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SIXPENCE

# RADIO

IN AUSTRALIA  
& NEW ZEALAND

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# Radiotorial

## "Boom!"



**S**LOWLY but very surely it is coming. From many and various causes, as everybody knows, it has been delayed and fiddled about with but nevertheless, and despite all written and said and done to the contrary, it is coming. With the Federal Government's action last month in giving out the regulations under which broadcasting and wireless activities are to be controlled in Australia henceforth, went the last "chocks" that had, of necessity, held back the launching of the ship of Radio Progress in the Australian Commonwealth.

**T**HERE are many evidences of it for those who have eyes to see and ears with which to hear. In the case of a movement like this to glean evidences of the way in which the wind is blowing, it is essential that the little things be taken into account.

**T**HE writer noticed several enlightening instances while coming into the city on the tram one morning.

**T**HE smoking compartment was full of men. All of them were reading newspapers and, as far as could be seen, as each came to the column in which Radio matters were dealt with, he read . . . and then they turned to the financial news or "the Weights and Acceptances."

**T**HREE months ago they would have turned *straight* to the money market or the sporting information.

**A** VERY little thing, you say, but it counts, my masters, *it counts!*

**A**NOTHER instance. The writer has a friend whom he meets frequently at luncheon. They had been meeting pretty frequently for some time and the conversation, of course, often turned on matters pertaining to wireless and to say that the other had no more interest in or knowledge of radio than a new-born babe would in no way be exaggeration. This deponent, let it be said, knowing a little more—though not much—than the aforesaid infant, did most of the talking and the other more than his fair share of the listening. Be it understood, the writer never dilated on "the Wonders of Wireless" or wearied his companion with such strains on the friendship of a non-technical friend as "What do you think? I 'got' so and so last night on one valve;" he merely touched here and there on the subject and discussed no more than would interest the ordinary Man in the Street; there was no attempt to make a convert—and perhaps that was why!

**O**NE one o'clock the Uninitiated One took his seat at table with rather a self-conscious air and, after some little beating about the bush, unbosomed himself—he had decided to buy his youngster "one of those crystal sets—instructive y'know—keep him in at night," etc., etc., etc.

**T**HE long and the short of it was that he did buy the set *for the child*—but the kiddie has done a great deal more listening-in on his own *since* his father, after much mental cogitation, has built *himself* a set!

**T**HE inevitable moral has crept into this little story but it does not at all detract from its veracity.

**I**T simply goes to show that the more the average man knows about wireless, the more interested he becomes, and it also goes to show that anyone without any technical knowledge at all can buy and operate or build and operate an efficient radio receiving set. The only other fact that this tale does not bring out, but it is none the less true, is that you can do either of these things at an absurdly small cost.

**B**UT we have digressed a little and space is short. If you have a spare hour during the week, take a stroll round the town and make a tour of inspection of the wireless dealers and what will you find? You will literally—particularly in the luncheon hours and after five o'clock in the evening—be unable to see the counters for prospective purchasers!

**T**HE other evening, after waiting twenty minutes to be served at a small but well-known wireless dealer's shop, we remarked to the gentleman behind: "You seem to be making a lot of money; when are you contemplating to retire?"

**T**HE tone of the simplicity of truth rang through the dealer's words: "The trouble is, if our factory could cope with the work we would be making a great deal more. As it is, we cannot handle all the orders."

**T**HE subject of this Radiotorial must be evident enough by now—the Wireless Boom in Australia is getting under way. Of course, when things reach their maximum they will not stay there, there will be, as there must be, a certain amount of re-settling while factors find their true level again but when that time comes wireless will be established. *Radio* will be more than glad to greet that day.

# How to Make Simple Crystal Receivers

## Ideal Sets for Beginners



OW that thousands of beginners in wireless will want to make their own receiving sets for listening-in the question of tuning is very important. The new wireless regulations provide for open sets. That means that you can listen to anything that is "in the air," provided you can tune to it.

Amateur wave-lengths range from 100 metres up to about 250 metres, although the tendency seems that these wave-lengths will drop.

Broadcasting stations throughout Australia and New Zealand will operate on wave-lengths between 200 metres and 2,000 metres. No doubt every listener will at some time or other desire to try and tune in some distant station and as such station may be transmitting on a wave-length either higher or lower than his local station it is desirable that the tuning arrangements on his set be as simple as possible.

To wind one tuning coil to tune in stations operating between 200 and 2,000 metres wave-length is rather a tedious job, and probably would not work out to be as efficient as may be expected. Two coils would be necessary; one for fine tuning and the other to serve as a loading coil. Details of the construction of such a tuner are given herein.

For the sake of simplicity in both the construction and tuning of the beginner's first set the use of Honeycomb Coils and a Variable Condenser as the tuning elements seems to be the most efficient and economical. Efficient because there is very little loss and sharper tuning is possible. Economical because, if later on it is decided to build a set of bigger proportions and greater range, both the Honeycomb Coils, Coil Holder and Variable Condenser can be used again in another set.

The most simple Crystal or Single Valve Receiver need only employ one

Honeycomb Coil and a Variable Condenser for tuning. The wave-length range of such a set would depend upon the number of turns in the coil. The greater the number of turns in the coil the longer wave-length it will tune to.

If it is desired to tune in all broadcasting stations it is only necessary to have a range of honeycomb coils that can be used at will.

It has been found that the best size variable condenser to use for this kind of tuning should have twenty-three plates equivalent to a maximum capacity of .0005 mfd. This condenser invariably gives the best results when connected in parallel with the coil. If connected in Series the wave range of the coil in use is decreased.

The following table shows the number of turns in various honeycomb coils, obtainable at all radio dealers, and their relative wave range when used with a twenty-three plate (.0005 mfd) condenser in parallel.

Number of Turns in Coil.	Wave Range with .0005 mfd Condenser in Parallel.
25	200-300 metres
35	250-400 "
50	350-600 "
75	450-900 "
100	650-1100 "
150	900-2000 "

If the beginner does not desire to have the entire range of coils a selection can be made so that the station it is desired to receive can be tuned in best.

### HOW TO MAKE A SIMPLE CRYSTAL SET.

The best way for every beginner to start, who intends building his own receiving set, is to commence with a simple crystal set. These sets are easy to operate, they are cheap and give quite good results. The range of such a set is limited and is only recommended for those near a broad-

casting station, although quite good results have been obtained several hundred miles away from a broadcasting station.

One thing absolutely essential with a crystal receiver is to have a good aerial. Make your aerial as long and as high as possible. Details of how to build and suspend aerials are given in another article in this issue of *Radio*.

The material required for a simple crystal receiving set can all be obtained at any radio dealer's shop and consists of the following:—

- 4 Terminals.
- 1 Honeycomb Coil Holder.
- Honeycomb Coils as wanted.
- 1 Variable Condenser.
- 1 Crystal Detector complete.
- 1 Fixed Condenser for 'phones.
- 1 Pair Telephone Receivers.

The above material can either be mounted and connected up on a Panel or a Base. As most people who build a crystal set later build a valve set, it is hardly worth the extra expense in buying an Ebonite or Bakelite Panel for the first crystal set. If, of course, you want the set to look finished, by all means have the panel. The accompanying diagrams show both methods of mounting. If the base is decided on, a good piece of hard, dry board will serve the purpose admirably.

The diagram shows the various parts of the set and how they are connected. It is hardly necessary to say any more about the circuit except that all connections should be soldered. This ensures perfect continuity and adds to the efficiency of the set. See that all terminals where Aerial, Earth and 'Phone leads are made are quite clean.

To tune set: Set the Crystal Detector and, having selected a Honeycomb Coil and plugged it into the holder, slowly turn the Variable Condenser. As soon as signals are heard stop and

SIMPLE CRYSTAL RECEIVER USING HONEYCOMB COIL.

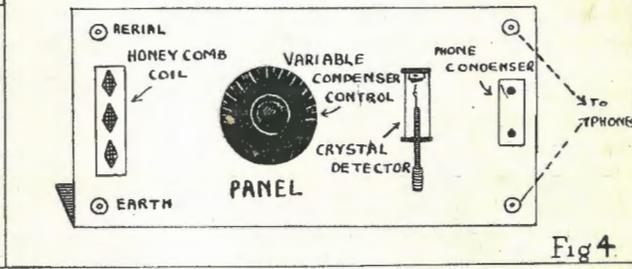
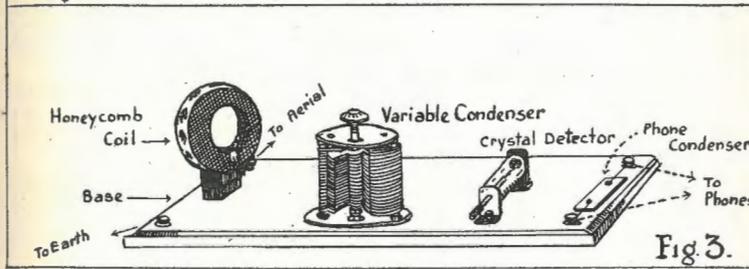
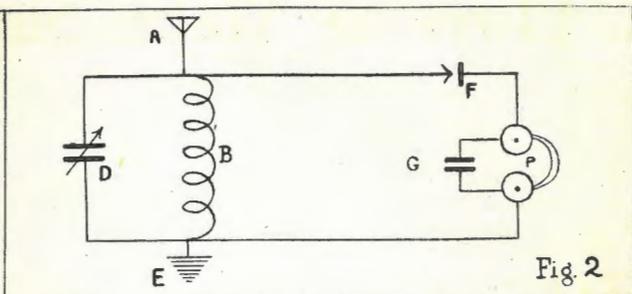
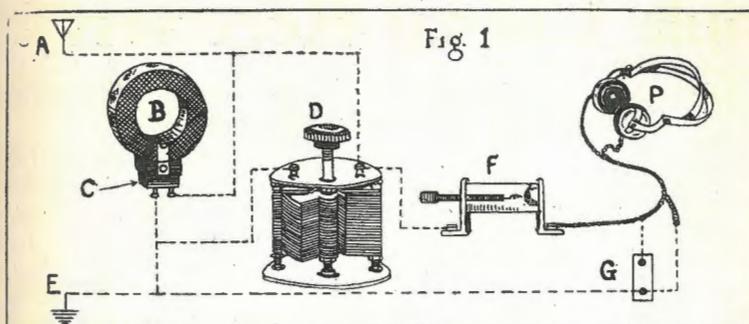


Figure 1 shows the component parts of the Simple Crystal Receiver employing Honeycomb Coil and Variable Condenser for tuning purposes. "A" Aerial. "B" Honeycomb Coil. "C" Coil Mounting. "D" Variable Condenser. "E" Earth. "F" Crystal Detector. "G" Small Fixed Condenser across 'Phones. "P" Telephone Receivers.

Figure 2 shows Diagram of Connections. The same index as used in Fig. 1.

Figure 3 gives an idea as to how the parts should be mounted on a Base. The actual size is not shown but almost any standard base, obtainable from radio dealers, will do.

Figure 4 illustrates a suggested layout for mounting on a Panel. These panels are also obtainable at radio dealers in all sizes.

adjust the Detector until the signals come in loudest. Then go on tuning until you get the station desired as loudly and as clearly as possible.

Quite good results will be enjoyed with such a set which while being efficient is more or less inexpensive so far as crystal sets are concerned, and

it is one that consists of parts that can be used in another set that the beginner will almost undoubtedly build later on.

## Another Simple Crystal Receiver

(See diagram next page.)

If a cheaper Crystal Receiving Set is desired, the following will serve the purpose best of all. The beginner will taste the joys of coil winding and, after the job is completed, will know more about his set than if he purchased a ready-made one or even assembled one similar to that described above.

Assuming that the same tuning range is required, i.e., between 250 and 2000 metres, the following material will be required:—

- 2 Cardboard Tubes, each 4in. diameter and 4½in. long.
- 1 Slider and Rod.
- 1 4 Point Switch complete.
- 4 Terminals.
- 1 Crystal Detector complete.
- 1 Pair Telephone Receivers.
- 1 'Phone Condenser.
- 3 Wooden Coil Ends.

- 1 Wooden Mounting Base.
- 4 ozs. 22 D.C.C. Wire.
- 4 ozs. 30 D.S.C.

On one cardboard tube wind 75 turns of the 22 Gauge Double Cotton Covered Wire. This coil will be the Tuning Coil. This winding should be done carefully and neatly. When completed it should be uniform throughout and quite flat everywhere. Give the winding about two coats of Shellac.

On the other tube wind the 30 Gauge Double Silk Covered Wire. This will be the Leading Coil. Three sections, each containing 60 turns, have to be wound on this tube, a total of 180 turns. First of all, wind on 60 turns then pierce a very small hole in the tube and allowing about six inches of wire over the number of turns, cut it and pass the end through the centre of the tube, making it temporarily fast in some way. Then al-

lowing another six inches of wire to also pass through into the centre of the tube commence winding the second section of 60 turns. When completed, allow an extra six inches of wire and cut off. Pierce tube and pass to centre. Pass another six inches of wire to centre of tube and then commence winding the third section of 60 turns. As soon as completed, shellac and allow to dry. That will complete the winding.

The Base Board and three wooden coil ends should be shellacked and allowed to thoroughly dry.

Take one of the wooden coil ends and mount the four point switch as shown in diagram. Next mark the switch studs 0, 1, 2, and 3 from left to right.

Everything is now ready for mounting. The diagram on next page gives the best idea for mounting the various parts and, if this is carefully

followed, it will be found to work out all right.

The most important thing to watch is, when mounting the Coils, connecting the Taps from the Loading Coil to the Switch. Mount the Tuning Coil on the Base with the Wooden Coil Ends supporting it. Then take the Loading Coil and hold it in the position in which it will eventually be, and compare the windings on both coils. The object of this is to see that both coil windings are in the same direction. This is important. When this

temporarily placed in such a position so as to allow a hot poker to be run along the top of the coil to burn the insulation off the wire to permit the slider to make contact. A track of wire about  $\frac{1}{4}$  in. wide should be bared. After this is done and the track of wire perfectly cleaned the brass rod and sliding contact can now be mounted in position. This slider is the means of varying the tuning.

The Crystal Detector, Terminals and Fixed 'Phone Condenser can now be mounted and then all is ready for testing.

The strength of signals received depends upon the way the Detector is adjusted. Make sure that it is adjusted to the most sensitive point. This adjustment can be made while signals are being received.

Last but by no means least is the Aerial and Earth. Get the Aerial up as high as possible. It should be at least 100 feet long. One wire up high is better than two or three low wires.

A good Earth connection is absolutely essential. The best and most

ANOTHER SIMPLE CRYSTAL RECEIVER.

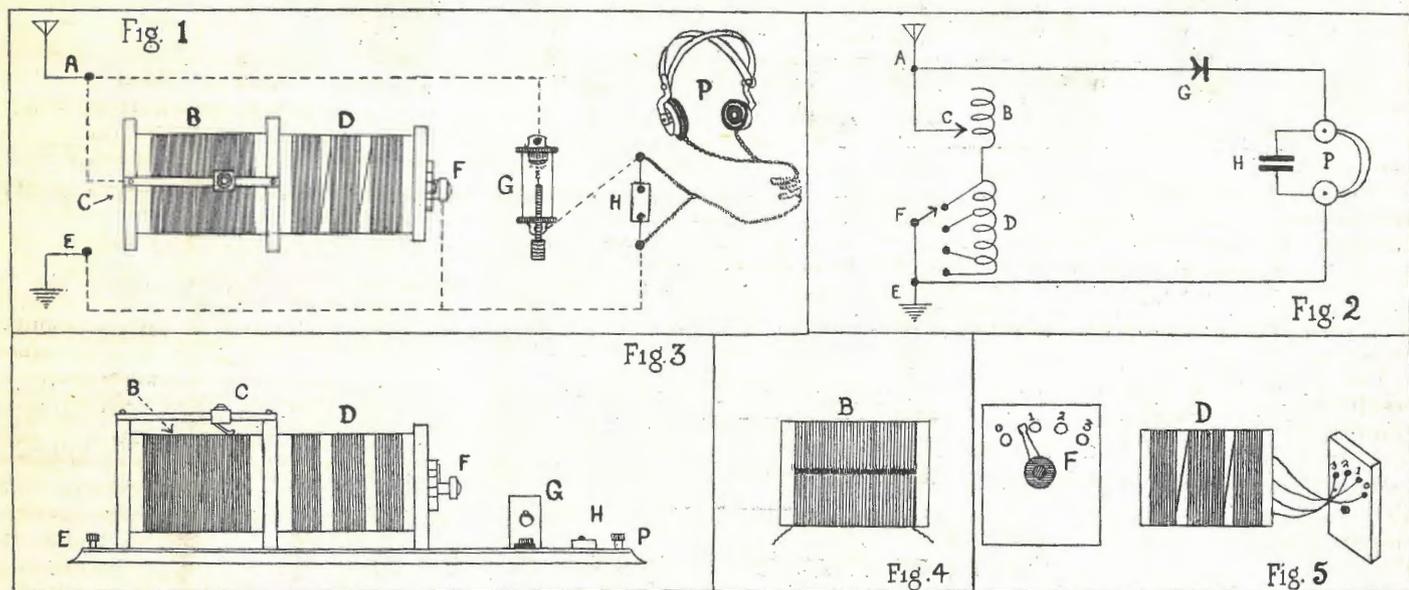


Figure 1: Component parts and connections of another Crystal Receiver. A: Aerial. B: Tuning Coil. C: Slider for Tuning. D: Loading Coil. E: Earth. F: Selector Switch on Loading Coil. G: Crystal Detector. H: Fixed Condenser across 'phones. P: Telephone Receivers.

Figure 2: Schematic diagram of connections. The index in Figure 1 also applies here.

Figure 3: Shows parts mounted on Base. Index same.

Figure 4: Tuning Coil, showing where to bare wire for Slider to pass over for tuning purposes.

Figure 5: Illustrates Loading Coil (D) and Selector Switch (F), the latter mounted on coil ends and the method of connecting taps from coil to switch studs.

is done take the ends of both the Tuning and Loading Coils, where they come together, and take these two leads to Switch Stud Number 0 mounted on wooden coil end but not as yet mounted. These two leads should be soldered to terminal of the switch stud. Then take the next two taps inside the tube and solder to Switch Stud Number 1. Then the next two and solder to Stud Number 2; and then the end of the coil should be soldered to Stud Number 3. The Loading Coil is now ready for mounting in position on base board, which should be done as indicated in diagrams.

The Tuning Coil has now to be completed. The brass rod should be

Connect the Aerial and Earth where shown in diagram and the 'phone leads to terminals marked for same.

The Crystal Detector should be set in position and with the Switch set at 0 the Slider should be moved slowly along the coil. As soon as signals are heard, adjust the Detector until you get the station as loudly as possible, then go on tuning until the signals are coming in clearly.

You will then be receiving signals on low wave-lengths. To receive stations operating on higher wave-lengths the Switch must be set at either 1, 2 or 3. The higher the figure the higher the wave-length.

convenient is a water pipe. The Earth wire should be soldered, if practicable, and the water must be turned off at the mains to do this. If not soldered the pipe should be cleaned and tin foil used in binding the wire tightly to the pipe.

In building this set the beginner will learn quite a lot and when complete will have the satisfaction of knowing that he built and made it work himself.

The parts required to build this set can be obtained at almost any radio dealer's store. Actual sizes of Base Board and Coil Ends are no given on account of sizes varying slightly.

# An Efficient One-Valve Receiver

## Easy to Build—Simple to Operate

### Using Famous P1 Circuit



**A**FTER one has experimented with Crystal Receivers for a time there inevitably comes the desire for a valve to get longer distance and louder signals. But, compared with a Crystal Receiver, a Valve Receiver is a far more expensive item. So when commencing with the first valve every experimenter should select the circuit, and parts that will give the best service.

The P1 receiver is well-known in all wireless circles. It is used extensively in commercial wireless stations in Australia and in many Australian and New Zealand ships. It is very sensitive and a good distance getter.

The circuit is regenerative. As a result the valve will "howl" unless carefully handled. When *your* valve is howling or oscillating you are interfering with other receivers round about, and you cannot receive speech clearly because it will be distorted. However, the adjustments are simple and, after using it a few times one soon becomes accustomed to it and quite good results and long distances will be enjoyed with just the one valve.

The Tuning components of this receiver are in the form of Honeycomb

Coils and a Variable Condenser. By being able to interchange the Coils any wave-length between 100 metres or less up to 25,000 metres or more may be tuned in. As almost everyone, at the moment, both Experimenter and Broadcast Listener, is anxious to listen to the various Broadcasting Stations in and around Australia and New Zealand which operate on wavelengths between 200 and 2,000 metres the following table of coils to use in this simple receiver will be of interest. Two coils are necessary. One known as the Grid Coil and the other as the Reaction Coil. The first column shows the number of turns for Grid Coil; the second column the number of turn for Reaction Coil and the third column the minimum and maximum wave-lengths which can be received when using a .0005 Variable Condenser in Series or Parallel with the Grid Coil.

Grid Coil.	Reaction Coil.	Wave-length.
25	35	150-260
35	50	200-400
50	50	270-550
75	50	400-800
100	75	550-1100
150	100	800-1600
200	150	1100-2200

If it is not desired to purchase coils

for all wave-lengths, it is a very easy matter to select what coils you require by consulting the above table. Coils for wave-lengths higher than 2,000 metres are obtainable at most radio dealers.

The apparatus required for this set is as under:—

- 1 Piece of Bakelite Panel.
- 2 Panel Mountings for Honeycomb Coils (one being variable).
- Honeycomb Coils, and Plugs.
- 1 Variable .0005 Condenser (23 plate).
- 1 Grid Condenser and Leak.
- 1 Filament Rheostat.
- 1 Valve.
- 1 "A" Battery (low tension) (either Dry Cell or Accumulator, according to valve used).
- 1 "B" Battery (high tension).
- 1 Pair Telephone Receivers.

Any licensed radio dealer will be able to supply the above-mentioned parts and, as there is such a variety of apparatus on the market to-day, it is not an easy matter to recommend any particular brand. However, go to a good, reliable dealer and he will take care of you.

The accompanying diagrams clearly show how the apparatus is connected up and how it is mounted on the panel. It is also advisable to mount

## IN THE FINEST HOMES

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AGAIN—the clarity of reception, freedom from extraneous noises, and greater elimination of interference made possible by a "BURGINPHONE" appeals to the true lover of music and the finer things of life. The long range places the music of the Continent within your reach.

AT LAST—the owner of a "BURGINPHONE" knows that others will admire it. Its possession reflects good taste and judgment.

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FIRST FLOOR, 391 GEORGE STREET, SYDNEY.

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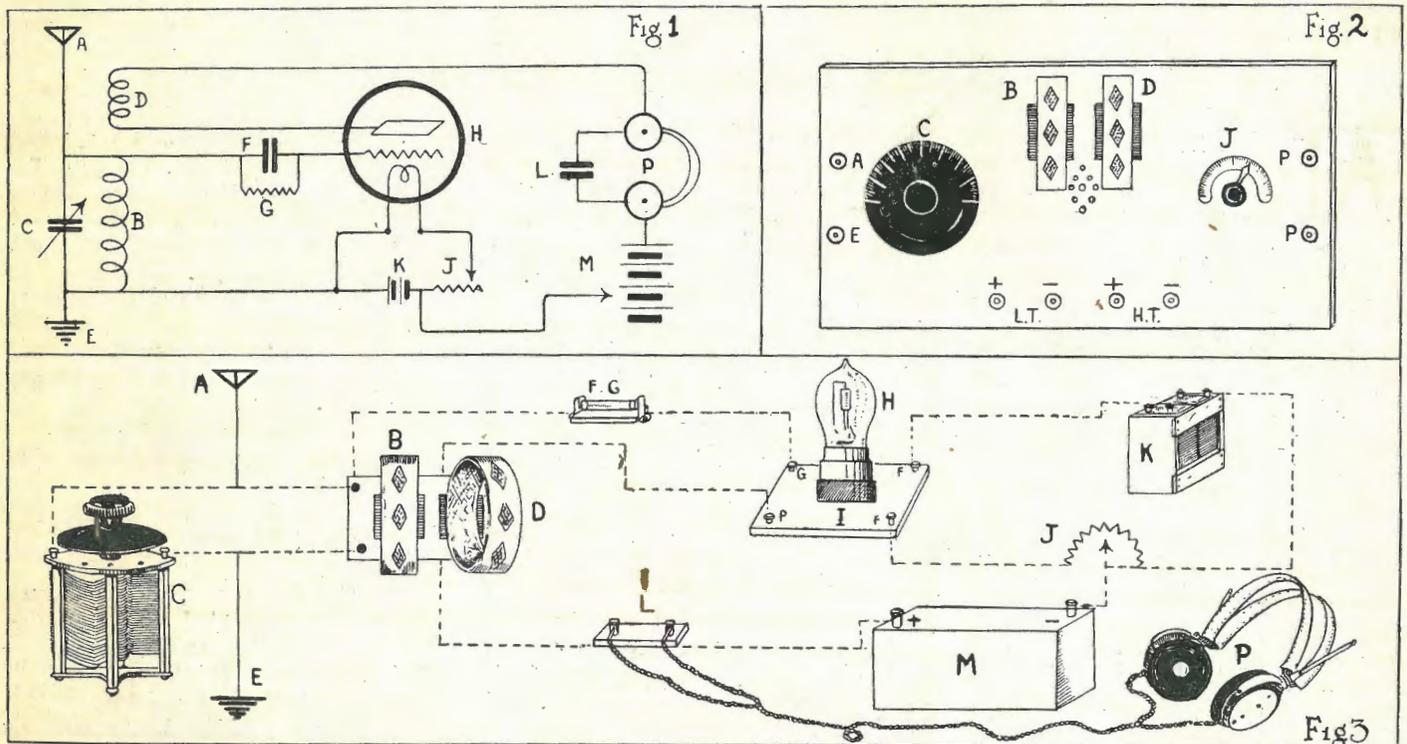
Telegrams: "BURGINECO," Sydney.

the panel on a wooden base or mount the panel in a small cabinet which can be obtained very cheaply from any radio dealer. The cabinet is recommended because it makes a much nicer finished job and is better for the receiver.

sible. To strengthen signals increase voltage from "B" (H.T.) Battery and bring the two coils closer together until maximum signals are obtained. It is at this stage that you should be careful not to allow your valve to oscillate. When you are receiving

ly. You are then getting the best out of your receiver and you will not be interfering with anyone else nearby.

Splendid results are being obtained with dozens of single valve receivers similar to the one described herein. One experimenter using one of these



Index to Figures 1, 2 and 3. A: Aerial. B: Grid Coil. C: Twenty-three Plate Variable Condenser. D: Reaction Coil. E: Earth. F: Grid Condenser. G: Grid Leak. H: Valve. I: Valve Holder. J: Filament Rheostat. K: Low Tension (A) Battery. L: Fixed Condenser across 'phones. M: High Tension (B) Battery. P: Telephone Receivers.

Figure 1: Schematic Diagram of connections

Figure 2: Front sketch of Panel, illustrating method of mounting parts. The index above also serves here with the exception of LT: Low Tension Battery Terminals. HT: High Tension Battery Terminals.

Figure 3: Illustrates the various component parts of receiver and how same are connected. The dotted lines indicate connecting wires.

To tune—place the Honeycomb coils in the holders. Switch on Filament Rheostat and also connect variable lead to "B" (H.T.) Battery. By means of the variable coil handle widen the space between the two coils. Next slowly turn the dial of the Variable Condenser until the signals desired are coming in as strong as pos-

speech or music from a broadcasting station as the two coils are brought closer together so the signals increase in strength until suddenly they will be become so loud that they will be distorted and the valve will oscillate. Immediately that happens widen the distance between the coils until you get the signals loudly but quite clear-

sets has been successful in receiving KGO, the broadcasting station at Oakland, California, over 6,000 miles away from Australia. Any details or other information you may require about this set will be gladly supplied by the Editor on receipt of stamped addressed envelope for reply.

### TAKE WARNING!

THE last three consecutive issues of "RADIO" have been entirely sold out a few days after publication. Those readers who were not able to secure their copies are advised to place a standing order with their newsagent, or to send 10/- to The Wireless Press, 97 Clarence Street, Sydney, for 12 months' subscription (26 issues), and thus avoid the possibility of further disappointments.

DO not wait to buy a Postal Note—send a 10/- Bank Note.

# Our London Letter

BY "RADIO'S" SPECIAL CORRESPONDENT.



**A**S in other countries, the birth of broadcasting in Great Britain caused a sudden demand for wireless sets on the part of the public and an unhealthy, rapid growth of the wireless industry. The sudden demand caused inflated prices and the possibilities of quickly making money attracted into the industry men who had no technical knowledge of wireless at all. Following the universal law of economics, a boom must inevitably be followed by a slump. Hard as it may be on the individuals concerned, though, it has the benefit of reducing prices to their natural level, to the advantage of the general public, and weeding out the unfit members of the wireless industry.

Unlike the United States, broadcasting in Great Britain is under the control of a central body, the British Broadcasting Company, who alone have power to regularly broadcast, and, although that system makes wireless less interesting for the individual, it prevents the other extreme, of broadcasting stations continually interfering with each other's programmes. So long as the British Broadcasting Company is able to keep up its present good standard of programmes all will be well, for it is safe to say that by far the biggest majority of amateur wireless enthusiasts, of whom there are something like a million in the country are satisfied with the present system.

**A NEW TYPE OF VALVE.**  
Great interest is being exhibited at

the moment in a new type of valve invented and provisionally patented by the Technical Editor and Assistant

## BOURKE (N.S.W.) WIRELESS TESTS.

In the last issue of "Radio" a report appeared of the wireless tests held at Bourke (N.S.W.), in which the results obtained by the Western Electric Company's representatives were detailed. From the report might have been gleaned the impression that this firm was the only one taking part in the tests; such, however was not the case, as New Systems Telephones Pty., Ltd., Burgin Electric Company, and David Jones, Ltd., were also represented, and, by the results they achieved, unmistakably showed the splendid possibilities for the reception of broadcasting in the N.S.W. Public Schools.

Technical Editor of a British wireless journal entitled *Popular Wireless*.

## THE HIGH-POWER BROADCASTING STATION.

The present main British Broadcasting stations work on a power output of approximately 1½ kilowatts and there is shortly to be opened at Chelmsford, Essex, a new high-power station which will work on 15 kilowatts. This will prove a great advantage to British amateurs who possess only crystal or one-valve sets, as they will be easily able to listen in at a distance of up to about 75 to 100 miles. It will also be an advantage to wireless amateurs on the continent, who will thus be able to listen to the Chelmsford station, if their sets are powerful enough, whenever they wish to. This new Chelmsford station is purely an experimental station and its life will depend on the success of the experiments. Time will show whether a high-power station is needed and appreciated in this country, and, if it is successful—and there is no reason why it should not be—it will probably be moved to a permanent site in London, where it will be able to serve a still greater number of amateurs who possess only small sets. The only disadvantage of the new high-power station seems to be that its wave-length is going to be somewhat similar to that of Radiola. This will be rather a disappointment to British amateurs, if it is going to mean that it will blot out Radiola's signals, for listening to Radiola forms a very welcome change in this country. However, we will have to wait and see results.

## We will Help You Build Your Set

Cardboard Tubes .. .. .	6d.
Tube Ends (small) .. .. .	4½d.
Tube Ends (large) .. .. .	9d.
Sliders and Rods .. .. .	2/6

Base (Wood) .. .. .	2/6
Wire, from .. .. .	9d.
Detectors from .. .. .	1/11

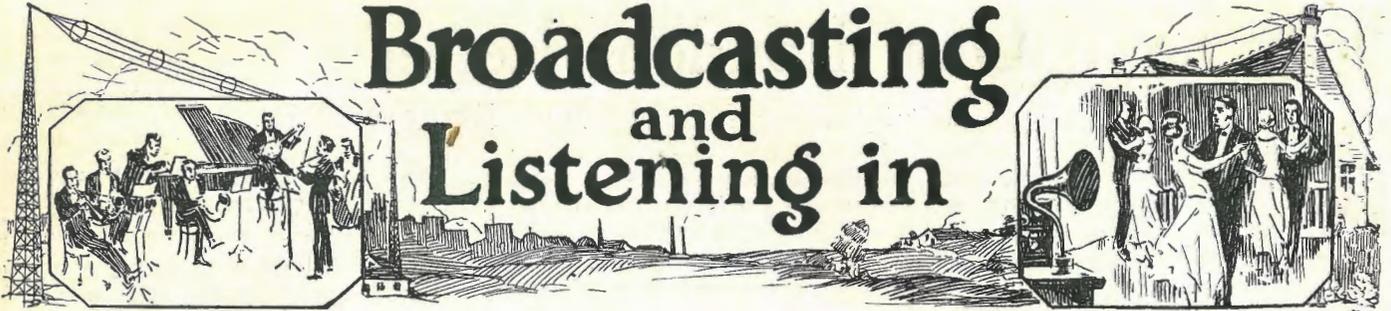
**BAKELITE CUT AND DRILLED TO ORDER.**

**NORTH SHORE TRAVELLERS**—Leave your order for Bakelite to be cut, tubes wound, wire, etc., before 9 a.m., and it will be ready by 5 p.m. same day.

# RADIO CO. LTD.

15 LOFTUS STREET, CIRCULAR QUAY

SYDNEY.



**F**OLLOWING on the initial prosecution in Auckland—the first in New Zealand—two young men recently appeared in the Dunedin Police Court to answer charges of having unlicensed radio sets. They were each fined 20/- and costs. *It would be well for wireless enthusiasts to seek registration at once, as the Act provides for penalties up to £500 for the more serious breaches of the regulations.*

**DISCUSSING** a letter received from 4YA, Christchurch, offering to broadcast sermons, the members of the Council of Christian Congregations, held recently in Dunedin, held diverse views. Canon Nevill maintained that it was impossible to pray at the end of a wire to any benefit. It would further tend to diminish church attendance. The Rev. W. Walker considered that if the preachers failed to use this new method for good, the Devil would use it for harmful purposes. The Rev. C. J. Bush-King, of Dunedin, speaking from 4YA, was the first minister in New Zealand to broadcast his sermons.

**AT** the forthcoming Radio Exhibition and Convention to be held in August in the Physics Department, Science Building of the Auckland University College, the following competitions will be held:—Class 1: Best crystal set, cost not to exceed 15/-, exclusive of 'phones. Class 2: Best crystal set, no limitations. Class 3: Best single valve set. Class 4: Best multi-valve set. The competitions are open but no employee of a firm selling radio apparatus shall be eligible to compete for the prizes. Exhibits must be in the hands of the executive committee on or before August 1, 1924.

**WIRELESS** Telegraph Stations are now open at Aitutaki and Man-

gaia (Cook Islands). The rate is the same as that to Raratonga. Sir Maui Pomare (Minister of the Cook Islands) received from Mayor A. A. Luckham, Resident Agent, the first message sent from the new station. The communication which came via

**FROM** Russell, in the far north of N.Z., two keen wireless amateurs report excellent reception of 2FC Farmer's, Sydney, and are loud in their praises of the excellent programmes sent out from this Australian Station. They so greatly excel the local efforts that the Northern listeners tune in for Sydney on all occasions.

**MANY** complimentary reports have been received of 1YB's broadcasting of the Beresford Street Congregational and Baptist Tabernacle (Auckland) and undoubtedly the scope of those churches is considerably widened thereby. In the course of his address on "The Art of Speech," Professor Maxwell Walker, said, speaking generally, that there were very few decent platform speakers in New Zealand. They were talking about broadcasting by wireless many of their sermons, but he thought that in many cases it would be a great affliction upon the community.

**IT** is stated that in connection with the New Zealand Company's scheme that the proposal of the Government is that there should be a board of eight directors—the Postmaster-General, the Secretary of the Post and Telegraph Department, and the chief Telegraph Engineer, one trader from each of the four centres and one listeners' representative.

**CONSIDERABLE** mystery at first surrounded an S.O.S. call received by the Wellington Wireless Station on a recent Monday. The call sign of *Java* was followed by the name of the vessel which, owing to the interference of other stations, was not completed. The signals were ultimately proved to be from the Yamashita Shipping Company's *Java Maru*, which was at the time stranded near Kobe. It is interesting to note that the call should be heard at so great a distance.

## 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).  
Coastal Farmers' Market Reports.  
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.

#### Early Evening Session:

6.30 Studio Chimes.  
6.33 Children's Hour.  
7.0 Dalgety's Market Reports, Fruit and Vegetable Markets, Stock Exchange, Late News.  
7.15 Close down.

#### Night Session:

8.0 to 10.0 } Entertainment.  
See list hereunder.

#### EVENING ENTERTAINMENT.

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

Monday: Theatre Night.  
Tuesday: Popular Concert  
Wednesday: Jazz Night.  
Thursday: Classical Night.  
Friday: Popular Concert.  
Saturday: Choral and popular numbers.

Raratonga, Apia and Awanni radio stations, extended greetings and appreciation on the establishment of wireless communication with the outside world. Provision of radio communication with these Islands should go far to eliminate the principal cause of cargo losses on fruit to New Zealand.

# PERSONALITIES

MR. N. CULLIVER (3DP), of Victoria, made a flying visit to Sydney the other day on business for Messrs. D. and W. Chandler, of Melbourne. Mr. Culliver shook hands with *Radio*, met 2JM and 2CM, listened in to 2FC and 2BL at David Jones', spent the evening at 2DS, did a little business and entrained for the Southern Capital—all within 24 hours! Mr. Culliver is certainly some hustler!

MR. E. Fay, hitherto well-known to wireless circles in N.S.W. as the manager of the Radio Company Limited, of Loftus Street, Sydney, has just accepted the managing-directorship of his firm. *Radio* takes this happy opportunity of congratulating Mr. Fay on his well-earned promotion.

## DEMONSTRATION AT THE DILL MACKEY HOME.

PART of the entertainment given by the Strathfield (N.S.W.) Presbyterian Fellowship Association to the children of the Dill Mackey Home, Strathfield, on a recent Saturday consisted of a wireless demonstration including "bedtime stories" from Farmer's station, 2FC, the company kindly allowing their service to be used. The kiddies thoroughly enjoyed the half-hour, especially the few words the "Hello Man" directly addressed to them. The receiving apparatus consisted of a three-valve experimental set with a two-valve amplifier and loud speaker the latter two adjuncts being generously lent by the Western Electric Company.

## HEARS APPLAUSE AT HOTEL ST. FRANCIS.

ON the night of June 1 "KGO came in very well at times," writes Mr. Trevor F. Evans, of Charles Street, Blayney (N.S.W.). He picked up the "carrier" as early in the day as 4.15 p.m. and at twenty-three minutes to six the usual announcement was made. A little time previous to this, Mr. Evans states that he could hear the applause between the dances.

Mr. W. A. Hopkins, experimenter, of Herbert Street, Newtown, Sydney, advises having heard the following N.S.W. amateurs during the last few weeks:—2AR,

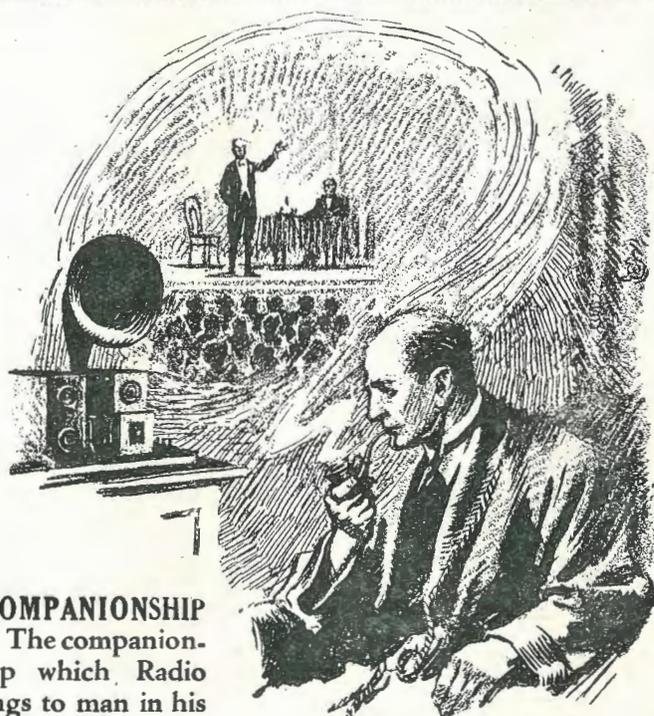
2BB, 2BF, 2BK, 2BM, 2CL, 2CI, 2CM, 2CR, 2DE, 2DH, 2DK, 2DN, 2DS, 2EC, 2ED, 2ER, 2FA, 2GF, 2GM, 2GQ, 2GR, 2HF, 2HM, 2HP, 2IJ, 2JM, 2KC, 2LO, 2MU, 2OI, 2RA, 2UW, 2WN, 2WV, 2XA, 2YG, 2YI, 2ZF, 2ZG, 2ZH, 2ZN, 2ZZ.

## ASK YOUR QUESTIONS THROUGH "RADIO."

In order that all concerned may know just where to look for information regarding any knotty points in the Broadcasting Regulations "Radio" has made arrangements to furnish information to all enquirers who submit pertinent questions.

A cordial invitation is now extended to all and sundry to seek enlightenment on any point they are doubtful about, through "Radio."

All enquiries will be answered promptly through the columns of this magazine.



## COMPANIONSHIP

The companionship which Radio brings to man in his home—and what a wealth of companions Radio introduces into our homes—companions of song, solo and orchestral music, besides fun and news. No need to feel lonely or to miss the best in Radio if you rely on

## Western Electric RADIOPHONES

to bring to you from the air all that this new companionship means. Western Electric Radio apparatus is known for its reliability—which means to you the best results possible

For descriptive literature, help and advice on Radio, call, write, or 'phone

**Western Electric Company**  
(Australia) Ltd.

192-194 Castlereagh Street, Sydney.  
Telephones—City 336 and 356

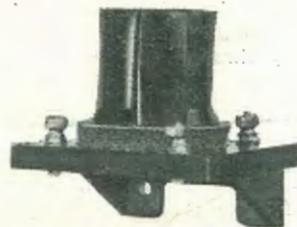


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#### One Price at Dealers



FROST RADIO.

No. 618, Bakelite Sponge Shock Absorber Socket, Standard base, panel or table mounting ..... 6/3  
For 199 Tube ..... 6/3  
For those who wish a compact gang of three Shock-Absorber Sockets. The construction is identical with our separate sockets, except for base. For panel or table mounting.



#### FROST SOCKETS.

- 618 SINGLE SHOCK ABSORBER SOCKET, for Standard Valves .. 6/3
- 617 SINGLE SHOCK ABSORBER SOCKET, for UV199 and C299 .. 6/3  
(All above sockets are made of Bakelite and have sponge rubber cushions.)
- 612 BAKELITE SOCKET, for C299 and UV199 Valves .. 5/-
- 100 BAKELITE SOCKETS for Standard Valves .. 5/-
- 619 3 GANG SHOCK ABSORBER SOCKET, for Standard Valves .. 24/6
- 616 3 GANG SHOCK ABSORBER SOCKET, for UV199, C299 .. 24/6

#### FROST RHEOSTATS AND POTENTIOMETERS

COMPLETE WITH TAPERED BLACK BAKELITE KNOBS, METAL PARTS HIGHLY NICKELLED, KNURLED TERMINALS, TECHNICALLY PERFECT.

- 650 RHEOSTAT, 6 ohm (Maroon Bakelite) .. 7/3
- 651 RHEOSTAT, 6 ohm Vernier (Maroon Bakelite) .. 9/6
- 652 RHEOSTAT, 35 ohm (Maroon Bakelite) .. 7/3
- 653 RHEOSTAT, 35 ohm Vernier (Maroon Bakelite) .. 9/6
- 600 RHEOSTAT 6 ohm Metal Frame .. 5/6
- 601 RHEOSTAT, 6 ohm Vernier, Metal Frame .. 7/6
- 602 RHEOSTAT, 35 ohm, Metal Frame .. 5/6
- 604 RHEOSTAT, 35 ohm Vernier, Metal Frame .. 7/6
- 654 POTENTIOMETER, 400 ohm (Maroon Bakelite) .. 9/6
- 605 POTENTIOMETER, 200 ohm, Metal Frame .. 5/6
- 603 POTENTIOMETER, 400 ohm, Metal Frame .. 5/6

#### FROST MISCELLANEOUS.

- 301 EXTENSION CORD, complete with Adapter and Plug, 20ft. .. 32/6
- 400 LOOSE COUPLER or Receiving Transformers .. 75/-
- 410 CRYSTAL TUNING COIL SLIDER (1100 metre range) .. 27/6
- 501 RADIO JACK BOX (for 4 plugs) .. 28/-
- 611 ADAPTER, for C299 or UV199 .. 5/6



#### FROST JACKS AND PLUGS.

NICKEL-PLATED, FORMICA INSULATION, NICKELLED SILVER COMPACT SPRINGS, PURE SILVER CONTACT POINTS.

- 133 OPEN CIRCUIT JACK .. 4/6
- 134 CLOSED CIRCUIT .. 5/-
- 131 DOUBLE CIRCUIT JACK .. 5/-
- 135 FILAMENT SINGLE JACK .. 6/-
- 136 FILAMENT DOUBLE JACK .. 6/6
- 126 NEUTRODYNE CIRCUIT JACK .. 6/6
- 140 PLUG, DOUBLE (2 connections) .. 5/-
- 139 PLUG, SINGLE .. 4/6

#### FROST MISCELLANEOUS.

- 630 RESISTANCE UNIT, 35 ohm (to increase resistance) .. 3/6
- 631 INDUCTANCE UNIT (to increase wave length) .. 5/-
- 620 POTENTIOMETER SWITCH .. 5/-
- 621 PARALLEL SWITCH .. 5/-
- 608 PUSH-PULL BATTERY SWITCH .. 4/-

#### FROST HEAD FONES

STANDARD THE WORLD OVER.

- 161 FONES (Aluminium Head Pieces), 2000 ohm .. 32/6
- 171 FONES (Aluminium Head Pieces), 3000 ohm .. 37/6
- 172 FONES (Maroon Bakelite Head Pieces), 3200 ohm .. 45/-

THE MAGNETS IN FROST FONES ARE TREATED WITH COPPER TO PREVENT CORROSION BY MOISTURE AND SALT AIR.

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"Applause" Cards Furnished Dealers and Clubs Without Charge.

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(WHOLESALE ONLY)

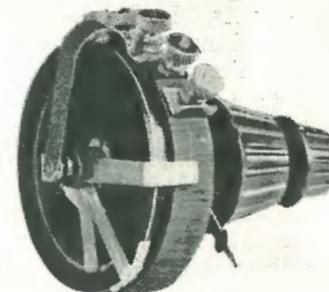
MANUFACTURERS OF RADIOVOX SETS

A FEW TERRITORIES OPEN FOR AGENTS.

MANUFACTURERS OF HOME ASSEMBLY SETS

SEE OTHER LINES, PAGE 218.

28 CLARENCE STREET, SYDNEY. — HOBART — PERTH — BRISBANE — ADELAIDE — 592 Bourke Street, MELBOURNE.



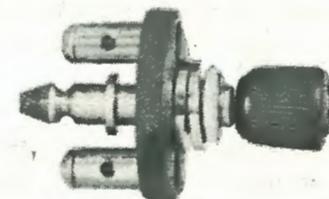
FROST RADIO.

#### FROST COMBINATION POTENTIOMETER- RHEOSTAT.

COMPLETE WITH KNOBS, ALL HAVE KNURLED BINDING POST CONNECTIONS, AND ARE TECHNICALLY PERFECT.

610 TUBE CONTROL UNIT, a combination of a 35 ohm Vernier Rheostat and 400 ohm Potentiometer .. 17/6

607 TUBE CONTROL UNIT, a combination of a 6 ohm Vernier Rheostat and 200 ohm Potentiometer .. 17/6



FROST RADIO.

608 PUSH PULL BATTERY SWITCH .. 4/-

Equal in operation to the best moulded type, with precision, operation of all moving parts and guaranteed resistance wire. Frame is made of heavy sheet brass, nickel plated and formed so as to give a rigid construction both to the windings and the contact arm. Central mounting thimble with locating tip prevents turning when mounted on panel. Washers provided to fit panels of varying thickness. Fluted moulded knob and nickel plated pointer.

- No. 600, Metal Frame Rheostat, 6 ohms 5/6
- No. 602, Metal Frame Rheostat, 35 ohms 5/6
- Same with Vernier .. 7/6
- No. 603, Metal Frame Potentiometer, 0.400 ohms .. 5/6
- No. 605, Metal Frame Potentiometer, 0.200 ohms .. 5/6

EACH OF THE ABOVE, WITH  
VERNIER, 7/6.

# Radio 4AH, New Zealand

THE following is a description of station 4AH (N.Z.), at which Mr. I. S. MacDonald last year logged 62 American amateur stations on the night of December 29:—

There is nothing out of the ordinary about the outfit, Mr. MacDonald writes, but everything is made to go and to go at any time required.

The aerial is an "inverted L" stretched between a 70 feet pole and a 60 feet tree, and is insulated from both pole and tree by insulators placed every 10 feet. The flat, top portion of the aerial is a two-wire affair 60 feet long, the wires being 10 feet apart. The lead-in is about 50 feet

side and switches are used for cutting out one or both stages of radio frequency. There are three circuits available which may be switched in as desired. First, the ordinary three-coil circuit, which is not used very often, second, the old two-coil circuit, and the third, a three circuit, utilising a two-turn and periodic primary with a loading coil in series.

The last-mentioned circuit is the one generally used, and I will describe it more fully. The primary consists of two turns of 14 d.c.e wire wound tightly over the secondary, and a loading coil made of No. 28 enamelled wire is placed in series

which has been "softened" is used as a detector. A pre-war audatron is sometimes used and gives excellent results.

As far as this station is concerned, radio frequency is a thing of the past. What can be done on 200 m. with radio frequency can be done with detector alone.

Radio frequency amplification is a slight advantage perhaps on 400 m. or over, but below 400 m. it is, in my opinion, a waste of time, and "juice." Note the reception by 1AC (Mr. Spackman, Auckland, N.Z.) of a Britisher amateur—with detector alone—Hi!

My reception of 62 different American amateur stations on the night of December 29, 1923, was accomplished by detector alone for most of them, and detector and one step for some of the later ones—from 10 p.m. onwards. Although mid-summer, conditions were particularly good on the night, there being practically no static or other disturbance. Mr. A. E. Jordan, 4AD, was visiting me at the time and checked the log.

We were not worrying about bagging a big number of "Yanks" but listened for perhaps half an hour at a time and then had a spell for a quarter of an hour and so on.

I suppose the 62 "Yanks" would be logged within three hours' listening. As usual, the 6th district were in the majority, 6AOS being the star station of the evening.

The transmitter at 4AH uses a five-watt radiotron. So far, plate supply has been 200 volts dry battery, but 1,000 volts rectified A.C. will be available shortly. The circuit is the well-known "I.D.H.," or reverse feedback, with grid coil coupled to the aerial helix. The grid coil is a wooden rotor wound with 28 turns of 14 d.c.e. wire and the helix is 22 turns of No. 10 copper wire, 6in. in diameter. The greatest DX to date has been about 1,000 miles q.w. with 1.2 watts input (90 volts on plate). Wave-length used at present: 140-180 m.

I shall be pleased to test with Aussie amateurs at any time, if they will notify me of the times that would suit them.



4AH.

long and takes the form of a four-wire cage.

A single vertical wire 60 feet high is used for reception of waves under 150 m. The counterpoise is fan-shaped, about 200 feet long and of an average width of 25 feet. After judicious experimenting a height of 10 feet was settled on as being the best for the counterpoise.

The earth is made up of wires and pipes buried in moist ground and also the household water system which consists of a mile or so of galvanised piping. The five-tube receiver used, has two stages of radio frequency, detector and two stages of audio frequency amplification.

Jacks and plugs are used for convenience on the audio frequency

with this primary and the earth (better results would probably be obtained by using a larger size of wire in the loading coil. Mine was resurrected from the junk heap and made to serve a turn.) The secondary shunted with a .001 condenser, is wound with 18 d.c.e. on a 4in. former.

The tickler is wound on a 3 $\frac{1}{2}$ in. former, has the same number of turns as the secondary and fits tightly into the secondary. Different secondary and tickler coils are plugged in for different wave-lengths. For 200 m. 18 or 20 turns are about right. Regeneration is controlled by a variable grid condenser and by a Bradleystat on the detector filament.

"V24" tubes are used as radio frequency amplifiers, and "V24"



Audio-Frequency  
Transformer  
37/6

# Volume-undistorted!

*With the A.W.A. Audio-Frequency Transformer*

- Complete and efficient shielding to prevent interaction between fields.
- solidly constructed to withstand rough use and much handling.
- Exact construction to eliminate distortion in each stage of amplification over the widest possible band of frequencies.



*The Symbol of  
Quality.*

*Especially Designed for Broadcast Receivers.  
Australian Manufacture.*

**Amalgamated**  **Wireless**  
*(Australasia) Ltd.*

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



# Lengthening the Life of Dry Cells

## A Simple Method Explained

A GOOD many amateurs are under the impression that when the zinc of a dry cell is eaten away it is quite time a new one was procured. Not so. A well-made dry cell of a reputable design, if it is gone about in the proper way, can be made to last two, or even three, times as long as is ordinarily supposed. The method of rejuvenation is this.

Punch a few holes in the zinc and immerse the cell in a concentrated solution of ammonium chloride. If, however, the zinc is already eaten

away, nothing remains that can be done by this method, one must make an ordinary Leclanché cell.

To do this, remove all traces of zinc from the outer shell of the dry cell. Underneath will probably be found a cardboard layer. Remove this also, until the black inner layer

Now take a piece of zinc and bore a hole near the top of it, after it has been cut into strips long enough to encircle the carbon cylinder. Pass a bolt into this hole and bend a wire round it. Then attach a screw to the bolt and tighten. You have now the negative pole of the battery.



A young Marconi in the making.

### EXPERT ADVICE

on

## RADIO

by

F. Basil Cooke, F.R.A.S.

of

DAVID JONES'.

Before choosing a receiving set, or commencing to make one, obtain the best of expert advice in order to ensure the maximum of good results from Radio receiving.

David Jones' Radio expert—F. Basil Cooke, F.R.A.S., one of the most experienced men in wireless, will advise you. Watch the Daily Papers for other interesting Radio information.

DAVID JONES'

RADIO DEPT., 252 YORK STREET,  
SYDNEY.

of carbon and manganese dioxide is revealed. If the cell is of an inferior make, no paper will be found to have been used, but in its place, a wrapping of cloth. Do not take this off. The better types of dry cells will fill the carbon centre rod to within a quarter of an inch of the top. Cover all the carbon and manganese composition with a a length of cloth and wind strong string tightly round it.

Pour into a quart jam-jar a concentrated solution of ammonium chloride and in this sink the carbon element. Then the negative, the zinc ring is introduced and the job is done.

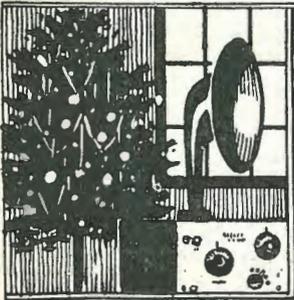
On the average, a cell of this kind will give 1.1 volts. In the case where for a protracted period one volt is to be drawn, as is the case in radio tubes, a number of these cells should be placed parallel by connecting zinc to zinc and carbon to carbon.

### READERS!

Owing to the great demand for "Radio," ensure receiving your copy by placing a standing order with your newsagent, or send 10/- for one year's subscription (26 issues) to:

The Circulation Manager,  
THE WIRELESS PRESS, 97 CLARENCE ST., SYDNEY.

# RADIO IN THE HOME



RADIO BROADCASTING  
SOLVES YOUR HOME  
ENTERTAINMENT PROBLEMS



Every tone, every note clear and sweet. You can almost see the musicians swaying in time to the music. It's just as if the orchestra was right in the room with you.

"COL-MO" Broadcast Receivers are the last word in sensitivity, selectivity and simplicity. You need only to switch on the valves and set the dials for the station you want. The cabinet is of highest finish mahogany or walnut, and includes compartment for dry batteries.

The COL-MO is the ideal Radio Receiver for the home.

Prices.—Complete in every detail: CRYSTAL SETS from £3/10/-; VALVE SETS, one to five Valves, including Loud Speaker, etc., £14 to £75.

**THE COLVILLE MOORE WIRELESS SUPPLIES LIMITED,**  
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## Columbia "A", "B" and "C" Radio Batteries

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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 Fahnstock 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 42d STREET, NEW YORK, N. Y., U. S. A.





# Our Letter Bag



## WEST AUSTRALIA HEARS VICTORIAN COAST STATIONS.

"I HAVE decided to avail myself of your offer and, if I may, I would like to take this opportunity of congratulating you on the high standard of your magazine," writes Mr. L. G. Seaby, of Bassendean (W.A.). "Right on the top of a hill, clear of buildings, trees, etc., stand my masts, one 54ft. and the other 45ft. The aerial is of the inverted L type, twin wires 5ft. apart and an over-all length of 95 ft. the earth connection being to the water mains. The set itself is made upon the unit system, two valves being employed, at present using detector and audio-frequency with a high-frequency panel in the course of construction. I am able to receive with two valves all the amateurs around Perth, 6BN being very good considering the low power he uses, usually about 1.2 watt. His station is about eight miles from mine and his speech and music are easily audible three feet from the 'phones. I get Geraldton, Carnarvon (W.A.), Esperance (Adelaide) and have heard Melbourne coast stations, also ships. I have also constructed a small indoor cage aerial, overall length of 20ft., six wires on nine inch hoops and get results that compare favourably with the outside aerial. I used basket coils throughout and find them very efficient. Wishing you every success in your second year of publication. Yours faithfully, (Sgd.) L. G. SEABY.

\* \* \*

## STATIONS HEARD.

MR. W. M. HENRY, of Rhodes (N.S.W.), in a letter to the Editor, gives the following details of both experimental and commercial stations intercepted during the last two weeks:—N.S.W. (C.W.): 2GQ, 2YA, 2HM, 2GR. ('Phone) 2HM, 2GQ. Vic. (C.W.): 3BM, 3EF, 3JU, 3BU, 3BH, 3BD, 3DD, 3BL, 3JP, 3BQ,

3QW, 3JH, 30T, 3BK. ('Phone), 3BH, 3BD, 3JH. Q'land. (C.W.). 4CK, 4CM, 4AK. S.A. (C.W. and 'Phone), 5BG and 5BQ. Tas. (C.W.), 7BK. N.Z. (C.W.), 4AA, 3AA, 3AF. ('Phone), 3AA. Long Wave Stations:

## QUEENSLANDER'S EXCELLENT DX RECEPTION.

The Editor,  
"Radio."

Dear Sir,—

I get Farmer's (Sydney) transmission on three valves, and with four valves it is good enough for the loud speaker, when it can be heard in the next room. Static is exceptionally bad up here, and in the summer time it is practically impossible to touch wireless. The above-mentioned results can only be obtained during a few months of the year, and at night only, being better at 9 p.m. than 8 p.m. The sopranos come out the best, and every word can be understood. Mr. Tollemache has a nice, soft radio voice, and if he spoke a little louder, we experimenters in the North of Queensland would catch a little more of what he is saying. Pennant Hills (VIS) comes in with a roar, and if one is not careful it is likely to get very "wobbly." Adelaide comes in also very loudly.

I have logged Karachi, India, on several occasions. I get Dr. McDowall, Brisbane, speech, 1,000 miles distant on two valves. The doctor has complimented me on my reception and in one of his letters he says: "Of all those who correspond with this station, you seem to have the best receiver."

The four sets that I am at present using are all home-made.

Yours faithfully,

(Sgd.) C. O. RANDELL.

Innisfail,  
North Queensland.

JAA, KIE, WQK, LY, HZA, PKX, NPO, NPN, NPG. The Victorian Broadcasting Station 3AR has been heard every night for the last three weeks on one valve.

MR. C. A. CULLINAN, of Diggers' Rest (V.), heard KGO transmitting on the night of June 4, using only one valve. The following are the amateur stations heard by Mr. Cullinan during the last three weeks: N.S.W.: 2AL, 2AY, 2CI, 2CM, 2DM, 2DS, 2HM, 2IO, 2IJ, 2LO, 2NG, 2CI, 2UW, 2YA, 2YG, 2YH, 2ZZ. Q'land.: 4GE. S.A.: 5BG. Tas.: 7BN. N.Z.: 1AA, 4AA. United States: 5TM, 5TU, 6KA. Mr. Cullinan advises that the above signals were all received on one valve.

Mr. J. B. D'Arcy, of Bega, New South Wales, reports having heard the following transmissions all on 'phone:—

N.S.W.: 2UW, 2HM, 2GR, 2OI, 2GQ, 2YI, 2BL, 2IJ, 2SO, 2RA, 2JM. V.: 3LM, 3JA, 3BA, 3EM, 3AM, 3RY. Q'land.: 4EG. S.A.: 5SB, 5AB, 5BM, 5BQ. N.Z.: 1YA. Mr. D'Arcy also reports having received KGO quite clearly.

Good work, Messrs. Henry, Cullinan and D'Arcy! We hope this will continue and that you will frequently forward us your reports. Incidentally, all other experimenters who read this might also fall in line by sending the Editor a copy of their logs either weekly or fortnightly.—Ed., R.

## HEARS KGO ON 5 VALVES.

THE Burgin Electric Company, Sydney, write that they have received the following letter from Mr. R. J. Fagan, of "Sunny Ridge," Mandurama (N.S.W.):—"It will probably interest you to know that, on May 4 and again last evening, May 11, I have been successful in getting KGO, Oakland, California, with the five-valve Neutrodyne. The music and speech have come in very clearly. I am keeping a record of the announcer's statements in case of argument." The company states that the receiving set was supplied by them and that this performance gives further evidence of the reception qualities of the country.

# "Wiles' Wonderful Wireless"

"WILES' WONDERFUL WIRELESS" is a very appropriate slogan in the Radio field. Some eighteen months ago Mr. W. Harry Wiles, a well-known electrical engineer of Sydney, started a Radio Department in conjunction with his electrical business. Since then the growth has been very rapid. He now employs a wireless staff of 20 skilled salesmen and a mail order staff of six.

To-day there are three of Wiles' Wonderful Wireless Stores in various parts of Sydney. A very extensive range of stocks of all the latest apparatus is carried, and the large, efficient staff of trained men are always ready to offer expert advice on all experimenters' problems. They are able to supply anything from a terminal to a multi-valve receiver or broadcast transmitter, including all parts for the latest Super-Heterodyne receiving set. Our representative had the pleasure of inspecting a three-valve set which gave some very remarkable results.

**LETTER RE KGO.**

The Editor, "Radio."  
 July 29, 1924.

Dear Sir,

I have pleasure in advising you that last Sunday evening, the 27th instant, between 5.30 and 6.46 p.m., I tuned in KGO on one of our five-valve sets, which operated a Loud Speaker. The speech and music of this station was quite audible in a 19ft. x 16ft. room at my Manly residence.

The music broadcasted was being played by Benson's String Orchestra from the Garden Room of the Hotel St. Francis, San Francisco. This is not the first occasion that I have received KGO, but last Sunday evening when I switched on the set the signals came in clear and strong. A number of visitors at my home at the time were greatly impressed as well as being entertained by music over 6,000 miles distant.

Trusting that this will be of interest to your wide circle of readers,

I am, yours faithfully,  
 (Signed) CHAS. A. WILES.  
 Wiles' Wonderful Wireless Store,  
 60 Goulburn Street, Sydney.

The Mail Order Branch of this progressive firm is under the supervision of a highly-trained official, and country clients are at all times assured of a quick service.

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A special demonstration room, tastefully furnished, has been fitted up and anyone desirous of listening to broadcasting programmes can spend many a pleasant hour listening to the various sets at any of the stores.

The three stores are located at 60-62 Goulburn Street, 23 Pitt Street, and 384 Pitt Street. Same stocks same prices and same service are obtainable at all stores. The wonderful growth of this business is attributed to the service and quality obtainable and an inspection is well worth while.

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## CLUB NOTES & NEWS

### BALMAIN (N.S.W.) DISTRICT RADIO SOCIETY.

 N spite of many difficulties, the above Society continues to forge ahead, reports the Hon. Secretary. Lectures, demonstrations and receiving tests are regular features of the club's activities and during the last few weeks 50 amateur stations have been logged. The following is a selection of these and includes one N.Z. station, the first to be received to date:—2AR, 2AY, 2BF, 2BK, 2BM, 2BN, 2CL, 2CM, 2DS, 2GR, 2HF, 2IJ, 2IM, 2JM, 2LO, 2MR, 2RA, 2UW, 2YG, 2YI, 2ZG, 2ZM, 2ZZ (N.S.W.) and 7AB (Tas.). To the many readers of *Radio* who reside in Balmain but who are not yet members of the Society, although desirous of joining up, a cordial invitation is extended that they see the Hon. Secretary any evening at 7.30 p.m. or write when all particulars will gladly be given. The address is "Percy G. Stephen, Hon. Secretary, 'Riverina,' 18 Clifton Street, East Balmain." The same applies to any experimenter or club desiring to conduct tests with the Society.

### CLAREMONT (W.A.) RADIO SOCIETY.

**A**T the last general meeting, Mr. B. Holt, of the Wireless Institute, assisted by Mr. Holmes, of the W.A. Fire Brigade, gave a very interesting lecture illustrated by lantern slides, the subject being, "Death and Dangers of Fire with Regard to Electrical Currents."

### GOOD TWO-VALVE WORK.

**T**HE following list of stations logged by Mr. C. J. Holton during February and March, 1924, constitutes a record which reflects great credit on the owner of the station. The set employed was a two-valve, three coil receiver, Spider-web coils being used. Valves used as detector and one stage A.F. amplification. All stations except 3TM were heard with good, readable strength. "201A" Valves were employed. The stations were:—Vic.: 3BD, 3BQ, 3BU, 3BM, 3BH, 3JU, 3DD, 3AP, 3HH, 3RY, 3FH, 3BH, 3JH, 3XF, 3VL, 3BL, 3EF, 3BP, 3UX, 3QW, 3SW, 3TM, 3JP. S.A.: 5BQ and 5AH. Q'land.: 4CK, 4GE, 4EG, 4CM. Tas.: 7AA, 7AB, 7BN. N.S.W.: 2HM, 2GQ, 2CR, 2YA. N.Z.: 1AA, 2AQ, 3AA, 3AC, 4AA, 4AK, 4AP. Mr. Holton is one of the most enthusiastic members of the N.S.W. Division of the Institute, and it is gratifying to note the good work that is being done by some of the younger members in the Science of Wireless.



## COASTAL RADIO SERVICE

### STAFF CHANGES.

Mr. F. G. Gowlett has been appointed Officer in Charge, King Island Radio and has taken up duty.

Mr. A. H. Brown, Radiotelegraphist, has been transferred from King Island to Melbourne Radio.

### GOOD WORK.

The Editor,  
"Radio."

Dear Sir,—

I am sending you a copy of the results obtained by me, and which I wish you to publish in "Radio" in the hope that it will tend to encourage "DX" work. The following stations have been logged regularly during the past five weeks on both 'phone and CW:—N.S.W., 2GR, 2LO, 2SO, 2XA, 2BK, 2GQ, 2CM, 2KV, 2ZN, 2ZG, 2JU, 2HM, 2YL, 2CV, 2UW, 2RA, 2YM, 2YA, 2YX, 2FP, 2YI, 2JM; Vic., 3ZZ, 3YL, 3BY, 3BM, 3BU, 3AR, 3JU, 3BA, 3BE; Q'land, 4EG; S.A., 5CQ, 5BQ, 5AA, 5BF, 5FB, 5BC, and N.Z., 1YA, 1YB, 2BY, 2AQ.

These stations have been logged on a three-valve set, one stage High Frequency, transformer coupled, detector, and one stage low frequency, also on a temporary aerial 60ft. long and only 18ft. high. A log book is kept, so that any of the above transmitters wishing to know just how they are being received have only to drop a line to

Yours faithfully,

(Sgd.) R. WOODHOUSE.

81 Cultivation Road,  
West Maitland, N.S.W.

Mr. S. J. Cooper, Radiotelegraphist, has been transferred from Perth to Broome Radio.

Mr. O. A. Jarman, Radiotelegraphist, has been transferred from Broome to Perth Radio on completion of his term of tropical service.

Mr. C. E. Lemmon has been appointed Radiotelegraphist at Darwin Radio.

### ON ONE VALVE.

**N**OW that KGO is working on full power—5000 watts—its reception by Australian experimenters seems to be becoming more frequent every day. Mr. A. E. Desereaux, of Bulli (N.S.W.), recently heard them on one valve for the first time. The tube used was a Dull Emitter, UV100 and Murdoch's 'phones (2000 ohms).



## QUERIES Answered

**"INDUCTANCE"** (Brisbane). Q.: What is correct method of tuning a three-valve receiver?

A.: Switch on Filament and H.T. batteries, then with honeycomb coils coupled tightly, search with primary and secondary condensers. When desired station is heard, loosen coupling and make final adjustments on condensers.

Q.: Should earth lead be bare or insulated wire?

A.: Bare wire is more efficient.

**Puzzled** (Sunnyside). Q.: Why are conversations on telephone lines in vicinity heard through receiver? How can this be overcome?

A.: This is due to inductance on to the Audio Frequency component of your set. Try screening the Audio frequency transformer.

**J. P. J.** (Sans Souci). Q.: How many turns required secondary winding for circuit detailed in "Low Loss Tuners," June issue?

A.: 12 to 18.

Q.: Give same circuit showing stage audio amplification.

A.: Connection of audio amplifier is same in this circuit as in any other.

**P. M. H.** (Lismore). Q.: Is tapped honeycomb coil for inductance of wave metre suitable to cover wide range wavelengths?

A.: You should use separate coils for different wave ranges. The use of a tapped coil introduces tuning complications when near the natural frequency of the whole winding.

Q.: In two-valve Reflex Circuit, could UV200 and UV201A be used or must I use two hard valves, such as UV201A?

A.: Use preferably two UV201A. A UV200 could be used for detector but this introduces additional controls which outweigh its advantages.

**G. W.** (Manly): Please furnish full details regarding condensers and coils used for reception in each instance.

### TASMANIAN GETS KGO.

**R**ADIO experimenter Mr. J. Stipek, at St. Helens, Tasmania, has again been successful in receiving KGO, Oakland, California. On June 18 and 22 complete programmes were received. At 6.59 p.m., local time, on June 18, Mr. Stipek heard KGO sign-off at 12.58½, Pacific Coast time, and at 7.1 p.m. on Sunday, June 22, KGO signed-off at 1.0½ a.m., Pacific Coast time. This is very good work and we should be very glad to hear of experimenters in other States who have been successful in receiving KGO so clearly.—(Ed. R.)

# America's First Woman Operator

## Connected with Radio Since 1905

IT had to come—or rather She had to—and now she has. The first woman in the United States to receive a commercial wireless operator's license is Mrs. F. E. Chambers, of 6046 Market Street, Philadelphia.

Mrs. Chambers is an instructress in a radio school and when engaged in her duties there, builds and assembles intricate wireles apparatus in her own wireless laboratory. Both she and her husband are expert operators, and for 15 years they have practised their occupation.

"But things have changed since I first began the study of wireless," says Mrs. Chambers. "One can sit in comparative comfort and get the signals that at one time one couldn't catch without straining ears and nerves with the head-phones clapped close against one's head."

In telling how she and her husband first became radio experts, Mrs. Chambers said: "In 1905, shortly after we were married, my husband and I became interested in wireless. At first, though, we thought it would be but to familiarize ourselves with

the theory, so we both studied at school. When we completed the course, Mr. Chambers continued his studies at Drexel Institute and taught me at night what he had learned in the day.

"Since then we have built many radio sets and have done a good deal of experimenting. We have seen many changes come about in wireless communication and some of them revolutionizing the entire system. However, we still have the amateur with us and we always will have," concluded Mrs. Chambers.

THE Management of this Magazine would esteem it a courtesy if, when writing to Advertisers, Readers would kindly mention "Radio."

## K. and C. POTENTIOMETER



The Potentiometer is frequently the deciding factor in the effectiveness of a receiving set. A detector tube is only as efficient on weak signals as its control. Increase of signal audibility in the detector tube depends on the potentiometer. Many weak signals are lost entirely if this control is not employed. The K. & C. potentiometer was designed and is constructed with a view to the user's needs. A broad, smooth-running contact gives constant, steady change of Potential without the variable curve encountered so frequently.

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**JUNE.**

MESSRS. A. E. LAWRENCE, J. R. Hain and C. Colton, First, Second and Third Operators respectively, signed off s.s. *Eastern* at Sydney, 19th.

**JULY.**

Mr. L. C. Coleman relieved Mr. W. J. Peell on s.s. *Iron Baron* at Newcastle, 1st. Messrs. W. D. Wedgwood and H. B. Tyler signed on s.s. *Changsha* as Second and Third Operators respectively at Sydney, 2nd.

Mr. S. L. Filer signed on s.s. *Baldina* at Sydney, 3rd.

Mr. A. S. Dening signed off s.s. *Iron Crown* at Newcastle, 3rd, and signed on s.s. *Iron Chief*, same date.

Mr. F. C. V. Humphery signed on s.s. *Iron Crown* at Newcastle, 7th.

Mr. A. H. Jeremy signed off s.s. *Victoria* as Senior Operator at Sydney, 7th.

Messrs. T. Chalmers, W. J. Peell and R. E. Mann signed on s.s. *Victoria* as Senior, Second and Third Operators respectively at Sydney, 7th.

Mr. W. C. Lucas relieved Mr. J. Jordan on s.s. *Marsina* at Sydney, 8th.

Mr. W. Hill signed on s.s. *Eastern* at Sydney, 8th, as Senior Operator with Messrs. A. C. Jackson and J. Thompson as Second and Third Operators respectively.

Mr. A. E. Lawrence relieved Mr. T. Hawkins on s.s. *Maheno* at Sydney, 8th.

Mr. G. Maxwell signed off s.s. *Barunga* at Sydney, 8th.

Mr. L. A. Paul signed off s.s. *Lammeroo* at Sydney, 9th, and terminated service.

Mr. R. Thompson signed on s.s. *Lammeroo* at Sydney, 9th.

Mr. W. C. Lucas signed off s.s. *Echunga* at Sydney, 4th.

Mr. G. H. Tracey signed off s.s. *Urilla* at Sydney, 4th, and signed on s.s. *Iron Crown* same date.

Mr. R. C. V. Humphery signed off s.s. *Iron Crown* at Sydney, 11th, and signed on s.s. *Urilla*, same date.

Mr. C. C. Ullman signed off s.s. *Eugowra* at Sydney, 14th.

Mr. E. J. Glaisher joined s.s. *Chronos* at Melbourne, 10th.

Mr. G. Maxwell relieved Mr. J. E. Cleary as Senior Operator on s.s. *Barambah* at Sydney, 14th.

Mr. R. Jordan relieved Mr. C. F. Griffiths as Senior Operator on s.s. *Moreton Bay* at Sydney, 14th.

Mr. F. L. Scott signed on s.s. *Nauru Chief* at Sydney, 14th.

Mr. J. R. Gilligan signed off s.s. *Kanna* at Sydney, 14th.

Mr. H. J. Byrne signed on s.s. *Kanna* at Sydney, 14th.

Mr. A. Stuart signed off s.s. *Eurelia* at Sydney, 14th.

Mr. S. J. McVeigh transferred from s.s. *Macumba* to s.s. *Mallina* at Brisbane, 11th.

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 2XB (c) Victoria University College, Wellington: 50 watts, 395 metres.  
 2YB (b) Wellington Broadcasters Ltd., Wellington, 500 watts, 275 metres.  
 2YK (a) Dominion Radio Co., Ltd., Wellington. 500 watts, 375 metres.  
 2YM (b) Gisborne Radio Company, Gisborne. 500 watts, 335 metres.  
 3AA (d) Orbell, Reginald John, Christchurch. 50 watts, 155, 165, 175 metres.  
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 3AF (e) Ball, Leonard Francis, Christchurch. 5 watts, 140 metres.  
 3AH (e) Courtis, Henry Burall, Timaru. 5 watts, 140 metres.  
 3AK (e) Reynolds, Ernest, Ashburton. 5 watts, 140 metres.  
 3AL (e) Dawson, Wilfred Milne, Ashburton. 5 watts, 140 metres.



### NEW ZEALAND.

(Continued from last issue.)

- 3AM (e) Withers, Bernard Tyndall, Christchurch. 5 watts, 140 metres.  
 3AQ (d) Small, James Ingram, Christchurch. 15 watts, 160, 170, 180 metres.  
 x3AR (d) Buchanan, David William, Ashburton. 50 watts, 160, 170, 180 metres.  
 x3AS (e) Paterson, Ian James McLean, Timaru. 5 watts, 140 metres.  
 4AA (d) Bell, Frank Dillon, Waiheme. 50 watts, 171, 161, 151 metres.  
 4AB (d) Otago Radio Association Inc., Dunedin. 50 watts, 160 and 300 metres.  
 4AC (d) Robinson, Robert Edward, Dunedin. 50 watts, 155, 165, 175 metres.  
 4AD (d) Jordan, Arthur Edward, Invercargill. 50 watts, 175, 165, 155 metres.  
 4AG (e) Slade, Ralph, Dunedin. 3 to 5 watts, 140 metres.

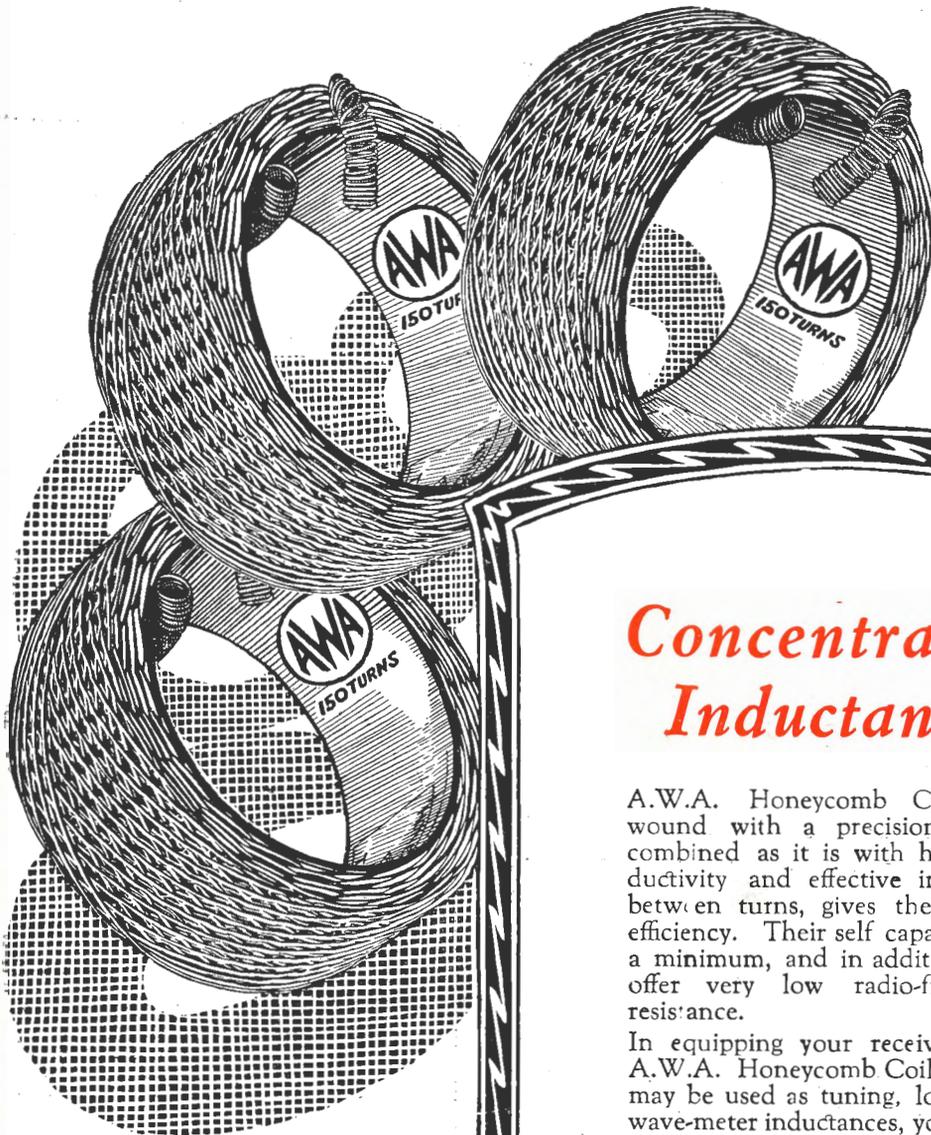
- 4AH (e) McDonald, Ian Sinclair, Dunedin. 5 watts, 140 metres.  
 4AJ (e) McGeorge, Claude Norman, Dunedin. 5 watts, 140 metres.  
 4AK (e) Shiel, William Lalor, Dunedin. 5 watts, 140 metres.  
 4AL (e) Grubb, Arnold Henry McLeod, Dunedin. 5 watts, 140 metres.  
 4AM (e) Crockett, Wm. McGill, Dunedin. 3 to 5 watts, 140 metres.  
 x4AO (e) Scott, Thomas Edward, Dunedin. 5 watts, 140 metres.  
 4AP (d) Invercargill Radio Club, Invercargill. 15 watts, 160, 170, 180 metres.  
 4XO (c) Professor Robert Jack (For University of Otago), Dunedin. 50 watts, 395 metres.  
 4YA (b) British Electrical and Engineering Co., Dunedin (F. J. O'Neill), 500 watts, 370 metres.  
 4YO (a) Radio Supply Company, Dunedin. 500 watts, 370 metres.

Mr. R. J. Orbell, Christchurch, holder of a Grade 1. License, has temporarily removed his apparatus to Cambridge, and has been allotted the call signal, IAX.

x— Advice of issue not received from the District Telegraph Engineer. (a) Toll Broadcasting Stations. (b) Private Broadcasting Stations. (c) Experimental Stations. (d) Transmitting and Receiving Stations, Grade I. (e) Transmitting and Receiving Stations, Grade II.



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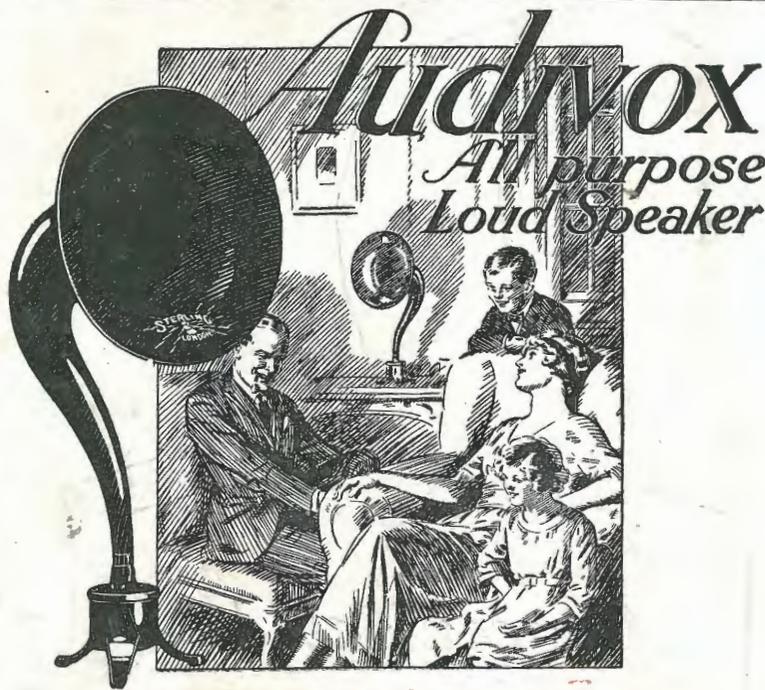
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