produce it at the right price. That explains the popularity of Ormond's Components.



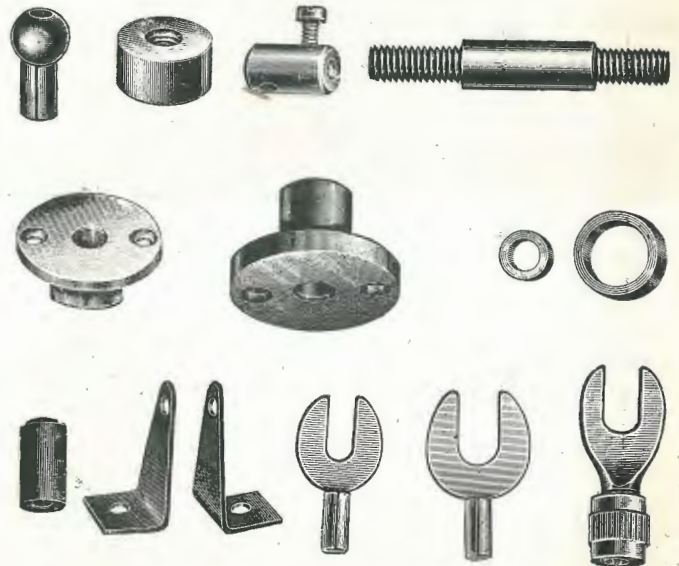
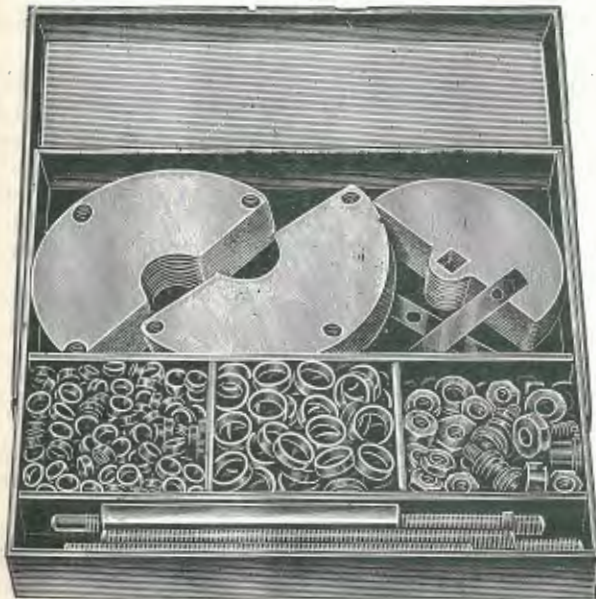
THE QUALITY IS HIGH :: THE PRICE IS LOW

ASK YOUR DEALER FOR ORMOND'S COMPONENTS!

ORMOND Engineering Co.

199 Pentonville Road,
KING'S CROSS, LONDON, ENGLAND.

BOX OF COMPLETE CONDENSER PARTS.



Broadcasting in America

Californians' Enterprise

(By Ralph L. Power, D.Sc.)

(Doctor Power, former college professor and University dean, who served overseas with the A.E.F., is now the "Sky Crier" of "The Los Angeles Examiner," and his voice, which formerly reached hundreds in college halls, now reaches thousands via radio.)



TAKE it that our friends of Australia and New Zealand are more interested than ever in the radio developments of Southern California, particularly since at least one of the local stations reach across the span of space and are heard regu-

to displace its present 500 watt station—the new apparatus to be in operation early in November. The present federal law limits the broadcasting to 1,000 watts and thus there will be a reserve of 4,000 in the event that the law is later changed to authorize the increase.

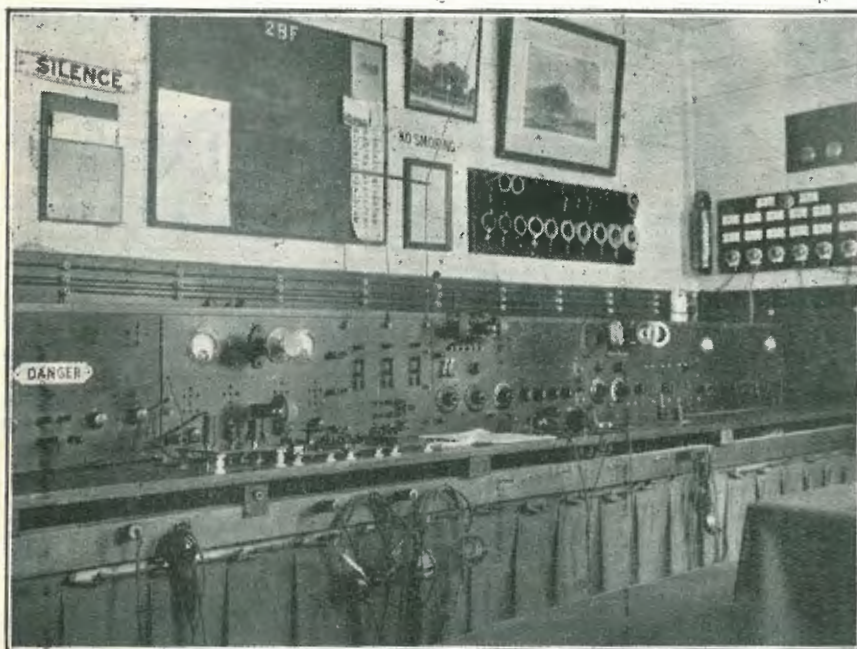
through KFI—*Carmen, Il Trovatore* and *Del Forza Del Destino*. Later, the Eastern Sunrise Organ Service and the Children's Symphony Orchestra were sent out to radioland in the same way—portable panels.

The Aeolian organ recitals, now a part of Los Angeles' evening radio programmes, go through portable panels to a local station and athletic events on special occasions go direct to the homes of everyone in this manner. The portable panels, connecting with a local station are proving unusually popular in the entertainment field.

With the tremendous sweep into popularity of radio in the States there has been a splurge in new orchestras. California's new radio orchestras include the Kentucky Colonels, the Blue Boys, the Wampus Orchestra, and several syncopating organizations of ladies—the Davis' Ladies Trio, Betty Wynn's Girl Syncopaters, Olga Trumbull's Orchestra and others.

The soprano of yesterday has given way to the Radio Soprano of to-day in this locality. Not all sopranos' voices carry well over radio with the present equipment. A few, however, find that their voices go well and, as a result, the radio soprano is a regular feature of the programme, as well as the radio girl who, in some parts of the States, is a pianist and, in others, a singer.

Radio interests are now fairly well banded together in this corner of the earth. The Radio Trades' Association, the Southern California Radio Association, the radio division of the Music Trades Association, the Radio Jobbers' Association, and other similar organizations and sub-committees bear evidence of the desire to "get



This is a view of portion of the interior of Radio 2BF, operated by Mr. L. E. Forsythe, with the assistance of Mr. V. Macklin, at Northridge, N.S.W. As can be seen, the operating room is beautifully fitted-up and there is here housed a number of receivers, including a four-valve and another a three-valve for low wave-lengths. QSA cards have come into 2BF from practically every State in the Commonwealth and the Sunday afternoon broadcast concerts prove most popular with listeners. The transmitter is a 10-watt Hartley circuit using tube modulation with power supply from A.C. mains.

larly in Australia and New Zealand by enthusiastic radio devotees.

Of more than usual interest is the announcement that KFI, Los Angeles' radio central station of Earl C. Anthony Inc., is to erect a new Western Electric 10,000 watt station

The use of portable panels is now an accepted part of radiocasting of the Western United States. Under the auspices of *The Examiner*, the San Carlo Opera Company broadcast three operas direct from the stage of the Philharmonic Auditorium

Brandes

The Name to Know in Radio



*Result of
16 Years'
Experience*

What is "matched tone" in headphones?

Matched Tone is perfect harmony between the earpieces, eliminating all blurring caused by the reception of signals in conflicting keys. This feature is essential to faultless radio reception.

Brandes "Matched Tone" headphones mean purity of tone with increased volume; easily adjustable, they can be worn in comfort for hours at a time.

PRICE
35/-

OBTAINABLE FROM ALL RADIO DEALERS.

Sole Australasian Distributors:

Amalgamated Wireless
(Australasia) Ltd.

97 Clarence Street,
SYDNEY.

Collins Street,
MELBOURNE.

Matched Tone

TRADE MARK

TRADE
ENQUIRIES
INVITED.

Radio Headphones



together" to smooth out individual differences and work for the common good of radio.

Newspapers now carry radio pages and programmes to the extent of nearly 1,200, while the new career of "Radio critic" is developing in the East. Radio programmes of the previous evening within a radius of perhaps 500 miles are criticised and reviewed in the morning papers. Some fifty or more radio weeklies and monthly periodicals are on sale at the street corner news-stands and new publications are springing up every day.

In the early stages of local broadcasting it was a case of hardly a single selection, but what was dedicated to Mrs. Smith, Jones or Brown. But the public has shown a decided

and other people internationally famous, have become as well known through the speaking voice as through stage and screen appearances.

Californians have rapidly passed through the crystal set stage and the local markets for this type of receiver have sadly diminished. The super-heterodyne and the neutrodyne, however, are popular with radio families. Of course, the hot summer season lessens the long distance range, but the holiday crowds are listening to local programmes for a change and they are, for the time being at least, forgetting the long distance mania.

Los Angeles stations at the present time include two religious stations—KFSG, the Angelus Temple; KJS, the Bible Institute; KHJ, *The Los Angeles Times*; KNX, the California

where there is vast evidence of the popularity and regularity of reception on the portable set. Best of all—the lead-in, or the aerial, may be thrown in the stream and local programmes are received. Ease of operation and assembling make these sets popular among holiday-makers and the travelling public alike.

The promotion force which manages but two radio shows annually—one in New York and one in Los Angeles show in February. That of this year, held at The Biltmore Hotel, was a decided success. *The Examiner* operated a portable panel and erected a miniature sending station in a balcony of the lobby, where the vast throngs in the radio show audience could see actual broadcasting, while thousands in their homes were listening-in for the programmes.

Radio plays are now well past the experimental stage and drama, especially written for radio production is proving a fruitful field for the young playwright. The comedy vein seems to predominate at the present writing, although it is highly probable that the more serious type may shortly find its way into favour as the radio public shows its preference and interest.

In the musical activities there is apparently a strong revival, if one may call it that, for chamber music via radio. The Los Angeles Trio, the Philharmonic Trio and the Davis' Ladies' Trio have all rendered strong programmes within the past few months, although, it is also true, that the demand for popular, or "jazz," numbers continues during the summer months when people are listening-in at their summer quarters at the beach or in the mountains.

With the return of cooler weather and the consequent long return of long distance reception, the columns of the newspapers will again be crowded with advertisements or notices for the exchange of sets. "Crystal set, exchange for rabbit hutch, gun, or what have you?" "Neutrodyne for exchange for allotment, car or jewellery." These are but samples of what we may expect with the departure of warm weather. And then all of you people in a distant land who are reading this article will again be listening to Southern California stations and becoming familiar with the voices of our announcers!

DATE 30 - 9 - 24.

Dear Mr. E. E. Jetham Editor RADIO

Many thanks for your Q.S.L. of 28 - 9 - 24.

I am glad to know my Fone I.C.W. C.W. are getting through to you O.K.

2 B.F.

Usual times of testing are as follows:

Sundays 3 to 5 pm.
Week-days 10 to 11:59 pm

I will be pleased to have further reports on my transmissions from you at any time.

Sincerely,
L. E. FORSYTHE, Owner Operator
SAILOR BAY ROAD
NORTHBRIDGE

stand in that they are much more interested in the musical offerings rather than in hearing names read over the air and the practice has been largely discontinued. The old days of the publicity-seeker having himself "paged" in the hotel lobby has given way to a similar species who wish to hear his or her name read over the radio.

Stage and screen stars of Hollywood have at last been bitten with the radio bug. Not a celebrity nowadays who does not have a receiving set or two. The Wampus, official organization of movie-land, now broadcasts a semi-monthly programme from KFI. Elinor Glyn has been a member of the radio cast during these programmes and Annette Kellerman,

Theatre and KFI. The KFI station operates remote control stations to *The Los Angeles Examiner*, *The Evening Herald*, and the Ambassador Hotel, as well as a programme in their own studio and portable panel operations from time to time.

Announcers of Southern California continue to come and go. "Uncle John," the famous announcer of KHJ, however, has been with *The Times* station since its establishment two years ago.

The portable set idea has taken a relatively strong appeal to people of the Pacific Southwest—California, Arizona and New Mexico. In the mountains, at the seashore, by the ocean, out on the desert, auto camping by the broad highways—every-

We are Sole Agents for
"ASHCOY"

Brand Best British Polished
Ebonite Panels

FOR RADIO WORK.

Each packed in a sealed envelope. Stocked in all the standard sizes for crystal and valve sets. Edges ground true to size.

ASK YOUR RADIO DEALER

Full Stocks of British Ebonite Sheets, Rods and Tubes.

WHOLESALE ONLY.

A. S. HARRISON & COMPANY,

Phone: 5-7 Barrack Street, P.O. Box
 B 4574. SYDNEY. 2591.

AMERICA'S FOREMOST
 RADIOPHONE REVIEW,

"The Wireless Age"

contains the very latest Broadcast-
 ing and experimental views and
 ideas from America. :: ::

PRICE, 2/- PER COPY,
 24/- PER YEAR.

Sole Australasian Agents:

THE WIRELESS PRESS,
 SYDNEY,
 Melbourne and Wellington.

QUERIES ANSWERED.
 COUPON.

"RADIO
 in
 Australia & New Zealand."

(October 29, 1924.)

WIRELESS AND MARS.

A CERTAIN amount of interest was taken in England, when Mars was at its nearest point to the earth, but at the moment of writing reports on results received have been decidedly disappointing. Members of the staff of one of the British wireless papers, constructed a special 24 valve set, said to be the largest in the world ever constructed for receiving purposes, and several well-known scientists attended to take part in listening for signals on the night when Mars was nearest the earth.

The construction of this wonderful receiving set took six months' hard work and experiment, during which time the set must have been taken down and reconstructed entirely a considerable number of times, as, since no such set has ever been thought of before, the constructors had little data to work upon. The set consisted of 24 valves, 20 of which were high-frequency valves, followed by a detector and three low-frequency valves. The ebonite panel on which the set was mounted was three feet square and over 200 feet of wire were used for internal wiring purposes. Needless to add, several new patents have been taken out in connection with this, the construction of which gave rise to many problems never before encountered which had to be solved.

THE LAUNCESTON "ROAR."

A DEPUTATION of wireless enthusiasts recently waited on the Mayor of Launceston with a view to obtaining some information about a so-called "roar" which has been troubling listeners-in in the North. Simultaneously, "roars" were discovered in Hobart and Burnie and mayoral sanctums are being invaded on all hands. It has now been ascertained, according to a Launceston correspondent, that the "roar" in that particular city is caused by a certain arrangement of power lines feeding the tram services. It is hardly likely the Council will stop the trams for the benefit of wireless men, however, and Launceston listeners will have to find out how the Sydney enthusiasts get on, surrounded as they are, with every sort of power generators from tram cables to aeroplane engines.

Sacrystal

**THE MOST SENSITIVE
 WIRELESS
 DETECTOR!**

Sacrystal

is a local product of the
 New South Wales
 Molybdenite Mines of
 Miss P. Sachs, of
 Randwick, Sydney.

There are no sensitive
 SPOTS—it's all sensi-
 tive!

Sacrystal

is obtainable at all the
 leading
 Wireless Dealers.

PRICE: 1/6 per Box.

ON the evening of September 13, Mr. Andrew Couper, Jr., of Mareeba, N.S.W., writes that he heard an amateur transmitting through intense static. He heard three musical items, which he believes were played on a gramophone. They were recognised as "Humouresque," "The Barcarolle" and "Because." He would be glad to know what station this was transmitting.

MR. W. E. CULMSEE, Victoria St., Warragul, V., has, he writes, succeeded in logging the United States broadcasting station WJAZ. He was tuning in for 2BL at the time, when he brought in the music, which was heard by three other members of the household, and which sounded like an orchestra of saxophones. This continued for about ten minutes when the announcement was made:—"WJAZ here, closing down now," but Mr. Culmsee could not hear the time announced owing to static.



KGO has been heard four times now by Mr. Percy L. Grant of Gowrie Station, Charleville. The last reception was on the evening of October 1, when this station could be heard quite plainly 100 yards from the loud-speaker. KGO was held till they signed off at 1.2 a.m., local time.

USING the P1 single valve circuit described in *Radio*, No. 36, Mr. A. Considine, of Lidcombe, has heard the following stations:—2DK, 2XA, 2GR, 2JM, 2YI, 2BF, 2UW, 2VM, 2CL, 2ZF, 2RA, 2CX, 2XM, 2IJ, 2ZN, 2AJ, 2CR, 2DE, 2CM, 2OI, 2HM, 2DS, 2DN, 2YC, 2ZX, 2FP, 2AY, 2FF, 2XX, 2GQ, 2MU, 2RJ, 2BB,

2NF, 2WU. Vic.: 3DP, 3BD, 3XF, 5AD, 7BN. N.Z.: 2AC, 4AC, 3AD, 1AA, 4AK, 5 Don N. N.Z. stations were heard on CW only, but V., N.S.W. stations were also heard on 'phone.

USING two valves, detector and audio, with a Mullard Ora as detector and Cunningham as amplifier, Mr. L. Boggs, of Inverell, writes that he picked up KGO on September 28, and also on a subsequent occasion. The United States station was picked up at 6.30 p.m. and held till 7 p.m., when they closed down. Very little fading was experienced. The aerial used for these results was only a single wire 22ft. high and 100ft. long.

FOLLOWING is the latest list of stations heard by Mr. C. A. Cullinan, jnr., Digger's Rest:—A.: 2BK, 2CL, 2CM, 2DN, 2DS, 2JM, 2LO, 2YM, 2ZZ. Z.: 4AA, 4AG, 4AK, 3AD, 2AC. U.: 6CGW working Z4AA, SGH, DB2.

An Appreciation of the Weco Valve

MESSRS. CATTS - PATTERSON CO., LTD., have forwarded us a copy of the following interesting letter which, besides ably illustrating the virtues of the Western Electric Co.'s Wecovalve, also goes to show the high standard of the wears particularized in *Radio's* advertisements.

The letter is as follows:—

[Copy]

To the Western Electric Co. (Aust.), Ltd., Sydney.

Dear Sirs,—

I am only an ordinary experimenter as the usual run of amateurs go, but being in possession of one of your Wecovalves I purchased here at Tonks Ltd. for 37/6, I feel it up to me to let you know what wonderful results I have had with this little marvel. I have a roughly constructed

(very rough!) vario-coupler wound with 24 enamel on the primary former and ten taps of ten unsweated, the rotor being wound with the same gauge.

I have experimented with even the bedstead for an aerial, and alternatively used the bed for an earth and the ordinary 75ft. 3-20 twin. I am situated in a hollow and well and properly screened, still the little tube stands on her dignity and I receive 2BL, 2FC, 2GR and hosts of other N.S.W. and Queensland stations, with good volume.

But here is where the miracle occurs, perhaps you can help me. I am using only one ever-ready pocket torch battery for the plate circuit and a disused one-volt Columbia dry cell for the filament. I really cannot "boost" up this tube too much. Many have seen, heard, and marvelling,

went and got one and they also swear by Wecovalves. I can, without fear or favour, say the valve is not made yet to give results half the equal. (I know!)

I am only a working man and £1/17/6 is a big "nip" for me to spare. I honestly say it's worth its weight ten times over in purest platinum.

You may use this letter in any way you see fit as merit will always overcome obstacles.

Yours faithfully,

(Signed) M. J. KENNEDY.

P.S.—I have on one occasion bought out all available Wecovalves at Tonks through demonstrations of mine to numerous inquisitive scoffers at first.

Gresham Street,
East Brisbane, Qld.

British High-power Station

THE British Broadcasting Co.'s high-power station at Chelmsford has now been working regularly for some weeks and it would be interesting to know exactly how far off it

has been heard on the Continent. Its call sign is 5XX, wave-length 1,600 metres and transmits on a power of about 15 kilowatts. Reports have been received of reception on a crystal set 270 miles distant, in Scotland.

Normally, it transmits the same programme as London 2LO, the programme being relayed by landline to Chelmsford and then being broadcast simultaneously.



JUST ARRIVED

Wireless Equipment.

MANY NEW ACCESSORIES.

Following upon the demand for high grade apparatus in the experimenter's station and broadcast receivers, David Jones' have imported many new accessories, some of which are quoted below.

- The new Phillip Valve, with American Base. Exceptionally priced at 18/6
- David Jones' Special Phones. Price, each £1/1/-
- "Mello" Phones, 4000 ohms. Price 25/-
- Audio Transformer, Jefferson 41. Price £1/10/-
- Audio Transformer, Jefferson Star. Price £1/2/6.
- Aerial Wire, Single Hard Drawn or 3/20 stranded. Price, 100 ft. 3/-
- 7/20 Stranded Aerial Wire. Price, 100 feet 7/-
- Full Stocks of 201A, 301A. Priced at 30/-
- A.P. Two-in-one Valves. Price 25/-

DAVID JONES'

FOR RADIO SERVICE,

252 YORK ST., SYDNEY.

STERLING PLATING & MFG. CO

(Late Stokes & Sons)

225 CLARENCE ST., SYDNEY.

ELECTRO, SILVER, NICKEL AND BRASS PLATERS.

All kinds of Lacquering, Gilding, Bronzing and Oxidising Done.

'Phone: City 9088.



**THEY
HAVE A
SPONSOR**

Western Electric
Head Receivers with the new
"COMFY" PAD

World-wide in popularity, "Western Electric" Head Receivers have a considerably increased value by the addition of a new "comfy" pad—light in weight and made of soft leather and flannel. The wearer is thus assured of the utmost comfort and ease.

TRY A PAIR FOR COMFORT'S SAKE
British-made throughout

In the mind of the man who judges a thing by its sources "Western Electric" Head Receivers have a sponsor. The sponsor is the name "Western Electric," a name inseparably associated with telephones the world over.

Any Radio dealer will supply you with "W.E." Head Receivers. Always insist on "Western Electric."

Wireless Receiving Sets Made to Order

I am prepared to make sets of any design, either complete or parts only.

VICTOR MARKS' Radio House

BEAMISH STREET, CAMPSIE.

Changing Variometer-Variocoupler Set to Reflex

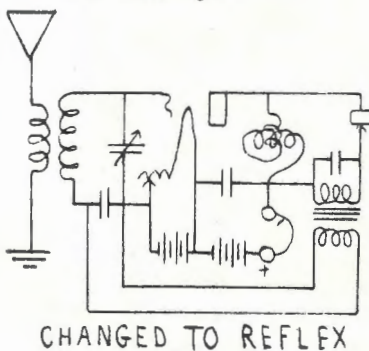
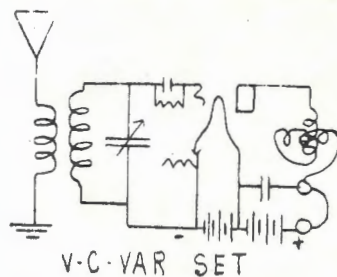


WHEN you use the same valve for both audio and radio frequency amplification it means economy and this is what happens in a reflex set. True, you do not get the same amplification as when separate valves are used for each, but you do get increased amplification.

There are quite a number of enthusiasts who have a vario-coupler-variometer regenerative set as shown in the upper figure. This can very easily be converted to a reflex set giving a stage of radio frequency amplification and one of audio frequency amplification by the addition of the following parts: two fixed condensers, crystal detector and an audio frequency transformer.

The wiring of your set will hardly have to be altered. The only place your present wiring need be cut is at the grid return between the secondary coil and the variable condenser. A fixed condenser about .002 is inserted in the circuit at that point. The rest of the changes are merely additions to your set. The crystal detector is connected to the plate of the valve and the other side of the detector goes to the primary of the audio frequency transformer, the

other side of the primary going between the telephones and plate variometer. The secondary of this transformer is connected across the fixed



condenser you inserted in the grid return, the grid leak and condenser shorted and the job is completed.

If you have been using 22½ volts on the plate of the valve detector,

it should now be raised to 45 volts. Any valve except the UV200 can be used in this circuit. The UV200 being strictly a detector, is not suited to radio or audio frequency amplification. For best results a 201A valve should be used, although a 199 or WD type may be used.

Where a large broadcasting station is near you, it will be found that this combination will operate a loud speaker. A crystal detector of the fixed type is recommended as it is much better than fooling around with an adjustable type, even though the latter may be a trifle more sensitive at times. An audio frequency transformer having a ratio of six to one is suitable.

A good variable condenser will make or break this set just as it does any other good receiving set. The rotor plates should be connected to filament and the stationary plates to the grid side.

So many ask if they cannot use a valve detector instead of the crystal detector. To be sure you can, but there is no advantage, the cost is more and the upkeep is a great deal more. Unless you are taking advantages of regeneration, you might just as well use a good crystal detector.

WIRELESS ON BOARD VESSELS.

THAT insufficient news is received by wireless on board vessels approaching New Zealand was the subject of a complaint made by Mr. A. E. Mabin, of Levin and Company, Wellington, to the Postmaster-General. Mr. Mabin pointed out that some time ago the New Zealand Government decided to broadcast a summary of the day's news in the Dominion for the benefit of travelling New Zealanders. If that was still being done it had not apparently reached the *Ionic*. The Hon. J. G. Coates states that under the existing arrangement wireless news was broadcasted from Awanui and was published on vessels of the Union company. An arrangement would be made, however, to have the news published on other

vessels also. So far as wireless broadcasting in New Zealand was concerned, Mr. Coates mentioned that a New Zealander interested in wireless development had written to him from America stating that many broadcasting stations in America had closed down, but those few remaining were giving good service. "Several interested people I spoke to," stated the correspondent, "thought the New Zealand scheme which I outlined was admirable, in fact, the only sensible way to run any broadcasting scheme."

4YA CLOSING DOWN.

GENERAL regret is expressed that Mr. F. J. O'Neill, proprietor of the powerful Dunedin broadcasting station, proposes to discontinue regu-

lar transmissions. It is stated that dealers and listeners-in offer no financial support and have been treating 4YA as though it were a public institution. Mr. O'Neill has recently commenced broadcasting news, which is particularly intended for residents of the Pacific Islands, who have written on several occasions requesting him to do so, as months elapse in many cases before mails arrive. Mails go to the Campbell Islands once in eight months, and to the Chatham Islands once in about three months. The broadcasting of news is also for the edification of the lightkeeper at Cape Brett lighthouse and the lepers on Quail Island. It is to be hoped that Mr. O'Neill, although discontinuing regular transmissions, will still carry on these humane services.

INSURE WITH
The Liverpool and London and Globe Insurance Co. Ltd.

ASSETS EXCEED £20,000,000.

LOWEST RATES.
FIRE — ACCIDENT — MARINE

Head Office for Australasia:
62 PITT STREET, SYDNEY.

W. B. CLARKE, Local Manager for N.S.W.

Melbourne Branch:
415-7 COLLINS STREET.

R. M. EVANS, Local Manager for Victoria.

C. DANVERS, Manager for Australasia.

T. M. DOUGLAS, Assistant Manager for Australasia.



STROMBERG-CARLSON

SUPER No. 2a Radio Headset SENSITIVE

The Headset of Quality — Layer Wound Coils and Powerful Magnets make it Highly Efficient.

SALES HAVE INCREASED ENORMOUSLY and we are pleased to announce New List Price, — 40/- —

STROMBERG CARLSON LOUD SPEAKERS, TRANSFORMERS, Jacks, Plugs, etc., equally efficient. ALL GUARANTEED. Ask your Dealer or write us direct.

AUSTRALIAN REPRESENTATIVES:

L. P. R. BEAN & Co. Ltd., 229 Castlereagh St., Sydney

Melbourne: HENRY G. SMALL & CO., 360 Post-office Place.
 Adelaide: CHARLES ATKINS & CO., Currie Street. Perth: T. MUIR & CO., 99 William Street.
 Brisbane: S. H. SMITH, 299 Adelaide Street. Hobart: J. A. COOPER, 90 Harrington Street.

"The Theatre, Society and Home"

LIKE WIRELESS IT TOUCHES ALL PARTS OF THE WORLD

After Reading Please Pass on to a Friend. Larger Circulation Means More Advertisements :: More Advertisements Mean Extra News, Pars, and Home Chatter.

PUBLISHED MONTHLY. SOLD BY ALL BOOKSTALLS.

HEAD OFFICE: 16 BOND STREET, SYDNEY.

Branches: 100 King St., MELBOURNE; 75 Elizabeth St., BRISBANE; 32 Waymouth St., ADELAIDE.

RADIO DEALERS! THIS MAGAZINE IS THE ONLY ONE OF ITS KIND IN THE COMMONWEALTH AND NEW ZEALAND. EACH ISSUE IS EAGERLY AWAITED AND READ BY "LISTENERS-IN," BROADCASTING COMPANIES, AMATEURS, EXPERTS, AND ALL CONNECTED WITH WIRELESS ACTIVITIES. THEY ARE ALL PROSPECTIVE PURCHASERS. GET IN TOUCH WITH THEM BY ADVERTISING IN "RADIO."

WRITE FOR RATES AND ALL PARTICULARS TO THE MANAGER, THE WIRELESS PRESS, 97 CLARENCE STREET, SYDNEY.

The Report on Wireless Telegraphy in New Zealand



COPY of a report on Wireless Telegraphy in New Zealand as contained in the General Report presented to the House of Representatives by the Hon. J. G. Coates of the Post and Telegraph Department makes interesting reading. It states:—

WIRELESS.

GOVERNMENT STATIONS.

During the year radio communication has been satisfactorily maintained by all Government coast stations.

James Clark Ross, during the whole period of its operations in the Ross Sea. Radio-telegraphic communication with the expedition was effected at 2,000 miles, and radio telegraph traffic was handled from the *Sir James Clark Ross* at a distance of 1,400 miles. Although conversations by radio-telephone have been conducted on many previous occasions by vessels trading in these waters, this is the first case in which this agency has been employed for the transmission of a radio-telegram to a New Zealand coast station.

tower. The semi-umbrella type of antenna erected on the new structure is proving equally as efficient as the "T" aerial erected on the old masts.

Consideration is now being given to the matter of equipping Radio-Wellington with a continuous wave valve transmitter. The installation of this equipment would permit the use of different types of transmissions for fixed and mobile service, facilitate long distance communication with ship stations, and reduce to a minimum interference with adjacent radio-telephone broadcasting transmissions.

RADIO-CHATHAM ISLANDS.

Reliable and uninterrupted communication has been maintained during the year between Radio-Chatham Islands and the mainland.

With a view to facilitating the despatch of radio telegrams over long distances, and also reducing interference arrangements were made in May last for Radio Chatham Islands to work overseas vessels on the Cape Horn and Panama Trans-Pacific routes on long waves.

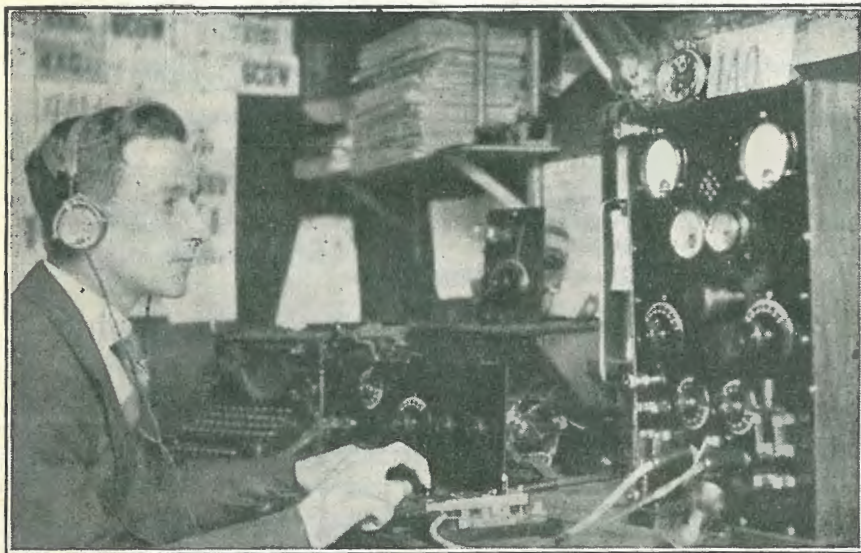
RADIO-AWANUI.

The proposed modernisation of the Radio stations at Awanui (New Zealand) and Apia (Samoa) by the installation of continuous wave transmitters in the place of the present spark equipment is being held in abeyance pending possible developments in connection with the erection in New Zealand of a high-power station, which would probably incorporate the specific services at present performed by Radio-Awanui.

RADIO-APIA AND RADIO-RAROTONGA.

In January last a direct coupled semi-Diesel engine and charging generator were installed at Radio-Apia to replace the plant disabled by an accident in 1923.

A system of broadcasting meteorological forecasts and hurricane warnings throughout the Southern Pacific



Mr. Russell White, 1AO, N.Z., and his radio station. 1AO has regularly been heard in U.S.A. and Mr. White will be at all times pleased to carry out tests with other experimenters in any of the five districts.

An effective watch has also been kept for signals of distress from ship stations.

In September last arrangements were made to enable masters of vessels at sea to communicate with coast stations for the purpose of obtaining reports on the weather conditions prevailing in important nautical localities.

RADIO-AWARUA.

Satisfactory communication was maintained by Radio-Awarua with the Norwegian Whaling Expedition, headed by the factory steamer *Sir*

The transmitting equipment at Radio-Awarua is being supplemented by an efficient short-wave transmitter, in order to provide a more effective means of communicating in daylight with ships on the southern steamship routes. When this transmitter is installed the period of transmission at Awarua will be increased and the duration of watch extended.

RADIO WELLINGTON.

In June last the two wooden masts at Radio-Wellington, which had been in service since 1912, were replaced by a new 165 ft. steel self-supporting

DE3 Valves For Economical Efficiency

The "Marconi" DE3 is a Dull Emitter Valve of wonderful economy and great efficiency. It gives results equally as good as an accumulator-heated filament valve of similar characteristics, but with an expenditure of only one tenth of the filament current.

The working filament wattage being only .18—3 volts at .06 amps—a 3 cell dry battery may be conveniently used.

The DE3 can be used as a detector, or a high frequency or low frequency amplifier; its low impedance renders it extremely suitable for use in conjunction with a loud speaker.

The anode voltage is from 20—80 volts.

PRICE 42/6.

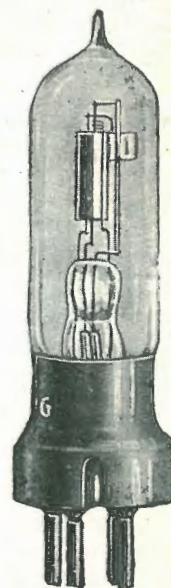
Obtainable from All Radio Dealers.

Amalgamated  **Wireless**
(Australasia) Ltd.

97 Clarence Street
Sydney

Collins Street
Melbourne

RADIO DEALERS KINDLY WRITE FOR TRADE PRICE LIST



has been developed during the year by the Naval Department, and is now in operation. Radio-Apia receives meteorological reports daily from Tonga, Tahiti, Rarotonga, Fiji, Norfolk Island, New Hebrides and New Zealand. These reports are correlated with the observations made at Apia Observatory, and a forecast is broadcasted twice daily during the hurricane season, and once daily during the non-hurricane season.

An independent rotary discharger was installed during the year at Rarotonga with a view to increasing the transmitting efficiency of the station.

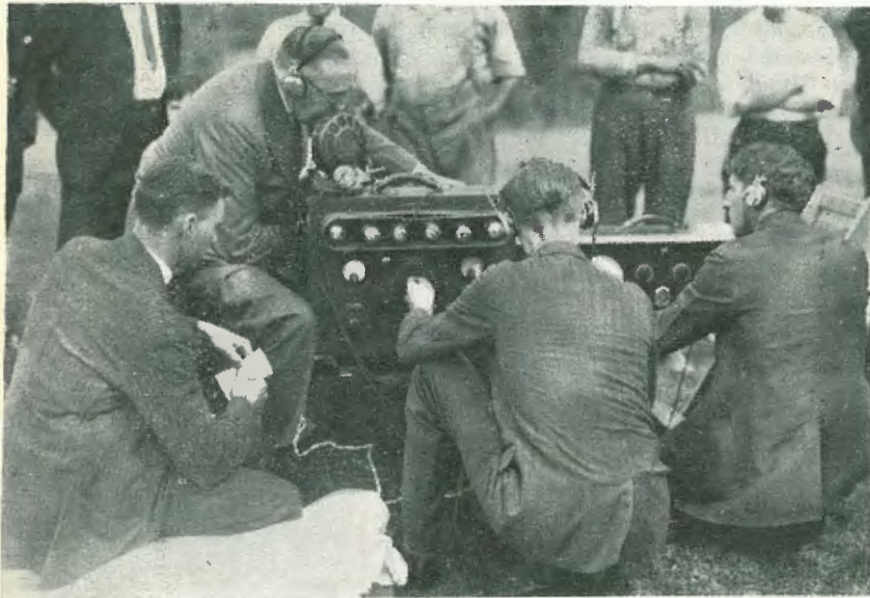
under the direction of Mr. J. H. Hampton, Superintendent of the Radio-Rarotonga radio station. The messages for the present are confined to plain language messages. The personnel of both stations were native students of Auckland College, who were specially trained in wireless telegraphy at the Dominion Wireless College, Wellington, on completion of their ordinary general education.

An officer of the Department has already left New Zealand with equipment for erecting a radio telephone station at Niue, which should be completed shortly.

very considerable relief has been obtained by the prohibition by regulation of certain well-known types of receiving circuits which strongly energize the antennae system. It is recognised that practically any valve circuit may be caused to oscillate and to communicate a portion of its energy to the radiating member of the system, and for this reason complete immunity from interference of this kind is impossible. It is considered, however, that the nearest approach from immunity will be achieved by forbidding the use of those types in which radiation is inherent and in which reaction is not under proper control. The reduction of mutual interference then becomes, in a large measure, the responsibility of the "listeners-in" and of the amateur associations which represent them.

The Department will, if necessary, take strong legal measures against persons disregarding regulations designed to reduce the evil effects of interference.

During the year several broadcasting stations of comparatively small power have been erected and operated by private enterprise with a considerable measure of success, but through lack of funds, and other causes, the development of this class of station has been retarded.



The Radio Corporation of America recently broadcasted messages from Central Park, N.Y., to aeroplanes. The photo shows Major L. D. Gardiner speaking to an aviator who is hovering somewhere far above.

COOK ISLANDS.

Investigations have been continued during the year on behalf of the Cook Islands Department with a view to providing suitable wireless apparatus for installation at outlying islands in the Cook Group. In this connection two half kilowatt radio-stations will shortly be erected at Aitutaki and Mangaia to act as feeder stations into Radio-Rarotonga. A radio-telephone station is proposed for Niue Island as a feeder into Radio-Apia.

In connection with the above section of the report communication has now been officially established between Aitutaki and Mangaia, the apparatus having recently been erected

PRIVATE STATIONS.

The Radio-telegraph Regulations for Amateur, Experimental, and Broadcasting Stations, gazetted in January, 1923, have proved an effective means of regulating the operation of private radio-stations. Already 2,900 amateur receiving-station licenses have been issued. Assistant Radio inspectors were appointed during the year in the Auckland and Wellington districts.

The reduction of mutual interference between "listeners-in," due to re-action effects causing radiation from the receiving antenna, presents considerable difficulties, of which, judging by reports received, this country possesses no monopoly. A

PRISON S.O.S. PROMPTLY ANSWERED.

AN amusing incident occurred in Wellington lately, when an officer and three mechanics engaged overhauling the wireless equipment of the Defence Force at Mount Cook Military Headquarters were made prisoners by accident, and were compelled to resort to an S.O.S. call by wireless in order to secure their liberty. During the evening the door of the room became closed by the prevailing high wind, and locked itself. No efforts on the part of the imprisoned men could prevail over the locks and the thick walls were impervious to sound. The wireless gear in the room was the last resort, and V.L.W. radio station on Tinakori Hill was successfully called up, and the position of the prisoners explained. The police were called to the rescue and the victims of the mishap were released shortly after midnight. Needless to say, they were glad to regain their liberty.

Ask your dealer for our "Elsie"
 Vernier Two-coil Holder for
 ————— 16/- —————

PACIFIC ELECTRIC CO.

(WHOLESALE ONLY)

87 CLARENCE STREET, SYDNEY.

SOLE AUSTRALIAN DISTRIBUTORS.

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

The most satisfying and profitable
 Radio Batteries you can sell

Advertised all over the world.

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

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

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

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

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

Write for an illustrated, descriptive circular.

NATIONAL CARBON COMPANY, Inc.

30 EAST 42nd STREET, NEW YORK, N. Y., U. S. A.



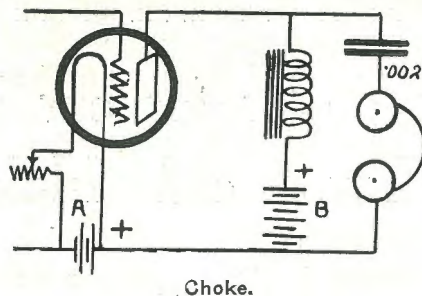
Three Methods of Using Audio-frequency Amplification



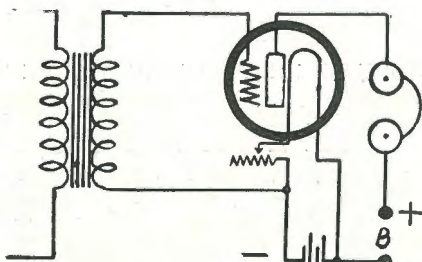
QUIET but good amplification is the desire of all radio enthusiasts who have a loud-speaker. There are three types of audio frequency amplification used to-day, namely, resistance coupled, transformer coupled and choke.

All these forms have their advantages, which are as follow: The most common type of audio frequency amplification is transformer coupled. It consists of a step up transformer and gives high amplification but when ratio transformers are used, it usually leads to distortion unless condenser or leaks or a combination of them are used to eliminate it and when this is done, the amplification is reduced. In the average set it is not practicable to use more than two stages of transformer coupled audio frequency amplification, while three stages is all that is permissible on any set without the use of condensers and leaks.

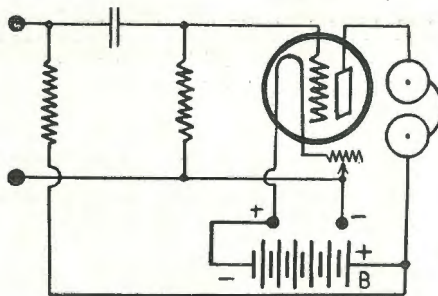
Resistance coupled amplification consists of high resistances and fixed condensers. The latter to keep the high potentials off the grid of the following tube. The high resistances are connected in series with the plate and the B battery similar to the primary of the audio frequency transformer. By inserting this high resistance in the plate lead, it means that a much higher value of B bat-



Choke.



Transformer Coupled.



Resistance Coupled.

tery must be used to overcome this resistance and deliver a high poten-

tial to the plate of the valve. Usually the voltage of the plate battery is doubled.

The big advantage of resistance type of audio frequency amplification is distortionless amplification, as it amplifies equally well over all frequencies. Its disadvantages is low amplification. It requires three stages of resistance coupled amplification to give the same volume as two stages of transformer coupled.

The choke coil type of audio frequency amplification, as far as results are concerned, is a combination of the two previous types. A choke coil consisting of a primary from an ordinary bell-ringing house transformer, or the secondary or an audio frequency transformer may be used and is connected in series with the plate and B battery. It does not offer a high resistance to the flow of the B battery as does the resistance coupled type and gives better amplification on that account, but it does not give as distortionless amplification and also it does not give as high amplification as the transformer type.

Both of the resistance and choke types of amplification amplify very little themselves. The amplification being only that of the valve, while with transformer coupled, we get the step-up action of the transformer as well.

The Why and the Wherefore

RADIO sets may be mounted so as to harmonize with the rest of the furniture.

While a low aerial will get signals, a high one in the same location will get them better.

One stage of radio frequency will improve the tuning qualities of a single circuit set.

A six ohm rheostat is not suitable for 201A valves.

A single circuit set will not cut out interference like a two-circuit set will.

Using jacks and plugs is an easy way of shifting from detector to amplifier.

The low current consumption valves will run off your battery a long time without having it re-charged.

Careful study of the why and wherefore of your set will amply repay you in signal strength.

There is nothing mysterious about radio sets, but common sense must be used to get results.

Most amplifying tubes will not handle a high B battery unless a C battery is used.

If you use a long one wire aerial you won't have to solder any connections to it.

A compact variable resistance can be bought to go with your six ohms resistance when using 201a tubes.

Your storage battery requires water oftener in warm weather than in cold.

A portable set should have the batteries in the cabinet.

To get away from interference it is usually necessary to use a two-circuit set.

A large condenser requires closer turning when tuning than a small condenser does.

If you are going to lay your storage battery up, give it a good charge and employ the electrolyte.

A vernier condenser is necessary for sharp tuning.

Closed circuit jacks are used for detector and first step, and an open circuit jack for the last step.

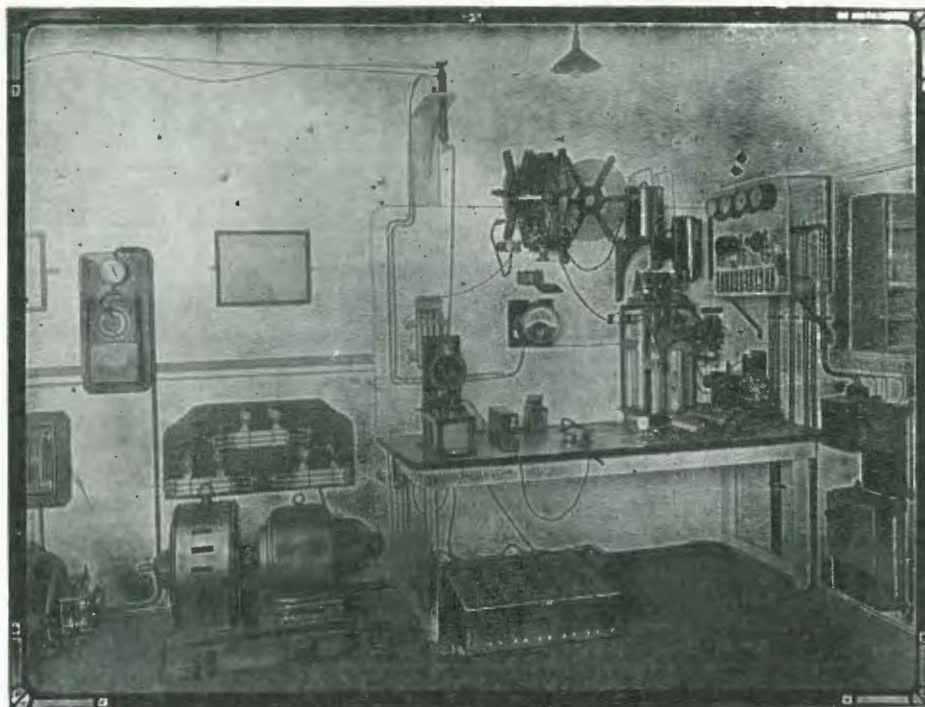
If your set works well one night and dead the next, look at your B batteries. They may have become short-circuited.

**FREE
Practice
Set**

**FREE
Gramo-
phone**

Service

**FREE
Books**



MARCONI STUDENTS OPERATE THIS TYPE OF STATION.

WIRELESS

IS GROWING SO RAPIDLY THAT IN THE
VERY NEAR FUTURE QUITE A NUMBER OF

**WIRELESS OPERATORS
WILL BE WANTED**

TAKE ADVANTAGE OF THIS UNIQUE POSITION
AND ENROL TO-DAY WITH THE

MARCONI SCHOOLS

AS THE TIME IS LIMITED.

WRITE TO-DAY TO

Marconi School of Wireless

97 Clarence Street, SYDNEY,
AND

Gloucester House, 44 Market Street, MELBOURNE.



Queries Answered



L. R. M. (Hornsby). Q.: With a good aerial and earth and under good conditions will the P1 circuit operate a loud-speaker nine miles from 2FC? A.: You will need another valve as an amplifier, such as the one described in *Radio*, No. 37. Q.: What is wave-length of vario-coupler of the following dimensions:—Stator wound in two sections on a 4in. dia. tube, 60 turns No. 22 wire and 100 turns No. 26, with a rotor wound on 3in. tube with 46 turns No. 22? A.: About 300 to 2000, if a tapped winding is used. Q.: Would connecting the first stud of a tuning switch to the switch eliminate dead-end losses? A.: This method of connection is not very effective as the effect of the short-circuited turns makes a

battery if the valve is to be employed as a detector; this will increase the life of both the valve and the battery. Q.: Would a variable condenser as shown in diagram give finer tuning, and what value should this be? A.: To obtain fine tuning with an additional variable condenser it will have to be of small capacity—say, about 0.0001 m.f. with three plates.

L. R. M. (Hornsby). Q.: Would a two-wire aerial, 50 ft. long, be as efficient as a single wire 100 ft. long? A.: Yes. Q.: Is circuit submitted very selective? A.: It is more liable to pick up interference from spark transmitters and electric light induction than a circuit with a separate

turns should the loading coil be to receive 2FC? A.: Wind 100 turns of No. 26 wire on the 4in. tube and connect it between the top of the present coil and the variable condenser.

M. P. F. (Arnccliffe). Q.: Is it possible to make a Cockaday Tuning Unit to take in all broadcast wave-lengths up to 1800 or 2000 metres? If so, how many turns of No. 28 and 30 D.C.C. wire on a 3½in. former are necessary in the bank-wound Primary coil, and each of the two windings of the Secondary coil? A.: It is possible to make a Cockaday circuit to work on the long broadcasting wave-lengths, by using three to four times as many turns as those used for the usual 300-500 metre range. It is doubtful whether you will be able to tune in the short waves owing to dead-end effects. Why not use a standard three-coil regenerative receiver? After all, the Cockaday circuit is merely one of the freak circuits doing what can be accomplished by simpler means. See answer to *L. R. M.*

Readers, Kindly Note!

QUERY LETTERS WHICH ARE ACCOMPANIED BY OUR COUPON AND COMPLY WITH THE FOLLOWING DIRECTIONS WILL RECEIVE FIRST PREFERENCE. MAKE YOUR LETTER AS BRIEF AS POSSIBLE AND WRITE YOUR QUESTIONS ONE UNDERNEATH THE OTHER. ALL LETTERS MUST BE SIGNED IN FULL, TOGETHER WITH THE ADDRESS OF THE SENDER. FOR PUBLICATION, THE WRITER'S INITIALS WILL BE USED OR A NOM-DE-PLUME, IF DESIRED, BUT ON NO ACCOUNT WILL ANY CONSIDERATION BE GIVEN TO ANONYMOUS COMMUNICATIONS.

IF REQUESTED, ANSWERS WILL BE FORWARDED BY POST, PROVIDING THE LETTER OF ENQUIRY CONTAINS THE COUPON TO BE FOUND ELSEWHERE IN THIS ISSUE.

IT SHOULD BE NOTED THAT IT IS IMPOSSIBLE FOR US TO ANSWER QUESTIONS REGARDING THE APPROXIMATE RANGE OF EXPERIMENTERS' SETS.

great increase in the resistance of the winding, which is often worse than the dead-end effect.

E. S. (Mincha West). Q.: Can you advise the best circuit using DER valves with two stages tuned radio frequency amplification? A.: You are certainly looking for trouble with two stages of tuned R.F. amplification. Why not use one of the "Low Loss Tuners" described in recent issues of *Radio*? We have noted from correspondence with experimenters who do exceptionally long distance work, that they all use simple circuits. If, however you wish to use two stages of Radio amplification for some special purpose, we consider tuned anode the best.

R. W. T. (Burwood). Q.: Would a WD12 valve work more efficiently from a 42, than a 60-volt battery? A.: Use the 42-volt

tuned primary. Q.: What kind of oil should be used for finishing off panels? A.: Ordinary light machine oil and knife polish form a good mixture for polishing panels. Q.: What are the merits of the Cockaday, Reinartz and Aerolia circuits? A.: The Cockaday circuit employs an absorption coil coupled to the grid coil to control the regenerative and oscillation properties of the valve. It also employs a very loose coupling to the aerial, and fixed mutual between the grid and reaction coils. The Reinartz has an adjustable auto-transformer coupling for reaction, and an adjustable auto coupled aperiodic aerial circuit. The Aerolia circuit is the same as the P1. The former circuits are merely freak methods of accomplishing regeneration and coupling without using movable inductance units. Q.: The vario-coupler consists of 60 turns of No. 22 wire on a 4in. Stator for the Primary. How many

H. L. S. (Sydney). Q.: How many turns of No. 38 enamelled wire are required to make a Radio Frequency Transformer for wave-lengths from 200 to 2,000 metres and how many turns for each slot A and B (diagram submitted)? A.: You cannot wind an efficient Radio Transformer to cover so wide a range. You omitted to state the dimensions of your former. Let us have this and we will tell you the number of Transformers and the windings to cover the range you require.

X. Y. Z. (Glenelg). Q.: Can you offer any suggestions for improving reception (diagram of circuit and particulars of aerial submitted)? A.: Your circuit is quite satisfactory. Q.: Would radiation from this receiver cause any interference providing reception is clear and undistorted? A.: If reception is clear there need be no fear that it is causing interference to your neighbours. Q.: What size coils for L1, L2, L3 and L4 are required to receive amateurs, 2BL, KGO and 6FC? A.: For KGO and 2BL: L1, L2, L3 and L4 should consist of 25, 50, 50 and 50 turn honeycomb coils respectively. For experimenters on short waves it would be better to employ a standard three coil circuit with 20, 25 and 35 turns in aerial, secondary and reaction coils respectively. There is no station 6FC. If you mean 6WL (Westralian Farmers), use 150, 200, 200 and 100 turns for the above coils. Q.: Will small flash-lamp globes protect the AR06 and WECO valves? If not, is there
(Continued on page 456.)

MODERN PRINTING

KEEPING in touch with all that is new and good in type faces and modern printing machinery makes us think

we can satisfy your printing wants.

We wish to announce that we can furnish everything it is possible to print and bind. Our charges, quality considered, are surprisingly low. We turn out work as quickly as you want it.

NORTH SYDNEY PRINTING CO.

195 ALFRED STREET,
NORTH SYDNEY.

Tel.: North 3178.

EDWARD WATERS & SONS

(Established 1859.)

PATENT and TRADE MARK ATTORNEYS,

CATHCART HOUSE,
11-13 Castlereagh St., SYDNEY.

Tel.: B 5987. (And at Melbourne).

FOR SALE.

SECOND-HAND AND DAMAGED WIRELESS APPARATUS.

Variable Condensers, Table Type, .001 or .0005, 17/6; Telephone Transformers, 150, 1000, 3000, 15/-; Transformers, Audio Frequency, ratio 1 to 3, 15/-; Calibrated Dials, 0 to 10, 9d.; Valve Holders for "V.24" and "GX" Type Valves, 6/-; Honeycomb Coils, 300 turns 2/-, 400 turns 3/-, 500 turns 3/6, 600 turns 4/-, 750 turns 4/6, 990 turns 5/-; Quantity Damaged, 137 turns 1/8; Variable Condenser Plates (Brass), 9d. doz.; Aerial Tuning Unit with Variable Condenser mounted on panel, vario coupler, inside cabinet, type No. 1, £2; Aerial Tuning Unit, mounted on panel, vario coupler inside cabinet, type No. 2, £1; Auto Coupling Valve Receivers, single slide Inductances, valve holder V.24, one fixed condenser and variable filament resistance, £2; Valve Receivers in Mahogany Cabinets, 1, 2, 3 and 4 Valve Receivers—Prices on application; Single and Double Slide Inductances, Valve Panel, Filament Resistance and Fixed Condenser, £1/10/-. Also quantity of other Wireless Apparatus.

Open for Inspection at 218 Kent St. at 4 p.m. week days; Saturday mornings, 9 till noon.

Address all communications to Department "S," 218 Kent Street.

Amalgamated Wireless (Aust.) Ltd., Sydney.



MOVEMENTS OF MARINE WIRELESS OFFICERS

SEPTEMBER.

Mr. W. C. Smith signed on s.s. *Inga* at Sydney, 27th.

Mr. R. C. V. Humphery signed off s.s. *Urilla* at Sydney, 27th.

Messrs. G. Vincent and E. D. Nicoll signed off s.s. *Cooee* as senior and third operators respectively at Sydney, 29th.

Mr. F. Barclay signed off s.s. *Woolgar* at Melbourne, 26th, and signed on s.s. *Iron Prince* at Melbourne, same date.

Mr. H. W. J. Warner off s.s. *Iron Prince* at Melbourne, 26th, and signed on s.s. *Woolgar* at Melbourne, same date.

Mr. A. W. Hodge relieved Mr. T. J. O'Leary on s.s. *Period* at Melbourne, 23rd.

Mr. F. A. Noar signed on s.s. *Eastern* as senior operator at Melbourne, 24th.

OCTOBER.

Mr. E. S. Bailes signed off s.s. *Loongana* at Melbourne, 1st, and signed on s.s. *Nairana*, same date.

Mr. R. C. V. Humphery signed on s.s. *Iron Master* at Newcastle, 7th.

Mr. A. D. Hosken signed off s.s. *Time* at Sydney, 7th, and signed on s.s. *Eastern* as senior operator at Sydney, same date.

Mr. E. D. Nicholl signed on s.s. *Eastern* as 3rd operator at Sydney, 7th.

Mr. S. G. White relieved Mr. F. Marsden on s.s. *Tahiti* as 3rd operator at Sydney, 8th.

Mr. F. W. Kettlewell signed on s.s. *Time* at Sydney, 8th.

PERSONALITIES

MR. R. W. BARKER, of the Melbourne office Sales Staff, terminated services with the Amalgamated Wireless (A/sia.) Limited on the 30th ultimo, to take over the position of Melbourne manager of the Allied Engineering Company. Mr. Barker was for, approximately, six years in the Coastal Radio Service, and for the past two years has been in the Sales Department of Amalgamated Wireless. On the occasion of his departure from the company he was presented with a smoker's outfit by members of the staff.

THE IMPANDEX TRADING COMPANY, LTD.,

5 VICTORIA AVENUE,
BISHOPSGATE, LONDON, E.C.2.

Imports and supplies the best Crystals for Wireless Receiving Sets, in Bulk and Boxes. Good Agents required. Also all other Wireless Accessories supplied. Write at once.

Mention "Radio" when communicating with Advertisers.

HUGHES & CO.

HIGH-CLASS

CIVIL and NAVAL TAILORS

Our civil Suits are perfection in STYLE FIT, DURABILITY and PRICE. TAILOR-MADE on the premises under our own supervision. OUR NAVAL UNIFORMS and GOLD LACE work speak for themselves. CAPS, LACE, BADGES, UNIFORM BUTTONS always in stock. ONE Quality only — THE BEST.

70-72 Erskine Street, SYDNEY

'PHONE: City 77.

BACON & Co. Ltd.

PROCESS ENGRAVERS

and

ILLUSTRATORS

31a PITT STREET
SYDNEY

'Phone: B 3368

Telephone: 1180 City.

FOR SERVICE

GREEN & NORTON

(Formerly the Rapid Freight Despatch Co.)

CUSTOMS, SHIPPING & FORWARDING AGENTS,

Broughton House, King St.,
SYDNEY.

any other suitable fuse for these small filament? A.: No. The current is so small that it is practically impossible to employ suitable fuses.

G. F. C. (Blackheath). Q.: Is circuit submitted regenerative? If not, how could it be made so, and would it improve range and volume? A.: It is very doubtful whether your circuit would work. To make any circuit regenerative the plate and grid circuits must be coupled.

F. O. (Pymble). Q.: What are the connections for the circuit shown in a "Two-valve Broadcast Receiver," published in *Radio*, No. 38, without 'phone transformer? A.: To employ the telephone receivers direct, connect them in place of the primary winding of the inter-valve transformer.

L. A. (Cordeaux). Q.: Would insulated wire from aerial to receiver be satisfactory as a lead-in (sketch submitted)? A.: Yes.

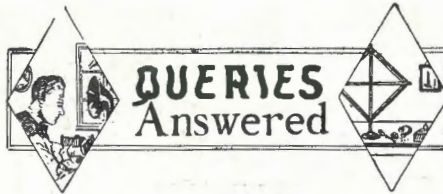
L. G. (Brisbane). Q.: Where and at what price can an up-to-date list of American amateur stations and their calls be procured? A.: A complete list of both American amateur and broadcasting stations with wave-lengths, calls, etc., was published in *The Wireless Age* for August, price 2/-.

H. L. H. (Rockhampton). Q.: What number of turns coils are necessary to tune from 200 to 1,200 metres? A.: Purchase a range of coils from 25 to 200 turns and select the most suitable for each wave. Particulars of coils for the above wave-range have been published in these columns from time to time.

R. L. M. (Auburn). Q.: Would a four-wire aerial, 20 feet long, be as efficient as a two-wire, 40 feet long? A.: A two-wire aerial 40 feet long would be more efficient than a four-wire 20 feet long. Q.: Is a telephone condenser necessary in the P1 circuit? A.: A telephone condenser is not absolutely essential but is generally employed for smoothing-out purposes. Q.: What resistance should the filament rheostat be? A.: This depends upon the valve you use. For WD12 and other dry cell tubes this should be 30 ohms. Q.: Could the P1 be used as an amplifier for a crystal set? A.: We suggest you try the various hook-ups shown in the article on "Crystal-valve Receivers," published in *Radio*, No. 39. Q.: Is it possible to use the house lighting current as a source of power? A.: Yes. An article on "High Tension from Lamp Socket" was published in *Radio*, No. 24.

"Wanterno" (Concord). Q.: What kind of coils are A, B and C (diagram of receiver submitted)? A.: A and B can be honeycomb coils, while C is a loading coil, bank-wound, tapped.

C. A. H. (Mosman). Q.: What is range of receiver (particulars and circuit submitted)? A.: See special announcement. Q.: Would a pipe driven three feet into damp ground with an earth lead of five feet be more efficient than the present



(Continued from page 454.)

earth? A.: No. Q.: Would it be an advantage if receiver was made regenerative? A.: No. Use a coupled aerial circuit. Q.: What coils are necessary for KGO, New Zealand, Melbourne and amateurs? A.: Obtain a range of coils from 25 to 250 turns and select suitable coils for each wave. These will cover from 200 to 2,000 metres. Use the smaller coils for New Zealand and amateurs. Size of coils for KGO and Melbourne have already been given in these columns. Q.: Would a single strand of heavy flex for inside lead-in be better than double or light flex? A.: Both will give the same results. Q.: Why is it when No. 1 valve is cut out and condensers altered the same results can be obtained when using all four valves? A.: This is due to a capacity coupling to the detector through the radio valve. Q.: Can you recommend any alterations to present circuit? A.: Yes. Convert it to a tuned anode radio frequency amplifier with reaction on anode coil. Q.: How is it possible to tell positive and negative of headphones? A.: The correct battery connection is that which causes an increase in magnetism and causes a greater pull on the diaphragm.

E. A. M. (Parramatta). Q.: Can you explain how I picked up a telephone conversation on my crystal set? A.: You have evidently heard signals from an experimental station due to harmonic interference.

L. R. M. (Hornsby). Q.: Can a B battery which has been short-circuited be patched up? A.: No. Q.: Will "Dull Emitter" valves give as good results as ordinary valves? A.: Yes.

R. L. C. S. (Five Dock). Q.: Is receiver using variometers capable of tuning in 2BL and 2FC (circuit submitted)? A.: The variometers are only suitable for tuning in 2BL. If you replace these by honeycomb coils tuned by condensers you will be able to cover all bands of wave-lengths.

R. B. (Melbourne). Q.: What is cause of trouble experienced with P1 receiver? A.: Without a personal inspection we are unable to assist you. Suggest you get another experimenter along to have a look at your set.

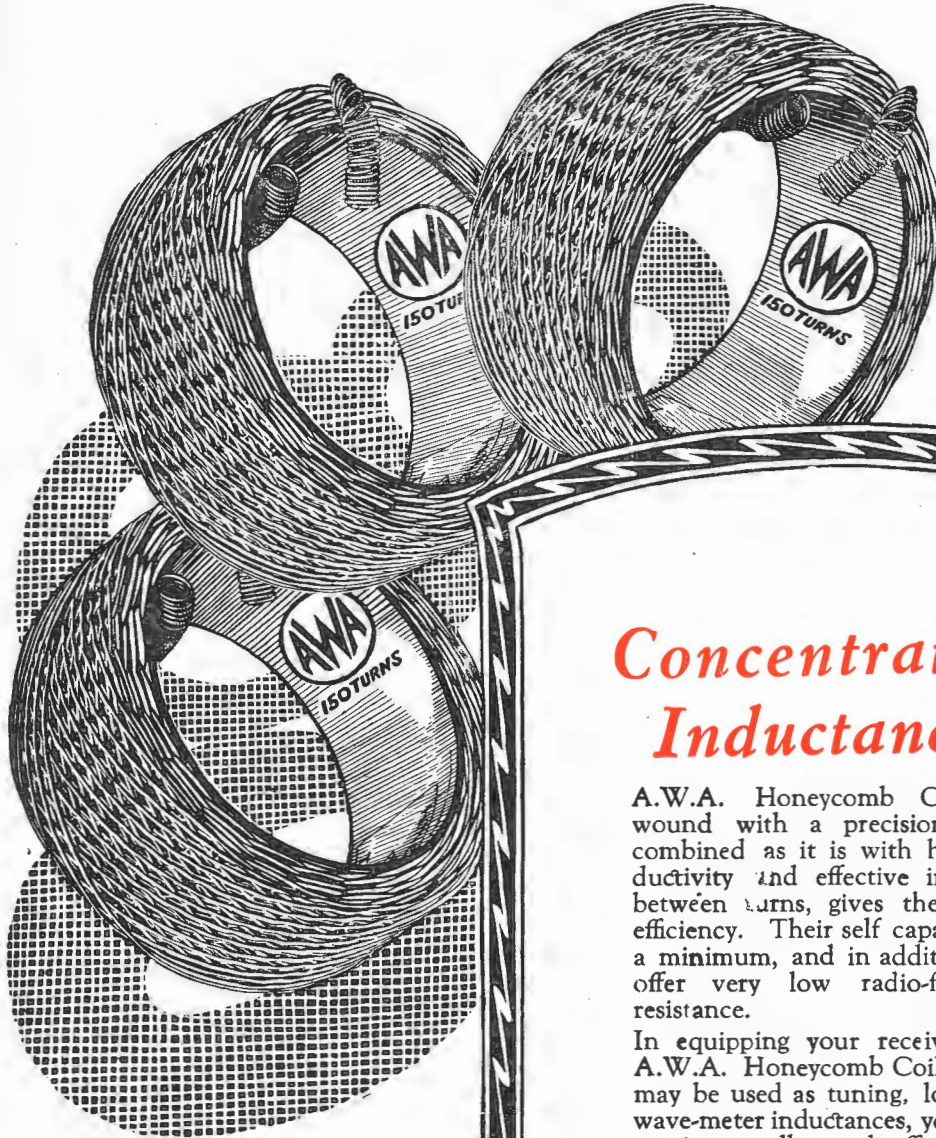
H. W. (Balmain). Q.: What is diameter and breadth of coils to use with the P1 receiver? A.: All information was supplied in the article on the circuit. Q.: What kind of valve and what voltage should the A and B batteries be? A.: This depends upon the particular valve you use. Full particulars regarding voltages, etc., is printed on the carton in which it is packed.

M. B. S. (Coolabunia, Qld.). Q.: Would circuit (submitted) be more efficient than the P1 for receiving 2FC, situated 200 miles west of Brisbane? A.: No. Q.: What should be the value of the grid condenser, grid leak and fixed condenser? A.: 0.0003 mf., 2 megohms and 0.001 mf., respectively. Q.: What type of valve and valve-holder would you recommend? A.: UV201A with Radiotron type holder. Q.: What should be the resistance of the filament rheostat? A.: 30 ohms. Q.: What type of 'phones would you recommend? A.: Sterling or Radiola, 2,000 ohms. Q.: What size wire should be used for connections? A.: No. 16 copper. Q.: Would circuit No. 12 be better than the P1? A.: Yes, more selective. Q.: What size coils are required for the following wave-lengths: 150-260, 200-400, 270-550, 400-800, 550-1100, 800-1600? A.: 25, 35, 35, 35, 50, 35, 35, 50, 35, 35, 50, 35, 50, 70, 50, 75, 100, 75, 100, 150, 100 respectively. Q.: What should be the value of the aerial tuning condenser, secondary condenser, grid condenser and leak? A.: .001, .0005, .0003 and 2 megohms respectively, with a .001 mf. condenser across the telephones. Q.: What is the name of a good radio firm in Brisbane? A.: We are unable to recommend any one particular firm.

E. P. D. (Avondale). Q.: Would it be necessary to alter position of reaction coil to add one-stage H.F. amplification? A.: The position of your coils will be O.K. Q.: Is the "Cockaday" circuit a good one for long distance telephony? A.: This is merely a freak circuit and no better than the standard three-coil regenerative. Q.: In making up the "Cockaday" or "Reinartz" receiver, is it necessary to use air condensers? A.: Any good variable can be used. Q.: Can you give me particulars of windings for "Cockaday" coils? A.: No.

F. C. H. (Te Pohue, N.Z.). Q.: What size secondary and reaction coils are required to cover the wave-lengths given in the "Queries Answered" page, under R.P.G., *Radio*, No. 37? A.: This has already been given in previous issue of *Radio*. Q.: Is it possible to make a voltmeter for the B battery to register up to 60 volts? A.: This would take too much space to answer in these columns. We think it would be cheaper for you to purchase one. Q.: What is the average life for a B battery, using separate battery for each valve? A.: Six months.

A. D. P. (Drummoyne). Q.: Would the P1 receiver be suitable for receiving 2FC, 400 miles from Sydney? A.: You will require at least two valves. Q.: What is the usual thickness of Bakelite Panels? A.: 1/8in. Q.: What voltage H.T. and L.T. battery is required, and what should be the resistance of the filament rheostat? A.: 60 v. 6 v and 30 ohms. Q.: What should be the capacity of the grid leak and condenser? A.: Two megohms and .0003 mf. Q.: If two valves are necessary for the above distance, can an amplifier be added to above receiver and what additional parts will be required? A.: An article on a "One Valve Amplifier" was published in issue *Radio*, No. 37.



Concentrated Inductance

A.W.A. Honeycomb Coils are wound with a precision which, combined as it is with high conductivity and effective insulation between turns, gives the utmost efficiency. Their self capacity is at a minimum, and in addition, they offer very low radio-frequency resistance.

In equipping your receiver with A.W.A. Honeycomb Coils, which may be used as tuning, loading or wave-meter inductances, you secure maximum all-round efficiency.

Each Coil is attractively boxed, a wave-length table being printed on every carton.

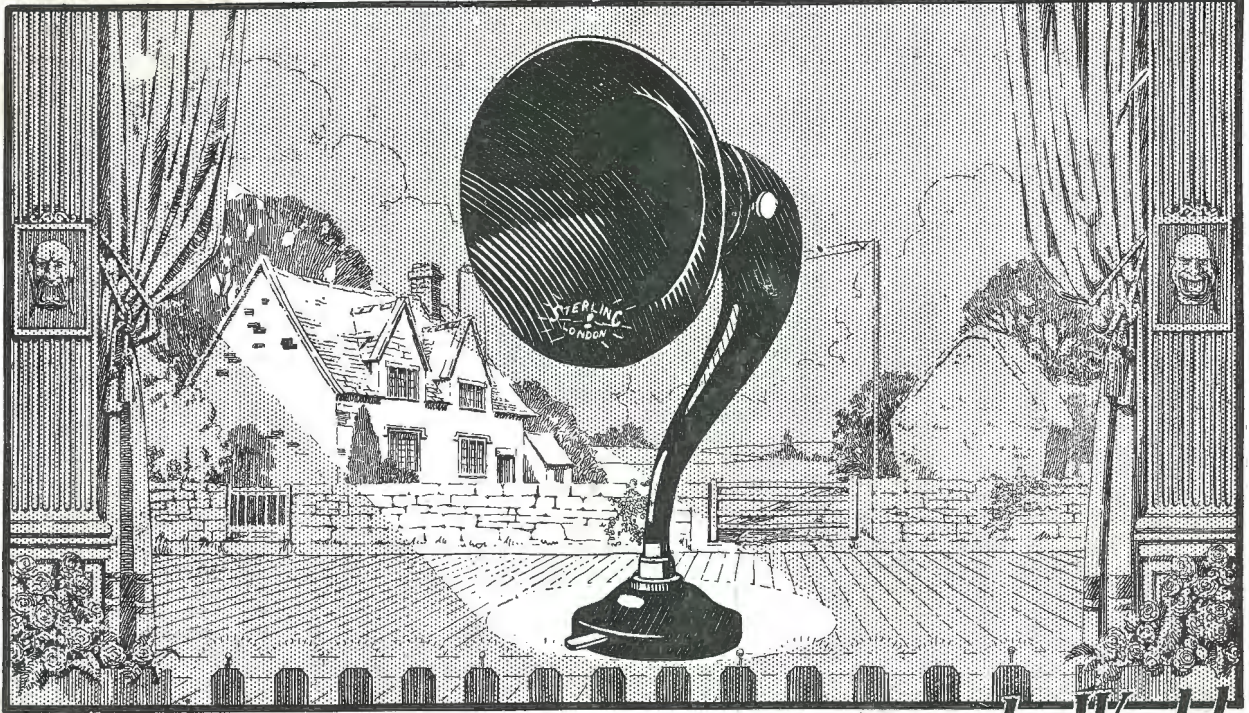
Procurable from all Radio Dealers

Amalgamated  Wireless
(Australasia) Ltd.

97 Clarence Street, Sydney
"Collins House," Collins St., Melbourne



PRODUCTS



The most popular Entertainer in the World

No entertainer ever had a bigger or more appreciative public than the Sterling Baby Loud Speaker. In thousands upon thousands of homes throughout the world, this amazing little instrument daily renders programmes that bring absolute delight to musicians, perfect pleasure to dancers, endless amusement to kiddies, and ever varied interest to all.

The Sterling Baby Loud Speaker is flawless in reproduction, natural in tone, distortionless, and wonderfully loud for its size. It is supplied in two resistances: 120 or 2,000 ohms and in the following finishes—Black Enamel, Brown Floral Design, Black and Gold Floral Design and Black Matt decorated Oriental style.

Ask your dealer to demonstrate the



**STERLING "AUDIVOX"
Loud Speaker**
The Baby's Big Brother!

Clear, melodious and perfect in tone—ample in volume without any sign of distortion. It is an all-purpose loud speaker—indoors or outdoors 'Audivox' results are perfect results.

STERLING BABY Loud Speaker

Height overall 19"; diam. of flare 10½"; diam. of base 5½"

DELIVERY FROM AUSTRALIAN STOCKS.
Distributors for Australasia:
N.S.W. and Queensland: LAWRENCE & HANSON, ELECTRICAL CO., LTD., 33 York Street, Sydney.
Victoria: WARBURTON, FRANKI & CO., LTD., and LAWRENCE & HANSON, ELECTRICAL CO., LTD., 393 Post Office Place, Melbourne.
South Australia: NEWTON, MACLARAN & CO., LTD., Adelaide.
Western Australia: CHAS. ATKINS & CO., LTD., Perth.
New Zealand: TURNBULL, JONES & CO., LTD., Auckland, Wellington, Christchurch and Dunedin.



**STERLING LIGHTWEIGHT
Radio Headphones.**

give consistently perfect results and are supreme in tone, volume and quality. As light as good headphones can be and as comfortable as good headphones should be.

THE STERLING TELEPHONE & ELECTRIC CO., LTD., *Manufacturers of Telephones and Radio Apparatus, etc.*
210-212, TOTTENHAM COURT ROAD, LONDON, W.1, ENGLAND

Works: DAGENHAM, ESSEX.