



Simple Arithmetic

of
£100 Investment in
The Commonwealth 5% Loan
1928

You pay a deposit of £18
And an instalment of $\frac{£80}{£98}$

You receive back in 1928 a full £100
And in five years interest
amounting to = $\frac{£25-2-6}{£125-2-6}$

Profit on £98 invested £27-2-6
This is Interest at 5-9-3%

It is a good Investment



OFFICIAL ORGAN OF THE AUSTRALASIAN RADIO RELAY LEAGUE.

Vol. 2.

August 24, 1923.

No. 34

Experimental Music Continues.

No doubt many radio men smiled when they read the Sunday papers. What an amazing perversion of facts — DO THE TRADERS WANT EXPERIMENTAL MUSIC TO CONTINUE?

Wireless Weekly, who we emphatically state, is in the unique position of having the real wireless traders' confidence, has no hesitation in saying "THE TRADER DOES WISH THE EXPERIMENTAL TRANSMISSION OF WIRELESS MUSIC TO CONTINUE."

A Sunday weekly says that its continuance

is likely to discourage real broadcasting. Perhaps that accounts for the large Broadcasting Company just formed which intends operating a big station within the next few weeks.

The Postmaster-General, through the medium of Mr. J. Malone, Chief Manager of Telegraphs and Wireless, says: "Experimental transmission of music shall continue for the present," and knowing that due consideration was given before this statement was made, we have every confidence in telling our readers to LISTEN IN.

Roster for Week ending 29th August, 1923

	7.30 to 8.0	8.0 to 8.30	8.30 to 9.0	9.0 to 9.30	9.30 to 10
Thursday, 23	2 GR	2 GR	2 FA	2 ZG	
Friday, 24 ...		2 WV	2 FA	2 CI	2 CI
Saturday, 25..	2 GR	2 GR		2 FA	
Sunday, 26...	7 to 7.45 2 GR		7.45 to 9.15 2 CM		9.15 to 10.0 2 JM
Monday, 27 ...	2 GR	2 ZG	2 FA	2 WV	2 WV
Tuesday, 28 ..		2 GR	2 JM	2 FA	
Wednes., 29...	2 GR	2 WV	2 ZG	2 FA	

Vacant times may be booked by Transmitters by ringing Red. 732 between 9 a.m. and 5.30 p.m. daily.

The Mailed Fist, No. 4.

THE POOR EXPERIMENTER TO SUFFER NEXT.

Another astounding document has been placed before us. The experimenter is asked to pay 5/- for the right to experiment.

Before you start to experiment, you pay 10/- for a license from the Government; now before you start to build your set you are expected to pay another 5/- is what we gather from this amazing document to which is attached the name of Amalgamated Wireless (Australia) Ltd.

It looks very much like a monopoly to us,

but as to whether it can be enforced is another matter.

£501,000 of shares of the above Company belong to the Federal Government.

What we desire to know is did the Government representative attend the meeting which decided that the company would create a precedent by trying to compel the experimenter to pay. If not, why were they not present at this and many other meetings of directors of this company.

Telephone Receivers.

By E. JOSEPH.

The author has been constrained to write this article owing to the action of a radio operator who made certain alterations of which more anon—to his telephones.

One hears of radio receivers of resistance from 120 ohms up to 8000, and the user is generally aware of the fact that he obtains better results with the phone of high resistance. To begin with, resistance—as resistance—is of no use or advantage at all, but it may, under certain circumstances be a disadvantage.

The telephone circuit of a radio receiver consists usually of a crystal, a resonant circuit (resonant to radio frequency) and sometimes of a source of electro-motive force. The crystal may be replaced by the anode-filament circuit of a triode of three electrode valves, the resonant circuit may then be sometimes eliminated. Occasionally the telephone circuit consists only of the secondary winding of a transformer.

The value of the fluctuating electro-motive force available to work the telephone receiver depends upon the strength of signals received, the proportioning of the resonant

circuits, the damping, and certain adjustments controlled by the operator.

Whatever its value it is caused to send a current through the telephone circuit. This current obeys ohms law—which is as correct for fluctuating and alternating currents as it is for direct and continuous currents.

The value of the current is therefore given by

$$C = \frac{E}{R}$$

where C is the current, E the sum of all the electro-motive forces in the circuit, having regard to direction also (or the algebraic sum) and R is the resistance of the circuit.

The resistance of a crystal runs into many thousands of ohms, that of the plate-filament circuit of a triode, may be anything between about 20,000 and 100,000 ohms, and we will neglect for the present the circuit containing a telephone transformer except to state that all references to a telephone receiver where a transformer is not used, apply equally to the primary of the

transformer, where one is used. We will take 50,000 ohms as a representative figure for the resistance of the detecting device, will assume that a certain electro-motive force E is available and will note the variation in current with receivers of different resistances taking 100 and 10,000 ohms as examples, the value of E being taken as 1. Table 1 shows us the effects.

Resistance of detector	50000	20000	50000
Resistance of telephone	—	100	10000
Total resistance	50000	20100	60000
Assume value of E	1	1	1
Telephone current	.00002	.0001996	.0001666
Ratio of currents	1	.998	.833
Ratio of Resistances of telephones	—	1	100

Table 1.

We see that increasing the resistance of the telephone receivers one hundredfold has only decreased the current about 16 per cent. This is apparently a slight disadvantage. What then is the use of high resistance phones?

To be continued

August 24, 1923.

WIRELESS WEEKLY

Using the "Inverse Duplex" with Various Kinds of Tubes.

By DAVID H. GRIMES.

Briefly, the Inverse Duplex is a method of employing tubes for radio and audio-frequency work simultaneously, without overloading them—the heaviest audio-frequency currents flowing in the tube where the weakest radio-frequency current is flowing.

Most of the troubles encountered in the operation of the Inverse Duplex arise from the radio frequency part of the circuit. If you have had little or no experience with radio frequency circuits, the following suggestions will prove helpful to you. All leads from the radio transformers to the grids, plates and by-passing condensers should be as short as it is possible to make them. These wires are carrying high frequency alternating currents, and if run near other wires or apparatus they are likely to "cross over" into them through the capacity between

tends to oscillate there are several tricks which may be employed to stabilise it.

Radio transformers have to be pretty carefully built, and even then are best suited to certain types of vacuum tubes. Some transformers which are absolutely successful on, say, the Radiotron tubes, are very poor on any other type of tube. It is impossible, generally speaking, to use indiscriminately any type of vacuum tube with any type of radio transformer. Therefore, in purchasing your tubes and R.F. transformers, be certain that they are of a

tube. Hence it is absolutely necessary to secure results there before proceeding further.

One of the features of the Inverse Duplex circuit is the easy and ready way in which trouble may be located. The hook-up can be cut into three separate and distinct circuits—the radio, detector, and audio connections. Any one of these three may not be operating properly due to troubles common to radio circuits, detector circuits, or audio circuits.

For instance, on loop reception, it is somewhat difficult to make a so-called "hard" tube, such as the UV-201, act properly as a detector on only two stages of radio. On the other hand, a "soft" tube, such as the UV-200 will do this easily. There are detectors and detectors, varying over all known range of sensitivity. A great deal will depend, naturally, on the sensitivity of your detector for best results. A recent article recommended a UV-200 tube as a detector. This tube does not require a grid condenser or leak and the grid wire should lead back to the negative side of the filament. A UV-201 or 201-A tube is not recommended here for a detector.

USING DRY CELL TUBES.

This brings up the dry-cell situation as applying to my circuit. The same thing holds true in this case. When satisfactory radio amplification is obtained and successful detection is secured, the rest is easy. The new UV-201-A tubes which will operate on low enough currents to permit their use with dry cells, cause considerable difficulty in radio circuits unless special precautions are taken. I have found that the easiest way to secure stability with these tubes on radio frequency is to drop the plate voltage to 45 volts and sometimes even lower. Dropping the filament voltage below 5 volts often helps.

For a detector tube on dry cell operation, the UV-200 can hardly be recommended because of the high



The Layout for the Audio-Frequency Part of the Inverse Duplex.

them, just as they do between the plates of a condenser. This will cause no end of trouble. The photograph showing the equipment layout indicates the closeness of the radio transformers and tubes.

Next, radio frequency amplification unless properly designed, has a tendency to oscillate or howl, and to the novice with little experience, it is almost impossible to stop it. This is mostly a problem of radio transformer construction, but even with a given transformer which

design suitable for operation with each other.

BEGIN AT THE BEGINNING.

The best possible way to proceed in wiring up an Inverse Duplex circuit is to connect up merely the two stages of radio and a detector to start with. If no results are obtained on this, it is useless to expect anything by adding the two stages of audio. The audio stages function to make louder the results already obtained by the detector

filament current required. It is possible to use it, but several banks of dry cells must be connected in parallel to hold up for any length of time. The expense of such operation becomes greater than the maintenance of storage batteries, and is not advisable. The UV-201-A tubes

audio circuits, or if they have, they have learned how to overcome them, by reversing primary windings. The reversing of leads on the primaries of the radio transformers, by the way, is a good thing to try when troubled with instability in the radio frequency circuit.

circuit is essentially a super-sensitive layout and will not stand tremendous currents. If louder reception is desired on local or long distance stations than that given by two stages of audio, it is suggested that an additional tube of straight audio be added between the set and the reproducer. The sole purpose of this tube will be audio amplification, and can be used to the limit of its ability for that purpose. If greater range is desired, a straight radio stage may be connected between the loop and the first duplex tube, but, of course, this has a tendency to overload the duplex tubes on local reception. Running three duplex tubes beside the detector is not to be recommended to the uninitiated, although it has worked out perfectly well in hundreds of cases during the past year. Until the amateur has fully familiarised himself with the duplex peculiarities on two amplifier tubes, he should not tackle the three amplifier lay-out.

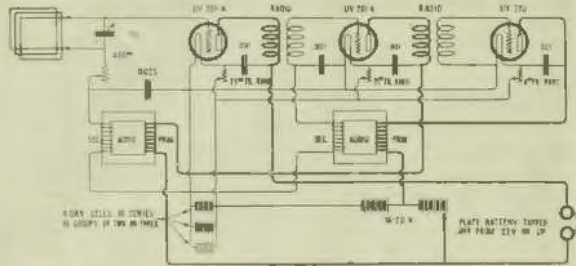


FIG. 1. HOW TO EMPLOY A UV-200 AND TWO 201-A's.

25-ohm rheostats are used for the 201-A's, and the common 4 to 6-ohm rheostat controls the UV-200. Dry cells in series-parallel are used to light the filaments.

have, in my experience, not responded as detectors to weak enough signals to permit their use with only two stages of radio on a loop. The WD-11 is apparently much better, but requires a different line-up in the filament battery circuits. It operates on only about 1 volt, while the UV-201-A tubes function on from 4 to 5 volts.

Many questions have arisen regarding the omission of the filament rheostats on the amplifying tubes in earlier drawings. These were purposely left out because the UV-201 tubes would take the battery voltage (about 5½ volts after the filament current had gone through the battery leads) directly, with only a small decrease in their life. It was thought that omitting these rheostats would simplify the adjustment of the set to a sufficient degree to compensate for the somewhat shorter life of the tubes. The confusion, however, has been so great that I am now suggesting that the amplifying tubes have rheostats inserted as shown in the accompanying diagrams (Figs. 1, 2 and 5).

Having assumed, now, that the radio frequency part of your circuit has been adjusted to function satisfactorily, we are ready to consider the specific difficulties encountered in duplexing the audio in the radio tubes. Most fans have little or no trouble with

You will no doubt recall what was said in a recent issue about overloading the tubes in certain types of "redex" circuits. It was also brought out that the Inverse Duplex greatly helped in overcoming this trouble by balancing the load. Even then, if the incoming energy is excessive, as is the case on aerial reception for local work, the carrying limit of the tubes is reached, and poor quality results. In this case, the 400-ohm resistance would not be sufficient to cut the energy down to a reasonable amount. WD-11 tubes are not very satisfactory as amplifiers in this circuit, as they are limited in energy and are easily overloaded. This

ANY LOOP WILL DO.

A one-foot loop was referred to in a previous article, and this has led to much confusion. Many readers inferred that the circuit would operate with nothing else. Any kind of a loop will work on the circuit, provided the number of turns are such as to tune properly with the variable condenser for the wave lengths desired. The smaller the loop, the less energy it will pick up, and the less will be the range for a given sensitivity of circuit. Many other types of sets have operated over considerable distances on loops ranging all the way up to five feet on a side, or even larger. The one-foot loop was emphasised merely to illustrate the extreme sensitivity of

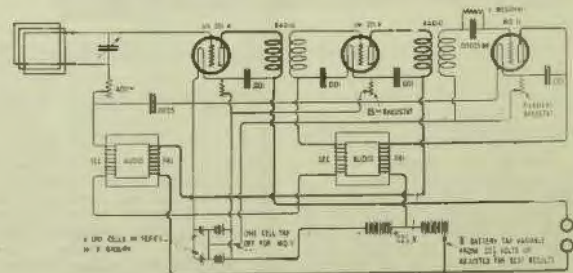


FIG. 2. The same circuit adapted for use with a WD-11 and a WD-12. Note the one and a half volt tap-off for detector-tube filament.

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Variable Condensers, .001, Model D ..	17	0	Variocoupler Parts	9	6
Variocoupler, Mounted	22	6	Knob and Dial	5	0
Vacuum Tube Sockets, Porcelain	3	0	Rheostats	4	0
Transformers, Audio Frequency	30	0	V.T. Socket Adaptors for W.D.11 .. .	5	6
Variable Condenser and Radio Frequency			Crystal Detectors, Mounted	12	0
Transformer, for Tuned Plate Circuit ..	30	0	No. 1 Terminals	0	6
No. 2 Terminals	0	8	No. 3 Terminals	0	9

VACUUM TUBES

Mullard "Ora" A.	26	0	Mullard "R" Amplifiers	30	0
Ediswan	30	0	Marconi-Osram "R"	35	0
Radiotron Detectors, U.V.200	40	0	Marconi, D.E.R.	50	0
Radiotron Amplifiers, U.V. 210A. . . .	45	0	Marconi, V.24	37	6
Cunningham Detectors, C300	37	6	De Forest, D.V. 6A. (3 volts)	45	0
Expanse, "B"	35	0	G. and R. Valve	26	0
Myers' Audion	35	0	W.D. 11 (dry cell tube)	50	0
DUBILIER MICARDON FIXED CONDENSERS, .001 and .002 M.F.D.				each	3 6
DUBILIER DUCON ELECTRIC LIGHT ATTACHMENT, WITH SOCKET			Bakelite Dials, for Rheostats	5	0
Hoyt Midget Voltmeters, 0-10 Volts ..	20	0	Bakelite Dials, for Potentiometers ..	5	0
Hoyt Midget Voltmeters, 0-50 Volts ..	25	0	Bakelite Knobs, 3-16in. and 1/2in. Shaft	2	0
Hoyt Midget Voltmeters, 0-100 Volts ..	30	0	Vernier Rheostat	12	0
Bradley's Filament Control	18	0	Keystone Lightning Arresters	17	0
Grid Leaks, Fixed	5	9	Radio Frequency Transformers	45	0
Master Audio Frequency Transformers	40	0			

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the circuit. On powerful stations up to 175 miles away, I have obtained good reception on a 4-inch coil—the secondary of a variocoupler. For best all-round results, a 16 to 20-inch loop with 8 to 12 turns of wire, spaced a quarter of an inch apart, is suggested. On a three-foot loop, a listener in New York, using the Inverse Duplex circuit with two tubes and a crystal detector, has picked up stations as far west as Kansas, at noon. This size loop has a tendency to overload the circuit on night reception. Overloading is easily ascertained by poor quality, or the first or second amplifying tube acting as a detector instead of the regular detector tube.

TWO WAYS OF OVERCOMING "SILENCE."

After all the above suggestions have been followed, there will be cases, no doubt, where the fan will still have trouble. There are so many variables which can cause trouble. I would recommend trying two additional changes which ordinarily are not desirable. The first is to run the grids of both amplifying tubes back to potentiometers instead of to the negative filament, and the second is to cut down or perhaps eliminate entirely the bypassing condensers on the middle tube. This first gives broad tuning, and also reduces the audio, while the second materially reduces the range.

The audio transformers should be of the 3:1 or 4:1 ratio preferably. Under certain conditions especially when using a crystal for a detector, the first audio transformer after the detector can be of the high or 10 to 1, ratio.

It is assumed that the ordinary troubles possible in radio hook-ups, such as open transformers, poor tubes, broken down condensers and run down B batteries, have been located and eliminated. It is naturally beyond the scope of this article to cover all these points, but nevertheless they must first be checked before any success can be obtained. Fully nine out of ten troubles which I have been personally called to remedy, were due to such things as mentioned above.

If I have in any small degree helped the radio fan along, I shall feel amply repaid, and to those who

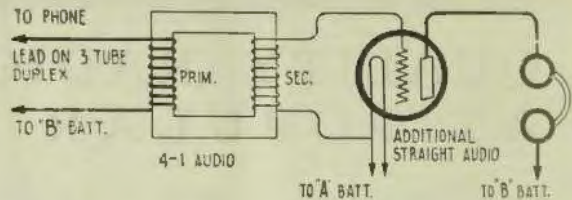


FIG. 3. Showing how to add a stage of straight audio to the inverse duplex.

have not achieved all the results they had a right to expect, I can only suggest that they accept the advice on the back of one of the earlier automobile handbooks: after all the cures for possible automobile troubles have been given throughout a vast number of pages, the final

statement is made, "Don't forget that this machine once worked, and with proper care will work again."

NOTE. Owing to an error on the part of our block maker illustration showing diagram No. 4 is missing from this article, but will be published in our next issue.

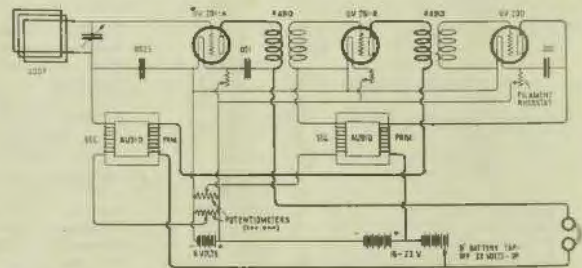


FIG. 5. The stability of the circuit is improved by two 200-ohm potentiometers. Note that in this case there is no pass-by condenser on the second tube.

6,000 NEW FANS A MONTH IN ENGLAND.

In spite of the relative difficulty in amateur operation owing to a government control that requires a license for every receiving station, and prohibits the use of home-made apparatus, the wave of radio enthusiasm that has just begun to hit England seems likely to become at least comparable to what it was here. One month's application for licenses was 6,000—and that was before the "boom" had really started.

RADIO FANS TO HAVE A CHURCH OF THEIR OWN.

To bring the church direct to the people by radio is the plan pro-

posed by the Radio Church of America, which was incorporated recently in Sacramento, California, under the laws of the State of California. It purports to be non-sectarian and non-denominational. Headquarters of the church will be in San Francisco. Branches will be established wherever a broadcasting station is available.

FRENCH FANS ARE BEGINNING TO LISTEN IN.

There are now about 50,000 privately owned radio receiving sets in France—as compared to an estimated 2,000,000 in the United States.

Low Frequency Power Amplifier Unit.

Intended for use with the tuning, detector and high frequency units already described, this power amplifier can well be made up where it is desired to operate a loud speaker from any type of receiving apparatus. The design is based upon that adopted in the previous units, and consequently the general dimensions are ample for the size of the components to be supported, but if space is a consideration it is easy to build an equally effective instrument using a panel not quite so tall as that shown in the diagrams.

The following components are required for the construction of the unit:—

A piece of best quality polished ebonite 5-16 in. in thickness, and of a size suitable for finishing a panel to 12 1-8 ins. by 8 ins., and a strip 12 ins. by 1 in.

Two circular pattern filament resistances.

Two valve holders.

The arms and contacts of two double-pole two-position switches, as used previously.

Eight terminals.

A 44-volt battery, such as is used in a pocket lamp, and also a single cell removed from such a battery.

Wire and insulating tubing for connecting up, and various brass screws.

A piece of hard wood for a base-board, which should measure 12 ins. by 6 ins. by 5-8 in. Another piece of wood will also be required 7 1/2 ins. by 6 ins. by 1/2 in., from which end

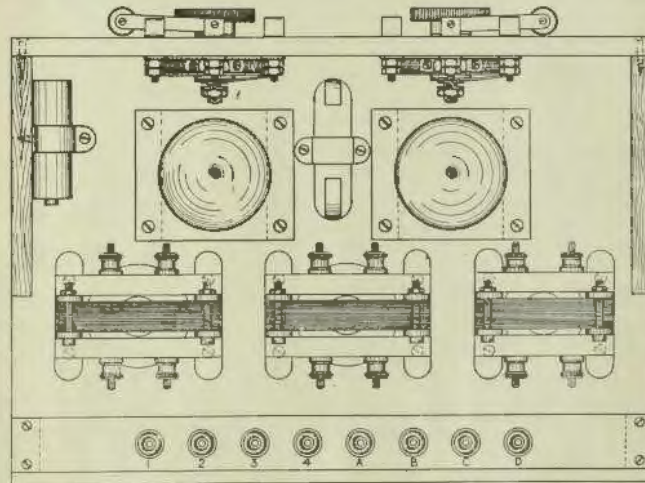
pieces can be made when it is sawn diagonally.

Two intervalve transformers and a telephone transformer, all of reliable make.

With regard to the selecting of intervalve transformers, large types will be found the most reliable. A large transformer may be wound with wire of a gauge suitable to pass the required current, and the space provided for the winding allows of the use of ample turns. Small transformers invariably sacri-

fice one or both of these desirable features. When purchasing, one should ascertain the number of turns with which the transformer is wound. This should be 30,000 or more, and the ratio of the number of primary turns to the number of secondary turns should never exceed 1 to 4 when used with British "R" type valves.

Should it be the aim of the reader to construct an amplifier for use after a crystal detector, it is the recognised practice to adopt a lower



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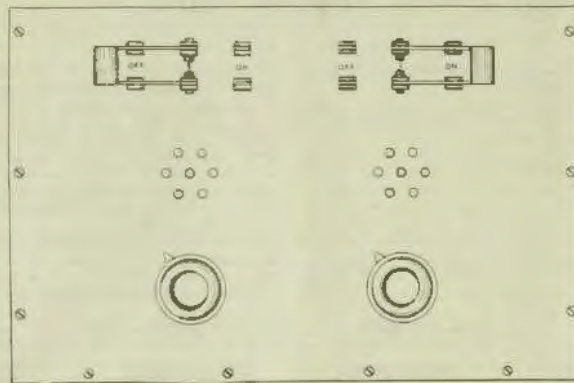
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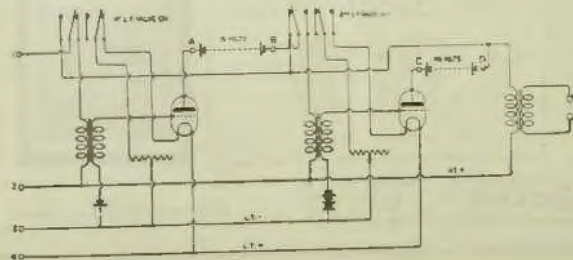
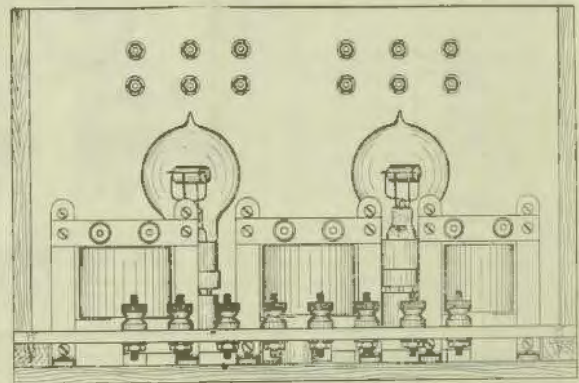
Front View of Panel

ratio than this, the reason being that the crystal delivers a much smaller current than a valve, and consequently finer wire may be used and more turns included in a given space. Especially is it desirable that ample turns be included for the purpose of building up the necessary ampere turns from the small current produced by the crystal. A transformer for this purpose should have a ratio of about 1 or 1½ to 1.

In view of the tendency of closed core transformers to operate better on certain note frequencies than on others, thereby producing distortion, it will be found that in several modern power amplifiers open core transformers are employed, or those in which the core consists only of a bundle of fine wires in the centre of the winding and equal to it in length. Such transformers must not be assembled close together, as the lines of force around one may

link up with those of another, and produce oscillations at audio frequency. Partially closed core transformers are sometimes made by enclosing the open core type in iron boxes, which improves the efficiency to just such a degree as may be permitted without the introduction of serious distortion, at the same time obtaining thorough screening.

Returning to the design of the instrument, it will be noticed that a cell is arranged to provide an additional negative potential for the grid of the first valve, and that a small battery provides an additional ½ volts negative to the grid of the second valve. In addition, terminals A and B are arranged so that extra H.T. potential may be applied to the first valve, while C and D supply the second. With the additional voltages shown in the circuit diagram "R" or "L.S.3" valves may be used in the amplifier, whilst higher voltages can be arranged to

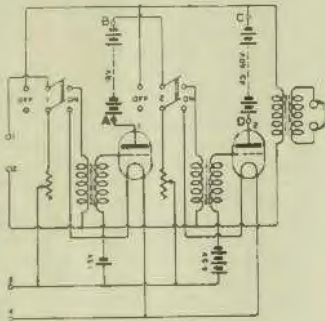


suit special power amplifying valves such as "L.S.1" and "L.S.2." One is reminded that unless suitable transformers are employed the windings may be destroyed with the latter type of valves.

The switches for cutting out the valves of the amplifier are of the same type as used in the tuning and high frequency amplifying circuits, but it is not essential to the working of this unit to employ low capacity switches of this type. Should it be desired to key or "Dewar" switches, a circuit is given showing an amended method of wiring. Only half of the contacts of each "De-

war" switch are made use of, and thus two sides may be paralleled across.

When this unit is not used in conjunction with the corresponding detector unit it is necessary to connect a condenser having a value of



between 1 and 2 microfarads across terminals 2 and 4, which then become H.T. plus and minus respectively, while terminals 3 and 4 become L.T. plus and minus. Termin-

als 1 and 2 are connected to the telephone terminals of the detector valve apparatus.

This article completes the construction of an effective four-valve station in which provision is made for just such circuit changes as are required by the experimenter, and from the principles embodied it may be expected to rival in results any receiving equipment however elaborate.

A LITTLE BACK CHAT.

A novelty in the way of entertainment was broadcasted from a General Electric station at Schenectady, New York, when part of a speech was given backwards. Two paragraphs of an inspirational address given by Dr. Frank Crane were reversed by means of using a Pallophotophone film from the end instead of the beginning. The peculiar effect is better imagined than described. The Pallophotophone records sounds on a strip of celluloid like an ordinary piece of cinematograph film. Holding it up to the

light, one can discern lines running up and down in series, and of many different frequencies and amplitudes. Just as in motion picture, amusing results, like houses rebuilding themselves, and men or animals leaping out of lakes instead of into them, are obtained by reversing the film, so the speech film reproduced everything backwards.

A VOICE FROM IGLOO.

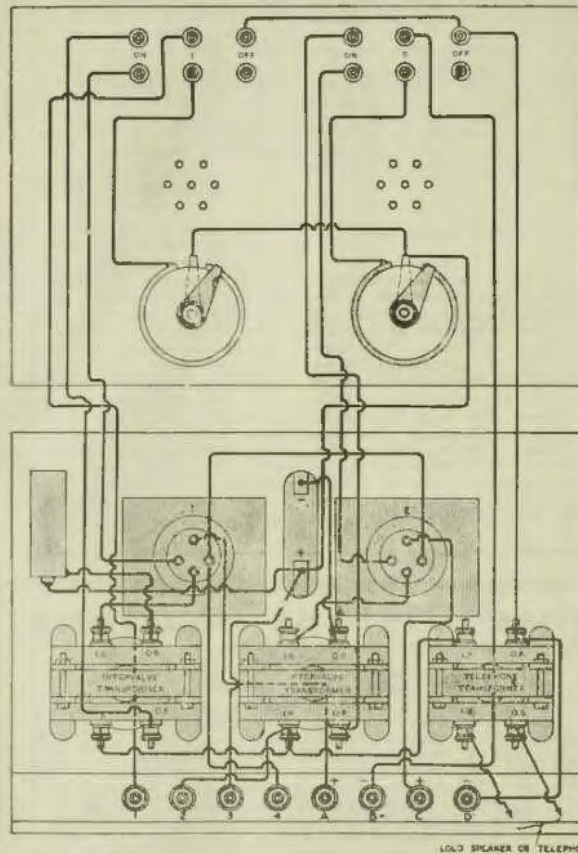
Radiophans in the United States have been asked to "stand by" this summer and listen for the voices of Donald MacMillan, the explorer and his crew. His ship, the Bowdoin, carries a powerful radio equipment, and the party plan to take sending and receiving gear with them when and where they land. Their goal is the North Pole, and whilst they are resting or weatherbound inside the Eskimo igloos (huts) they will recount their experiences by Radio whenever possible. They fully count on Radio supplying their recreation and are eagerly awaiting the effect of jazz music upon the Eskimo.

Bring in Those Distant Stations

LET US HELP YOU ENJOY RADIO AT ITS BEST

Arresters (Lightning)	0 5 9	Rheostats, Kilbourne Clarke Vernier	0 10 3
Antenna (Super for E.L. Socket)	1 2 0	Rheostats, Bestone with Dial	0 9 0
Accumulators (B. Battery) Exide, 32V	3 0 0	Rheostats, Bradleystats	0 12 6
Aerial Wire, 3/20 gauge, per 100ft.	0 3 0	Rheostats, Micro-amp. Vernier	0 10 6
Bakelite, 1/8 and 3/16in. per square inch	0 0 1	Rheostats, Best	0 6 6
Dials, Bestone, 3/16in.	0 4 9	Switches, Remler 1in. Rotary Lever, No. 94	0 2 9
Dials, Bestone, 2 1/4in.	0 3 6	Switches, Remler 1 1/2in. Rotary Lever, No. 95	0 3 6
Detector Parts, K.D.	0 3 9	Switches, Remler 1 1/2in. Rotary Lever, No. 98	0 5 0
Grid Leaks, variable, mounted	0 5 6	Switches, Best 1in. Rotary Lever	0 2 6
Insulators, Green Strain	0 2 6	Series Parallel Switches	0 5 0
Insulators, Bullnose	0 1 0	Transformers, Jefferson, Audio Freq.	1 17 6
Jacks, Stromberg Carlson, No. 147	0 8 0	Transformers, Radico, Radio Freq. 150-400 Metres	0 3 0
Jacks, Stromberg Carlson, No. 148, Automatic Fil.	0 9 3	Transformers, Radico, Radio Freq. 400-700 Metres	0 3 9
Jacks, Stromberg Carlson, No. 151, Single Circuit	0 7 6	Transformers, Onteco, Audio Freq.	1 17 6
Keys, Practice	0 10 6	Valves, C 300 Detector	1 17 6
Keys, Transmitting	3 3 0	Valves, C 301 Amplifier	2 2 6
Loud Speakers, Western Electric, Jnr.	3 15 0	Valves, C 302 5-Watt Oscillator	2 10 0
Loud Speakers, Baby Brown	5 10 0	Valves, C 303 50-Watt Oscillator	7 10 0
Loud Speakers, Audiophone, Jnr.	7 7 6	Valves, Marconi R.	1 17 6
Loud Speakers, Audiophone, Snr.	13 10 0	Valves, Marconi, V-24	1 17 6
Loud Speakers, Magnavox	14 0 0	Valves, Ediswan R. Type	1 10 0
Potentiometers, Master 200 ohms	0 14 0	Valves, Mullard Ora	1 7 6
Potentiometers, Master 300 ohms	0 15 6		

Radio Co. Ltd., 15 Loftus-st., Sydney



The Filament Resistance.

Although the part which it plays in the theory of operation of a receiver is a minor one, the filament resistance is a component whose efficient performance has much to do with the ease and convenience or otherwise of the manipulation of the set.

It is not, as a rule, worth while to make one's own filament resistances, since very good ones can be purchased extremely cheaply. To ensure the purchase of a satisfac-

tory type there are a number of points to be borne in mind; besides insisting upon the presence of various desirable electrical and mechanical features, one must remember to see that the resistance is suitable for the particular use to which it will be put. For example, if it is to control the filament supply of a group of, say, three valves, it must be capable of carrying a current of two amperes without overheating, whereas if it is to control

one valve only it need not have nearly so large a current-carrying capacity, but it must have a considerably higher resistance, to give the required amount of regulation to permit of a single four-volt valve being run from a six-volt accumulator.

The other important points to note in buying a rheostat are chiefly concerned with the maintenance of a steady smooth contact on the resistance element during adjustment, since the quietness or otherwise of operation of the rheostat depends upon this feature. The moving contact-arm should press firmly but not too heavily upon the resistance wire, and it must pass smoothly and without chattering over the turns of the winding. A weak point in many resistances is the unsatisfactory nature of the connection to the contact-arm; this connection should be steady and reliable and not of the loose and erratic nature which results from the utilisation of the contact between the bearing of the spindle and the spindle itself (and hence with the moving arm).

CABLES VERSUS AERIALS.

In the U.S.A. Navy, radio has all but superseded the cable services. Regular circuits are kept in maintenance for the despatch of messages for the various ships, and there are seven main stations on the Atlantic Coast, besides a number of smaller ones. Bar Harbour, the chief of them all, receives all the official communications from Europe, which are then sent to Washington over a wire. Excepting to a few South American countries, messages are never sent via cable, and even those employ radio should a man-of-war be stationed or visiting there.

BOOKS ON WIRELESS

Radio Experimenter's Handbook. by Coursey, Price 4/10, posted.

Practical Amateur Wireless Stations by J. White, Price 4/10 posted.

Amateurs' Book of Wireless Circuit, by E. Haynes, price 3/10 posted.

Crystal Receivers for Broadcast Reception, by P. Harris, price 2/6 posted.

N.S.W. Bookstall Co., Ltd
476 George Street, City

Hints for Amateurs

When you connect up a set from a diagram, you will find it helpful to observe the following procedure:

Start at the antenna binding post and connect it to the instrument as shown in the diagram you are following. When this connection has been completed, draw over that connection on the diagram with a coloured pencil. You will then know that that connection is complete. Then from the other terminal of the same instrument connect a wire to next instrument as shown on the diagram. Cover this connection on the diagram with a coloured pencil line and do the same thing with every line on the diagram.

When all the connections are redrawn in coloured pencil you will know that you have completed hooking up your set and that it has been done correctly. This will eliminate mistakes and make the job simple.

Oscillations are induced in an antenna by passing radio waves only when the antenna circuit is tuned to the frequency of the oscillations which caused the waves to be radiated from the distant transmitting antenna. You have to tune in the signals that you desire to hear by adjusting the knobs that control the capacity or inductance in the antenna circuit of your receiver, before passing waves will cause currents to flow through your receiving instruments, thus supplying the necessary electrical energy to cause the telephones to function and reproduce the transmitted signals.

Bakelite or formica panels for radio sets, if left with the natural highly polished finish, soon become scratched and ragged. A durable satin finish may be imparted to the panel by rubbing it with sandpaper of medium coarseness—rubbing in one direction until the surface is perfectly smooth and all irregularities have disappeared. A smooth grade of sandpaper should then be used until a dull finish is obtained. This will leave the panel with a grey-green tint, but upon applying some furniture oil to the surface and rubbing dry with a soft cloth, a beautiful black colour will appear which will be permanent. Rub the panel in one direction only, with a long straight stroke.

(Continued on Page 12)



Loud Speaker and Power Amplifier
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387 GEORGE STREET (OP. STRAND). TEL. 2961 CITY.

Condenser Plates, 1/6 per doz.; Condenser Spindles, 2/0 per set; Condenser Ends, 1/9 pair; Honeycomb Coils, from 1/6; Honeycomb Mountings, 3/- each; Filament Resistances, 7/6 each; Calibrated Dials, 1/6 each; Knobs, 6d., 9d., 1/-, 2/- each; Contact Studs, 1/3 per doz.; Switcharms, from 1/6; Terminals, 6d. each; 'Phone Condensers, 1/-; Grid Condensers, 1/-; Variable Condensers, 25/-, 30/-.

Murdoch's 'Phones, 35/-; Myers' Valves, 35/-.

Catalogues, 9d. each, including wiring and other diagrams. All makes of Telephones and Valves.

Crystal Cups, 1/-; Detectors, 5/- each; Loose Couplers, 40/-;

Cabinets, Ebonite, Bakelite, and All-round Materials.

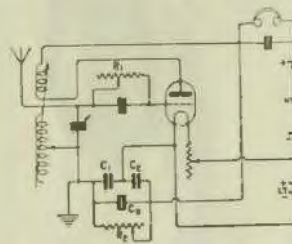
Complete Crystal Sets, from 27/6; Valve Sets from £9 to £35, 1, 2, or 3 valve; Radiotron Valves, 37/6; Vernier Rheostats, 12/6; Rheostat Knobs and Dials, Polished Bakelite, 4/-; Condenser Knobs and Dials, 4/6.

INTERVALVE TRANSFORMER, 40/-.
Closed Iron Core.

UNDER NEW MANAGEMENT.
Works Manager: Raymond McIntosh.
General Manager: J. S. Marks.
All Communications to the Firm.

Some Practical Notes on the Flewelling Circuit

Continued from Page 11.



The A.T.L. used was 70 turns of No. 18 enamelled wire on a former 3 1/4 in. in diameter, with a reaction coil of 125 turns of No. 30 D. C.C. on a 2 1/4 in. former.

The following values of the fixed condensers were used satisfactorily:

- C1 equals 0.25 MF.
- C2 equals 0.006 MF.
- C3 equals 0.006 MF.

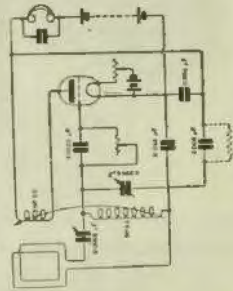
The valve which gave best results was a repaired "R."

After a few hours experimenting the results were brought up to equal what we are able to obtain on a single-valve "super," the handling being much simpler.

The adjustment of the reaction coil is rather critical, and the adjustment of the two resistances R1 and R2 very critical for best results.

The H.T. used was almost 50 volts with an "R" valve. C2 may be omitted with very little corresponding alteration of results, or C1 may be short circuited, but in this case it must be remembered that the H. T. will be leaking through R2 which must therefore be kept high.

The A.T.C. should be kept as low as possible, and therefore a slider or fine tapping switch should be used. The condenser used in the experiments has a maximum of 0.0003 F. and about 30 degrees of this decreases the efficiency quite noticeably.



When you solder connecting wires to the terminals of jacks for making connections to the telephones, it is important to keep soldering flux from running down on to the insulating segments which separate the different spring contacts.

If the flux runs down into the insulating segments it causes leakage and it is to this that many experimenters owe the trouble they have with their home-made sets.

Use only enough flux for the solder to take hold; a thin film is enough.

Another point to remember: be sure that the contacts make and break properly when you have completed the wiring of the set. Sometimes they get bent out of position slightly and do not touch properly; you may never discover it, and never get the new set to work right.


Many amateurs who build their first vacuum tube transmitting set, can get it to oscillate properly only on wave lengths that are in excess of what is allowed by the law. When they find that it is impossible to make it function properly on a lower wave length, it is natural for them to get reckless and "take a chance." They adjust it for the lowest wave on which they can radiate and let it go at that. Eventually the radio inspector pays them a visit and their license is suspended.

They could avoid all this trouble if they understood the difficulties involved and knew that a counterpoise would solve them.

When a set refuses to work on a low wave length, the cause is usually one of the following two points: the antenna resistance is too high, or the antenna capacity is too high. In the first case the antenna oscillating circuit has such a large value of resistance that it can not be induced to sustain oscillations; they are damped out. In the second case the capacity is too high and the antenna really acts as a short circuit to the vacuum tube oscillator circuits.

A counterpoise will remedy this trouble, as it will reduce both antenna resistance and capacity. At the same time it will be the equivalent of a perfect ground and it will enable you to have double radiating surface that is presented by an ordinary antenna and ground system.

For best results a counterpoise should be stretched underneath the



HIGHER INSULATION

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antenna, near the ground, but not touching it; its area should be equal to or more than the area of the antenna itself. Good results, however, may be obtained with a counterpoise consisting of another antenna just like the main antenna that runs off in some other direction and is used instead of a ground.

A counterpoise will sharpen up the tuning both for receiving and transmitting, and will, on that account, cut out a great deal of interference. When a good ground cannot be obtained, a counterpoise offers the only solution.

ETHER WAVES IN AN IGLOO.

What is probably radio's "farthest north" is reported by Mr. J. P. Henderson of a Dominion Government exploration party; at Fort MacPherson, well within the Arctic Circle, music broadcast by CFCN, at Calgary, 2,000 miles away, came in loud enough—when a loudspeaker was used—to fill a large igloo. The Esquimaux held a weird impromptu dance to this music and bestowed on W. W. Grant, the announcer at CFCN, an unpronounceable name that means "the voice from the box."

Honeycomb Coil Data.

Number of Turns on Coil.	Size of Wire, B. & S. Gauge.	Inductance in Millihenries.	Distributed Capacity of Microfarads.	Natural Wave Length in Metres.	Wave Length, with the following Shunt Condenser Capacities.			
					.001.	.0005.	.00025.	.0001.
25	24	.038	26.8	60	372	267	193	131
35	24	.076	30.8	91	528	378	277	188
50	24	.150	36.4	139	743	534	391	270
75	24	.315	38.6	179	1,007	770	560	379
100	24	.585	36.1	274	1,470	1,055	771	532
150	24	1.29	21.3	313	2,160	1,546	1,110	746
200	25	2.27	18.9	391	2,870	2,050	1,470	980
250	25	4.20	22.9	585	3,910	2,800	2,020	1,355
300	25	6.60	19.0	669	4,900	3,490	2,510	1,679
400	25	10.5	17.4	806	6,160	4,400	3,160	2,095
500	25	18.0	17.3	1,052	8,070	5,750	4,140	2,740
600	28	37.5	19.2	1,600	11,600	8,300	5,980	3,980
750	28	49.0	18.3	1,785	13,300	9,500	6,930	4,540
1,000	28	85.3	16.8	2,260	17,600	12,500	9,000	5,950
1,250	28	112.0	15.5	2,490	20,100	14,300	10,250	6,780

THE MOST POWERFUL RADIO STATION AFLOAT.

When the U.S.S. Leviathan is put into operation by the United States Shipping Board it will not only be the largest vessel to fly the Yankee

flag, but it will carry the most powerful and the most complete radio outfit ever placed on a ship. In addition to its regular telegraph apparatus consisting of a vacuum tube set capable of delivering six times as much power to the antenna as the usual ship outfit and able to maintain communication at a distance of 3,000 miles, it will be equipped with radio telephone and with two emergency sets.

HONEYCOMB COIL DATA.

The accompanying table lists the common sizes of honeycomb coils, by specifying the number of turns of wire in the coil. Such coils are generally made up with an inside diameter of 2 inches, a width of 1 inch, and an outside diameter varying from 2 1/4 inches to 4 1/4 inches, depending on the number of turns. All of the inductance and capacity values in this table are subject to some variation due to differences in design and construction by various manufacturers. A commercial condenser of maximum capacity of .001 microfarad generally has a minimum capacity close to .0001 microfarad, hence the wave length values under these two column headings represent approximately the wave length range which may be obtained by this coil and a .001 condenser combination in practice. It is better to use a condenser and a wave length higher than the natural one of the coil, as best results can then be obtained, and tuning is possible to other wave lengths.

De Forest

Ask your Radio Dealer to show you DE FOREST Radio Apparatus, the Standard of the World.

BRANDES' RECEIVERS are guaranteed the best made. Buy a pair; if you are not satisfied your money will be refunded in full.

Radion, Panels, Knobs and Dials.

If your Radio Dealer has not these lines to show you, write to us for Catalogue and Price List.

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ANOTHER HIGH AWARD IN SCIENCE GOES TO AN INVENTOR OF RADIO APPARATUS.

The Franklin Institute of Philadelphia has awarded the Elliott Cresson Medal to Dr. Lee De Forest for his invention of the audion or three electrode vacuum tube. The committee report on which the award was based, characterised the invention of the audion tube as "one of the most important ever made in the field of electrical transmission of intelligence."

WHO WILL OPEN THE BALL?

A blind man in South Dakota sent a touching appeal to the U.S.A. Department of Commerce for a receiving set, as he had been given to understand that some free ones were available for those afflicted like himself. He had, of course, been misinformed, but the Government authorities considered the matter, and are doing all they can to get private parties interested in starting a fund for this purpose. We pass along the very creditable suggestion for your consideration. Blind folk are so much cut off from much that makes life pleasant, and a radio set can and does relieve the tedium of their existence greatly. Radio clubs might spend some of their time at meetings in constructing inexpensive sets, to be later distributed where they are most needed. The making of a set is usually a thoroughly enjoyable task to the enthusiast, but the question of the license would need consideration.

BROADCASTING FROM ZION.

In Illinois dwells one Voliva, who has proved to his own satisfaction that the world is not round but flat. Wishing to let everybody in on this, he will expound his theories on this subject and others, such as fixed stars, etc., from the new plant erected on a hill near Zion tabernacle, Illinois. Two steel towers have been built there (serving as antennae towers), and are two hundred and thirty feet above the level of Zion Lake. Just below the antenna a compact building contains reception room, generating room, operating room, and studio. The installation broadcasts on a 400-metre wave length, and already heated arguments for and against Voliva have taken place.

VICTORIAN NOTES.

By our Special Correspondent

Over 70 experimenters gathered together at the 3rd general meeting of the St. Kilda Section, and if the attendance improves at the present rate St. Kilda will lead among the suburban clubs.

The President (Mr. B. A. Hull) who has been using Reflex Amplification for three years or more delivered a lecture on this subject, giving many circuits and demonstrating the use of same. Mr. Hull described a three-valve receiver employing the Grimes circuit and many other refinements resulting from practical work. After completing adjustments of a 5-valve loop receiver (assembled for the occasion by Messrs. Hiam and Hull) Mr. Hull left for his own station (3JU) and Mr. Short gave a lecture on the construction on a short wave crystal receiver, utilising a spider web variometer. As soon as this lecture was completed the loop set was switched on and with the aid of Magnavox a number of musical items transmitted by Mr. Hull were loudly received. Despite the fact that only a small 4 foot loop was utilised the signals were audible some hundreds of yards along the street outside. This loop set when being tested out on the previous evening received loud speech and music from Sydney experimental stations.

Mr. Hiam then delivered a lecture on inductances and described with the aid of exhibits the design and construction of all the types of inductances in use today.

At the close of the meeting those present were unanimous in declaring that they had spent an exceedingly interesting and instructive evening.

The Brighton District are shortly holding a dance in aid of section funds, and part of the music will be

supplied by radio. This is distinctly a modern fashion of raising funds, and good results are anticipated.

The latest radiophone station to be heard nightly is that of Mr. Hobart Duff, of Mulvena. The modulation of Mr. Duff's transmissions are excellent and this gentleman is to be commended in setting a standard for radiophone conversation, the existing standard—by the way—certainly requires elevating. Owing to the "ether hogging" going on at night—certain stations giving performances lasting for a considerable time—genius experimenting is quite out of the question. There should be a law also prohibiting an experimenter from crying "Hullo" more than fifty times in succession. The use of the radiophone is rapidly developing into a kind of musical dog-fight where the chap with the most power wins. Also some of the conversation is positively infantile in its tenacity and a night's listening in would convince any normal person that some of the operators are very, very young. It is to be hoped that the Relay League will cure some of the existing evils.

Messrs. Hull and Holst are obtaining much success with their duplex radiophone work. These gentlemen carry on two conversations for quite long periods without a hitch and this experiment shows definitely the commercial use to which the radiophone could be put were retrogressive methods in commercial circles.

A meeting of the Association for the development of Wireless in Australia, will be held shortly at Monzies' Hotel, and a fair attendance will be held shortly.

RADIO IN THE HOME OF THE BUCCANEERS.

One of the last parts of the world to remain in primitive isolation will be connected to civilisation when a radio station is set up which will enable the Turks and Caicos Isles, chiefly known as the ancient haunts of the pirates, to communicate with the other islands of the West Indies.

WANTED to Exchange a 3-Valve Receiving Set, complete, as part payment for a Harley Motor Bike and Side-car. Demonstration of set can be given at any time. Apply "Wireless Weekly."

SMART LAD required for city wireless shop. Must be a keen experimenter; one just left school preferred. Good opportunity for right boy. Apply "Wireless Weekly."

FOR SALE—Three Valve Wireless Receiving Set. Apply Box 2234, G.P.O., or City 9148.



CROYDON RADIO CLUB.

Report of Meeting held on Saturday, the 11th August, at the Club Rooms, "Rockleigh," Lang Street, Croydon.

A discussion took place on the new regulations and their bearing on experimenters.

Mr. C. Luckman gave an interesting account of what took place at the meeting held at the Royal Society's Rooms, where Mr. Malone addressed Club officials.

Members had their usual buzzer practice, after which Mr. Malcolm Perry gave a very interesting talk on general wireless, the most interesting of which was his subject:—"Avenues of Research for the Experimenter." The chief points on which Mr. Perry gave hints on were:

The aerial.—Different types and their various advantages.

Apparatus.—Isolated apparatus was thought best. If apparatus is in panel form, the speed of experimenters is greatly hampered, but if a test table is used with different units on it and a row of terminals—Earth and Aerial along top and bottom, H.T. and L.T. on each side with some 22-silk covered wire to make connections speedy experimenting is facilitated.

Crystals.—Their advantages were pointed out.

Telephones.—It was advised to experiment with various diaphragms and to endeavour to eliminate distortion in loud speakers.

Tuning Elements.—There is not much room for experiment in method of winding but many experiments could be conducted with coupling.

Valves.—These were considered too expensive for the average experimenter to use for experiments.

Directional Wireless.—The lecturer pointed out that there is a large scope for experiments in this direction; he also pointed out the wonderful possibilities and advantages of Directional Wireless, and regretted that more work was not done in this sphere.

Elimination of Statives.—He sug-

gested that experiments should be done in this direction, and in order to do this the experimenter should make a device which would constantly throw statives into the telephone receiver. This would give the experimenter continuous static signals with which he could experiment ad lib.

At the conclusion of his lecture, Mr. Perry was heartily applauded by the members.

The club meets every Saturday, and all communications should be addressed to the Hon. Sec., G. Maxwell Cutts, "Carwell," Highbury Street, Croydon.

MARRICKVILLE AND DISTRICT RADIO CLUB.

The above club met in their Club-room at the School of Arts, Illawarra Road, Marrickville, on Monday, 13th inst., at 8 p.m., President Hamilton occupying the chair.

The business of the evening was quickly disposed of and the chairman called on Mr. E. Basil Cooke to deliver his lecture on "Resonance."

Mr. Cooke, on taking the floor, expressed his pleasure in meeting the members of this club in which he had taken an interest since it was

To bring in
Good Music
and Speech

You require a Variable
Condenser in your Set

It is no trouble to make one
with our Complete Set of Parts

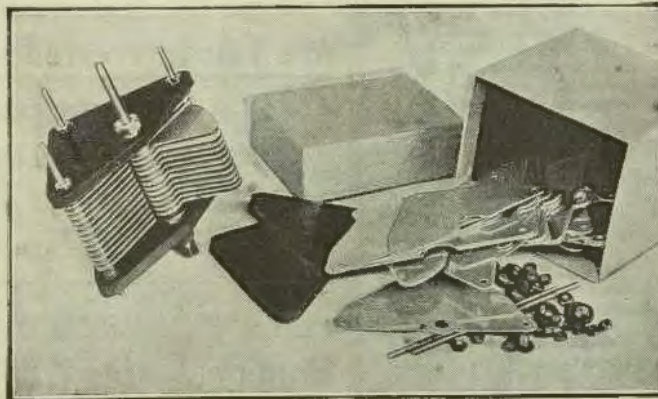
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- 17 Plate Set—,0005 M.F. 12/3
- 25 Plate Set—,0008 M.F. 15/6
- 35 Plate Set—,001 M.F. 18/6



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and KNOB to fit
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incepted. The principles of Resonance he explained and demonstrated with the aid of a few appliances which he had brought along for the occasion. Many little difficulties in the minds of those present were thus explained away and at the end of an hour, Mr. Cooke had added more education to the minds of local experimenters.

At the end of his lecture, Mr. Cooke answered many questions in a very satisfactory manner.

A hearty vote of thanks was tendered the lecturer for his attendance and very able lecture; refreshments were indulged in and after announcing that Mr. Wallace Best would deliver a lecture on "Inductance and Capacity" on the following Monday, 29th inst., the Chairman closed the meeting.

THE FIRST AUTHENTIC SIGNALS FROM AMERICA.

Confirmation is given in the following letter of signals received by 2CM, Strathfield, on April 25, 1923:

C. D. MacLurean,
9-13 Brisbane St.,
Sydney, Australia.

Many thanks for your letter on my signals. Please excuse my delay in writing you. I have been very busy with my set.

The transmitter used when you heard me was a one tube 50 watt set with 1,100 volts rectified a.c. on the plate employing a modified Hartly circuit. The aerial is a "T" cage 70 feet long and 80 feet high. The ground system is a 10 wire flat top "T" type counterpoise ground 15 feet high and 75 feet long. The antenna current at this station is 7.5 thermo-coupled amps.

Your report corresponds exactly to my log. I believe that you should advise the radio magazines such as "Radio" and "Q.S.T.," two amateur magazines, as much of the credit is due to your wonderful reception.

These magazines are always glad to get a report like yours. Their addresses are, for "Radio" (Pacific Radio Publishing Co., Inc., Pacific Building, San Francisco, Calif.) and for "Q.S.T." (The American Radio Relay League, Inc., Hartford, Conn.)

My best distance before I received your letter was New Zealand, Hawaii, Alaska, Panama, Mexico, Canada, Cuba, numerous boats at sea and all of the United States worked. I will be on the air again next fall and winter with a 300

FILAMENT BATTERIES

AT PRICES WITHIN REACH OF ALL

FULLER BLOCK ACCUMULATORS

2 VOLT UNITS—CAPACITY 10-15 AH

Price **5/-** PER CELL

2 CELLS 10/- 3 CELLS 15/-
4 VOLTS 6 VOLTS

These Batteries are of Reliable Construction, and are Mounted in Ebonite Composition Cases

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RADIO & ELECTRICAL ENGINEERS.



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JUST ARRIVED

Lucifer Plug Dynamo and Lamp Combined

45/- each

WILL RUN OFF TYRE OR RIM. WILL LAST FOR EVER.
GIVES A GOOD LIGHT FOR FOUR MILES PER HOUR

Battery Cutfits LEATHER CASE . . . LAMP AND WIRING **18/- each**

WILL LAST THREE MONTHS
OUR CHARGE. SPARE REFILLS 3/- EACH

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watt set with a new aerial, etc., and will appreciate it if you will drop me a few lines if you hear me again.

Sincerely yours,
(Sgd) K. L. Riedman,
CCGW.

P.S.—I am enclosing one of my station cards. My call has been changed from 6IF to 6CGW.
243 Euclid Avenue,
Long Beach, Calif.,
July 1, 1923.

LEICHHARDT AND DISTRICT RADIO SOCIETY.

On Tuesday, August 14th, members of the Leichhardt and District Radio Society, instead of holding their usual weekly meeting in the Club-room, paid a visit to the experimental transmitting station belonging to Amalgamated Wireless (Australia) Ltd., and spent a very pleasant and enjoyable evening. The usual Tuesday night test was conducted in their presence, and members found innumerable matters of interest and instruction to engage their attention. The officers of the Company who were in charge of the test treated their visitors with every consideration, and were kept busy replying to questions and supplying members with information about this, that, and the other. At the conclusion of the test, listeners in were given a short address by Mr. R. C. Caldwell, a Councillor of the Society.

Before dispersing for the evening a vote of thanks was accorded the officers of the Company for their hospitality to members, and Mr. G. Apperley, in responding, stressed the point that his company was, at all times, anxious to assist genuine experimenters in every way possible, a sentiment which was applauded by all present.

On Thursday, August 30th, the Society will conduct a demonstration in conjunction with the Druids' Lodge, which body is holding a benefit performance at the Annandale Theatre in aid of one of its members. A successful evening is anticipated.

At the meeting to be held at the Club-room, 176 Johnston St., Annandale, on Tuesday, September 11th an illustrated lecture will be delivered by Mr. G. Apperley. The meeting to be held on September 4 will be a business one.

Inquiries relative to the activities of the Society are welcomed, and should be addressed to the Hon. Secretary, Mr. W. J. Zech, 145 Booth St., Annandale.

NEW RADIO CLUB AT LINDFIELD.

On Wednesday evening, August 15, wireless experimenters of Lindfield were brought together and a club known as the Lindfield Radio Club was formed.

Preliminary business only was dealt with but about 20 members were enrolled and in order to finalise the actual formal procedure of the club's formation another meeting will be held next Wednesday, 29th inst., at 7.45 p.m. at "Rosemont," Walseley Rd., Lindfield. All experimenters are specially invited to attend.

Communications relative to the club should be addressed to the Hon. Sec., Lindfield Radio Club, at the above address.

Mr. A. J. M. Gourlay was elected chairman, and Mr. R. A. Pfeffer, treasurer.

NEW USE FOR HOWLING VALVES.

RECEIVING NEW ZEALAND C.W. WITH SET NOT OSCILLATING.

Owing to the local howling valves, Mr. C. A. Gorman was unable to receive the New Zealand Test Signals a few nights ago.

By using howling valves as a separate heterodyne he was enabled to copy the whole of C.W. from 3A.C., Christchurch Radio Society, New Zealand, his own set not being in a state of oscillation.

REGENERATION.

Hear the little dicky bird,
Calling for its mate,
With its variometer
Whistling in its plate,
How I love the dicky bird
And its plaintive lay,
For it says my neighbour is
Hunting for a wave;
Hunting far away, lads,
Scorning local stuff,
For the best at home here,
Isn't good enough.
So the little dicky bird,
Is calling for its mate,
With its variometer
Whistling in its plate.

ILLAWARRA RADIO CLUB.

At the 28th meeting of the Club held on 31st July in the absence of a lecture, the members indulged in some keen and lively discussion on club matters generally, particularly concerning future policy and meetings. It was thought that in order to make the general fortnightly meetings of greater interest and appeal, business matters at general meetings should be reduced to a minimum, by having all business conducted in Committee, and leaving the evening on general meet-

Ramsay Radio Supplies

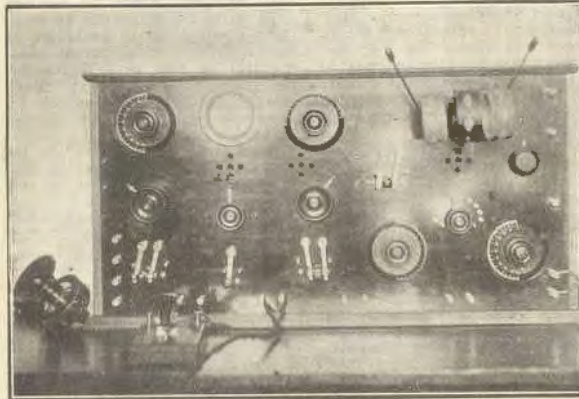
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2 F A



Front view of Mrs. V. Colville's Combined Receiver and Transmitter to be used for Relay Work.

ing nights free for matters of a practical wireless nature.

All members joined heartily in the discussion, and many valuable suggestions were made, which should prove very useful to the committee in arranging their plan of campaign for the future. A meeting of all committees and officers has been called for an early date, when the whole matter will be fully gone into, with a view to laying down a practical working basis for future activities, and providing more attractive programmes for the meetings, for the benefit of the members as a whole. The question of getting the club's receiving and transmitting sets into proper order, will also receive attention at the hands of the technical committee.

The next meeting of the Club will be held on Tuesday, 14th August, at 8 p.m., when there will probably be a lecture and some announcements to be made. All members are invited to attend.

The Hon. Secretary, Mr. W. D. Graham, 44 Cameron St., Rockdale, would be pleased to hear from any person interested or desirous of becoming a member of the club.

IN GRATEFUL RECOGNITION.

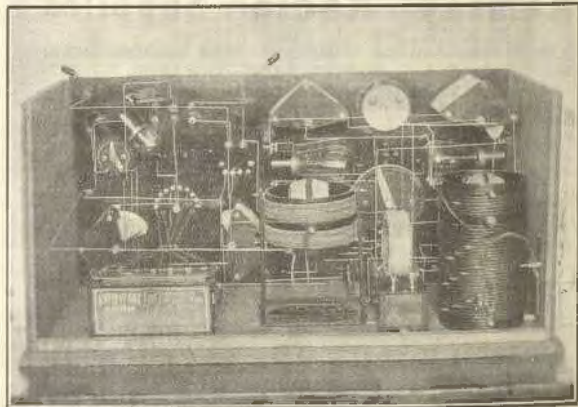
As a token of appreciation of radio and those immediately concerned with it at sea, the three operators of the s.s. City of Valencia have each received a pair of Zeiss prism binoculars. Their vessel was instrumental in saving eight hundred passengers and the crew of the

Hamburg-American liner Hammonia, which foundered off Spain. Several other ships answered the wireless signals of distress, and radio was also responsible for the concerted fashion in which the rescuers went about their work. The German Government and the Hamburg-American line singled out the wireless operators on board each vessel for awards.

NO MORE RADIO TIPS.

Amendments made in a new Bill introduced into the Ontario Legislature by Attorney-General, Hon. W. E. Ramey, cover and prohibit any bets, odds, prices, or other racing information spread by radio. Distributing news of this sort via the ether is to be made illegal. Radio has not until now been named in the Canadian criminal code; for when Gouin's federal legislation on betting on horse-races was brought into the Dominion Parliament, the Bill named only telegraph, telephone, rail or express, as forbidden means of sending information. A section of the Criminal Code will have to be amended that radio also may be included.

Do not "test" any kind of a battery by "shorting" it with a pair of pliers or a wire, as this injures it. The best way is to use a voltmeter across the battery while it is discharging at its normal rate.



Back view of Mrs. V. Colville's Set, showing Wiring.

August 24, 1923.

WIRELESS WEEKLY

19

FIRST AID FROM AFAR.

When the cook of the U.S. Shipping Board vessel Elkhorn had a nasty accident during a storm it was found that there was no ship's doctor on board that voyage. The freighter at once sent an S.O.S. through the ether to any ship's surgeon, and two on board the s.s. American got into communication. Pulse, temperature and description of a bad thigh wound were radioed, and instructions soon came through for the proper treatment. The s.s. American was travelling the same way as the Elkhorn, but at a much greater speed, and there was no chance of the freighter catching up. So, as an operation was essential, the ship's mates were instructed by radio how to proceed with it. They were not overjoyed, but eventually the first officer performed the job with a sterilised razor, whilst the patient was given a laudanum as an anaesthetic. Despite "unskilled labour" the operation was quite successful, and the man recovered rapidly.

OUTSIDE THE LAW.

Radio has fallen into disgrace with the Prohibition folk, for it has shamelessly joined hands with the bootleggers. Somewhere in Canada, over the boundary line and well hidden away, is a very powerful transmitting station. Also in many towns and cities are concealed sensitive receiving stations. Both are part of a "ring," the sending station being headquarters, and instead of using the telephone as formerly, the illicit purveyors of liquor (it is rum in this case) report by radio direct. Time and location are signalled as soon as the "runner" has paid for his protection, and then broadcasted at once, so that it is possible for him to get through without any hitch by travelling as per radio schedule.

Dr. E. Porter Felt, the State entomologist of New York, points out that there is a marked resemblance between the antennas of insects and the solenoid or loop antenna used with radio. He has received successfully, using an antenna patterned carefully after that of the gall midge. While it is probable that these antennas are designed for the reception of sounds too minute to be audible to the human ear, it is within the bounds of possibility that insects actually do communicate by radio.

Amateur Receiving Stations

AMATEUR WIRELESS LICENSES: NEW SOUTH WALES.

Wireless Licences for experimental purposes have been issued during the month of May, 1923, to the following:—

Nature of Licence.	Name.	Address.
C	Adams, G. S. E.	Anzac Avenue, Wyong. R.
C	Davies, L. C.	449 Glebe Point Rd., Glebe Point. R.
C	Maekenzie, H. O.	67 Prospect Road, Summer Hill. R.
C	Dibbs, K. E.	26 Wunda Road, Mosman. R.
C	Pearsall, A.	512 Macauley St., Albury. R.
C	Franklin, A. A.	22 Newington Rd., Marrickville. R.
C	Harrison, G. A.	Cross St., Guildford. E.
C	Cutting, R.	Canara Rd., Vaucluse, Sydney. R.
C	Sneddon, R. N.	250 Burwood Rd., Burwood. R.
C	Menniss, G.	186 Palmer St., Darlinghurst, Sydney. R.
C	Lucas, G. F. H.	12a Culdees Rd., Enfield. R.
C	Mitchell, T. W.	10 Wentworth St., Sydney. R.
C	Pile, R. N.	Bull's Rd., St. John's Park. E.
C	Robinson, V. J.	"Loloma," Wyuna Rd., Point Piper. R.
C	Robertson, W.	Albyn Rd., Strathfield. R.
C	Purkis, R. H.	59 Darley Rd., Randwick. R.
C	Kenworthy, L.	C/o K. C. Miller, Farm 187, Leeton. R.
C	Woods, J. H.	Esplanade, Marmong Pt., Lake Macquarie. R.
C	Turner, A. W.	"Passifera," Roslyn Ave., Roseville. R.
C	Cocksey, T. K.	"Chissold," Calypso Ave., Mosman. R.
C	Phillips, P. H.	186 Holden St., Ashfield South. R.
C	Page, J. W.	16 Orpington St., Ashfield. R.
C	Baker, H. A.	51 Trafalgar St., Stanmore. R.
C	Bourne, G. L. B.	58 Canonbury Grove, Dulwich Hill. R.
C	Clark, F. P. R.	"Winona," Lauderdale Ave., Manly. R.
C	Chislett, A. B.	"Allawah," 13 Oak St., Ashfield. R.
C	Filby, V. F.	"Leura," Banks St., Parramatta. R.
C	Kable, C. F. P.	"Irvine," Tulloh St., Willoughby. R.
C	Peek, T. B.	64 Miles, Gunnedah Rd., Tamworth. R.
C	Pullen, H. W. T.	"East Anglia," Young St., Wahroonga. R.
C	Brent, R. H.	"Frognot," Copeland Rd., Beecroft. R.
C	Tucker, S. L.	490 Illawarra Rd., Marrickville. R.
C	Grogan, J.	Canberra St., Canterbury. R.
C	Mackay, J. M.	18 Wilga St., Burwood. R.
C	Binstead, H. E.	10 Murray St., Croydon. R.
EV	Laxton, R. L.	"Ardara," Greenhills St., Croydon. R.
C	Parker, E. N.	200 Queen St., Ashfield. R.
EV	Gibbons, T. G. G.	Sutton Forest. R.
C	Burrell, A. A.	308 Victoria Ave., Chatswood. R.
C	Chandler, R.	4 Albemarle St., Newtown. R.
C	Trenouth, S.	130 Corunna Rd., Stanmore. R.
C	Essex, T. B. E.	35 Barden St., Arncliffe. R.
C	Grice, E.	"Wenford," Rosedale Rd., Gordon. R.
C	Cummins, F. E.	Grantham Rd., Plumpton. R.
C	Carter, C. H.	Prince Edward St., Long Bay. R.
C	Forrest, E.	Hill St., Campsie. R.
C	Ardill, H. P.	Cowan Rd., Mount Colah. R.
C	Henry, A. E.	Campsie St., Campsie. R.
V	Adam, J.	Pennant Hills Rd., Normanhurst. R.
V	Cunes, L. A. C.	31 Oak St., Ashfield. R.
V	Gibbs, J.	Pine St., Hay. R.
V	Holton, C. J. P.	24 Hurton St., North Sydney. R.
V	St. Stanislaus' College (Rev. G. A. Templeton)	Bathurst. R.
C	Round, G. W.	629 Military Rd., Mosman. R.
C	Rohmer, H. G. L.	55 Salisbury Rd., Stanmore. R.

Nature of Licence.	Name.	Address.	<i>Ships You Should Hear.</i>
C	Macaulay, A. E.	Woolooware Rd., Cronulla. R.	Melusina CGT
C	Lewis, S. N.	Crinan St., Hurstville. R.	Merriwa VKB
C	Chilton, F. O.	Chilton Ave., Wahroonga. R.	Milluna VKC
C	Fischer, C. H.	6 Woid's Ave., Hurstville. R.	Mindini VJY
C	Fleming, W. S.	Fernhill St., Hurstville. R.	Moirá VKL
C	Ramsay, P. W.	The Mall, Leura. R.	Monara VKL
C	Mills, A. G.	12 Railway Parade, Burwood. R.	Montoro VIT
C	Humphery, R.	Pittwater Rd., North Ryde. R.	Moorabool YER
C	Holland, W. B.	4 Bridge St., Sydney. R.	Moreton Bay VZBR
C	Davis, L. E.	42 Constitution Rd., Dulwich Hill. R.	Morinda YJF
C	Cowan, J.	87 William St., Redfern. R.	Nairana YHP
C	Larsen, J. G.	Erie St., Northbridge. R.	Nardoo VZL
C	Logan, J. Mc.	Lane Cove Rd., Pymble. R.	Navy Office VKX
C	Wetton, E. J.	Concord Rd., Concord. R.	Omana VZBN
C	Jacobs, N.	80 Mount St., Coogee. R.	Oona VJN
C	Sanderson, T.	Ferdinand St., Hunter's Hill. E.	Oonah VXA
C	Slight, A. A. B.	Morton St., Parramatta. R.	Parattah VBU
C	Sharpe, J. A.	Hereford St., Stockton. E.	Parramatta GABS
C	O'Leary, J. J.	Westworth Falls. R.	Period YXC
C	Lincoln, T. S.	Hercules St., Chatswood. R.	Platypus GABT
C	Andrew, J.	17 Westbourne St., Petersham. R.	Poolta VZBL
C	New Systems Tele-phones (R. Allsop)	280 Castlereagh St., Sydney. R.	Port Stevens Base VRE
C	New Systems Tele-phones (J. Carroll)	37 Milson Rd., Cremorne. R.	Protector GABV
C	Morrison, A.	New South Head Rd., Vaucluse. E.	Riverina VJA
C	Hokin, E.	64 Arthur St., Ashfield. E.	Rona VQX
C	Dixon, N. H.	11 Sloane St., Summer Hill. E.	Saros VKU
C	Day, G. M.	128 Catherine St., Leichhardt. R.	Stalwart GABW
C	Watts, A. J.	Elbow St., West Kempsey. R.	St. George CCQ
C	Wilkinson, F. D.	8 Stanton Rd., Haberfield. R.	Submarine J1 GABX
C	Bagot, E. M.	Blue St., North Sydney. R.	Submarine J2 GABY
C	Bevan, F. M.	98 Penshurst St., Willoughby. R.	Submarine J3 GABZ
C	Clyde, E. H.	Bigge St., Liverpool. R.	Submarine J4 GACB
C	Carter, J. D.	29 Collingwood St., Drummoyne. R.	Submarine J5 GACD
C	Bach, A. O.	52 Allen St., Leichhardt. R.	Submarine J7 GACF
C	Blakey, F. P.	49 Toxteth Rd., Glebe Point. R.	Success GACH
C	Milne, L. R.	Albert St., Hornsby. R.	Suva YJI
C	McLeod, B. J.	Hillcrest St., Homebush. R.	Swan GACJ
C	Moginie, C.	East Crescent Rd., McMahon's Point. R.	Swordsman GACK
C	Lawson, —	Hillcrest Ave., Ashfield. R.	Sydney GACL
C	Mitchell, A. E.	High St., Penrith. R.	Talawa VXP
C	Williams, H.	Junior Technical School, Leichhardt. R.	Tareola VKN
C	Styles, E. G.	47 Merrylands Rd., Merrylands. R.	Tasmania GACM
C	Gillon, W. A.	Car. Rawson & Allworth Sts., Kurri Kurri. R.	Tattoo GACN
C	Lowry, R. B.	"Dargle," Lower Portland, via Windsor. R.	Time VIK
C	Kind, U. F.	145 Brougham St., Darlinghurst. R.	Taromeo CCL
C	Newton, C. T.	11 Abbotsford Parade, Abbotsford. R.	Torrans GACP
C	Burgess, H.	182 Windsor St., Paddington. R.	Ulimuroa VHY
C	Chambers, T. M.	48 Church St., Mayfield, near Newcastle. R.	Una GACQ
C	Dodds, J. O.	Dudley St., Lidcombe. R.	Urilla VZU
C	Jones, G. E.	Archer St., Chatswood. E.	Victoria VHX
C	Hatchman, E. W.	32 Gray St., Kogarah. E.	Warrego GACR
C	Harwood, C. A.	61 Broughton Rd., Artarmon. R.	Warspray VZBQ
C	Holt, H. F.	"Denver," Ranger's Ave., Mosman. R.	Wear VKG
C	Harrington, J.	Warrigal St., Turrumurra. R.	Werribee VJL
C	Breen, Bro. E.	Sacred Heart Monastery, Kensington. R.	Westralia VJB
C	Candle, W.	38 Baker St., Enfield. E.	Wodonga VIK
C	Cutts, G. M.	Highbury St., Croydon. R.	Woolgar VKM
C	Abel, A. T.	88 Villiers St., Rockdale. E.	Wyandra VDW
C	Campbell, E. C.	C/o Mr. W. H. Mackrell, Kyogle. E.	
C	Thomas, E. A.	185 Elswick St., Leichhardt. R.	
C	Wiseman, J. E.	2 High St., Carlton. R.	
C	Davis, H. H.	Torrington Rd., Strathfield. E.	
C	Walters, A. E.	35 Park Rd., Hurstville. E.	
C	Ferguson, D. K.	114 Albany Rd., Stanmore. E.	

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August 24, 1923.

WIRELESS WEEKLY



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