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OFFICIAL ORGAN OF THE AUSTRALASIAN RADIO RELAY LEAGUE.

Vol. 3.

February 1, 1924.

No. 17

The Iniquitous Sealed Set

Owing to the present regulations of the "sealed set," the public have not taken Radio seriously. Now there is every possibility of the regulations being altered to allow the public to hear more than one service, and also to listen to experimental transmissions, and long distance stations. Until this is brought about it is foolishness to buy a wireless set (unless, of course, an experimental license is obtained, which allows the holder to listen in to everything in the ether).

The Government's duty is to look after the public interest, and as regulations have been in force for six months which do not cater for the public, this fact is amply demon-

strated by the public's refusal to purchase sets.

The regulations must be altered and quickly too, or the Radio industry in Australia will die.

The sealed set has had a fair trial and has proved an iniquitous restriction.

The proof of the pudding is in the eating, the proof of the failure of the sealed set to justify its existence is the dissatisfaction of the users.

The sealed set is an attempt to create a monopoly and stifle competition.

THE SEALED SET MUST GO.

Roster for Week ending 6th February, 1924

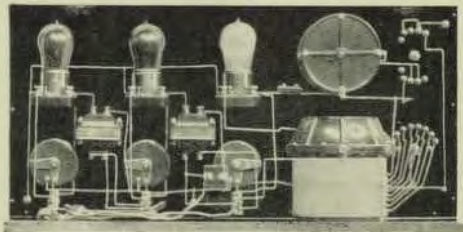
	7.30 to 8.0	8.0 to 8.30	8.30 to 9.0	9 to 9.30	9.30 to 10
Thur, Jan. 31	2 RA 2 GR	2 IJ 2 UW	ZG	2 YI 2 JM 2 ZN	2 YI
Friday, Feb. 1	2 IJ 2 GR	DS2 ..	..	2 ZN 2 JM	..
Saturday, .. 2	2 RA 2 GR	2 IJ ..	..	2 JM 2 ZN	..
Sunday, 3	2 RA 2 GR	2 DS ..	..	2 JM ..	..
Mon., 4	2 RA 2 GR	2 IJ ..	..	" JM "	..
Tues., 5	2 IJ ..	2 DS ..	..	2 JM 2 ZN	..
Wednes., ... 6	2 RA 2 GR	2 IJ ..	2 VX	2 JM	..

WIRELESS WEEKLY CUP COMPETITION

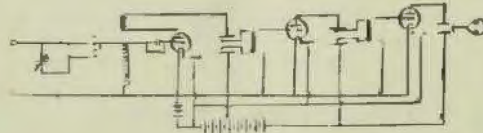
EXAMPLE SET



1. Completed Set



2. Interior of Set



3. Circuit Diagram

THREE VALVE EXPERIMENTAL SET.

This set consists of 24 x 12 Bakelite Panel; a variocoupler, with a wave length range from 200 to 1500 metres; a .001 mfd. variable condenser, with vernier adjustment; series parallel switch, switch and studs for varying the wave length; one 6 ohm. rheostat, and two 30 ohm. rheostats; jacks and plugs to enable the use of one, two or three valves; 2 Jefferson transformers; one UV-200 radiotron valve and two UV-201A radiotron valves; 3 hezels, set in panel; 2-40v. Ever-ready high tension batteries are placed inside cabinet, the connection being made with flex and Morse clips; all insulation throughout is of the best Bakelite.

COUNTRY COMPETITORS

Reports from Radio Clubs and dealers in Wireless Apparatus indicate that several sets for the Wireless Weekly Cup Competition are in course of construction. Enquiries from a number of places in Victoria and N.S.W. have been received. Country radio enthusiasts appear to have made an early start. The closing date for entries will be announced later.

Intending competitors will be well advised to send their nominations early.

Photos. of sets should be printed on glossy paper and the diagrams of the circuit should be drawn in ink. The circuit of the set must be shown.

The diagrams need not be elaborate, but should show clearly the wiring and all necessary details.

What is Required.

Competitors are required to submit:

1. One photo, not less than 4in. by 3in., showing the set complete.
2. One photo, not less than 4in. by 3in., showing the wiring of the set.
3. An ink diagram not less than 4in. by 3in., showing the circuit and wiring.
4. A small paragraph of not more than 100 words describing the set.

5. The nomination form shown below, witnessed by a member of the committee of a radio club or any trader advertising in Wireless Weekly, or a local J.P.

6. Entries should be addressed to the Editor, Wireless Weekly, 33 Regent St., Sydney, N.S.W., and marked "Wireless Weekly Cup Competition" in the bottom left hand corner.

Queries.

Crystal (Croydon): You are an amateur for the purpose of this competition.

C.Y.M. (Kew, Vic.): Any of our advertisers will supply you with a list of parts required.

Sparks (Geelong, Vic.): Any trader will advise you of the method of construction.

A.W.L. (Nyngan): The date will be published later.

Q.R.M. (Killara): Yes, from any trader.

NOMINATION FORM

I _____ of _____

_____ desire

to enter my _____ set in

Wireless Weekly Cup Competition. I agree to abide by the conditions set down by the proprietors, and I solemnly declare that I am a wireless amateur as defined in page 2 of W.W. No. 15, Vol. 3, of January 18, 1924.

(Signed) _____

Witness _____

WIRELESS TRAGEDY

Special Appeal to Experimenters

A Fund Inaugurated

Hardly any wireless experimenters have not heard of the unfortunate accident which occurred during last week, and which resulted in one of the States' keenest wireless experimenters losing his life.

The fatality was all the more distressing owing to the fact that it was witnessed by his wife who was at his side during the carrying out of the tests, and almost within the hearing of his little daughter, who, in a childish way, always worked with her father.

It will be remembered that Mr. Moore, who was known to one and all not only on account of his interest in the science but also through his position as engineer to the United Distributing Company, was carrying out certain transmission experiments at his home at Haberfield. While handling a transformer which was in action he came in contact with portion of the circuit in which current a high voltage was being handled and was electrocuted.

Through the unfortunate tragedy, Australia has lost one of its keenest experimenters and also one of its pioneers of the wireless movement.

Had the accident merely affected Mr. Moore himself it would have been tragical; but the fact that a widow and two little ones have been left to suffer makes it a great deal worse.

The hearts of all experimenters will go out to those who have suffered the loss of a husband and a father, but *something more than abstract sympathy is wanted.*

Practical help is needed by those left behind and it is the duty of every experimenter to assist in a practical manner.



The Late Mr. F. L. Moore

"Wireless Weekly" has decided to inaugurate a fund to help the dependents of the late Mr. Moore and its management feels sure that amateurs as a whole will rise splendidly to the occasion and give and give again.

No amount need be considered too small. Whatever your donation may

be, forward it without delay to the Editor of Wireless Weekly.

All amounts will be acknowledged through the columns of Wireless Weekly.

A board of trustees consisting of three experimenters known to most wireless enthusiasts, Messrs. F. Basil Cooke, Phil Renshaw and J. W. Robinson, has been appointed. These three gentlemen have agreed to handle the money and to see that it is properly disbursed.

Let us have your donation without delay. When you read this appeal do not decide that you will give something and then forget about it.

Send your little bit along at once to Wireless Weekly, Box 378 G.P.O., Sydney.

Contributions to date:

Proprietors Wireless Weekly	£5 0 0
United Distributing	10 10 0
Mr. Quaife	0 10 0
Wireless Weekly Staff	1 3 6
P. Renshaw	3 3 0
Mr. Jones	0 10 6
G. Taylor	1 1 0
J. W. Robinson	1 1 0
F. Basil Cooke	1 1 0
O. Sandel	1 1 0
Mr. Allsop	0 10 6
Mr. Saunders	0 10 6

Total £26 2 0

Waverley Radio Club

Fifth Annual Function

Waverley Radio Club held its fifth anniversary at its rooms on Thursday, January 24th. Invitations had been issued to representatives of other clubs and old members, and the gathering was well attended, the club rooms being crowded. The proceedings, assisted by Broadcasters Ltd., and refreshments, went without a hitch, and the evening was a great success in every way. Mr. M. Perry, the Club's President, was in the chair.



Mr. Perry

"The King" was the first toast, after which Mr. A. Burrows was called upon to propose "the Waverley Radio Club." Mr. Burrows mentioned that there were only two of the original members left, Mr. E. Bowman and himself. There were others who had given up wireless, and others who had become prominent in the game. The five pioneers, who had met in a private house five years ago, little thought that the club would be able to celebrate its anniversary five years hence. Radio, the speaker continued, was one of the most comprehensive and fascinating subjects that could be taken up by a body of men. The Waverley Club, with the exception of the Wireless In-

stitute was the first to lead the way in the matter of wireless clubs. It was to a great extent due to Mr. Geddes's kindness, in allowing the club its present club rooms, that it had made such progress.

Mr. M. Perry responded on behalf of the club. He told of the early work done by the Wireless Institute and the Waverley Club. A Prime Minister had once said, "A boy without a hobby is of little use." Mr. Perry expressed the opinion that radio was the best hobby of all. Undoubtedly the Waverley Club had had its troubles—it had passed through "clouds and the sunshine," but its trials would make it yet more solid.

"It should be the most respected of all suburban Clubs," said Mr. Perry, "because it is the oldest, and because it has always had a fine membership."

"Kindred Societies" was then proposed by Mr. R. Howell. He—Mr. Howell—was that unfortunate person known as a club's secretary, and, on that account he asked for everyone's sympathy. He was sorry there was not a greater number present, although it was doubtful where they would have fitted in. Mr. Howell said that although wireless undoubtedly broadened men's minds, he was of the opinion that a person should take up more than one hobby—he himself had several. He intended this as a warning to radio "cranks." Mr. Howell also said that a man without a hobby was like "a man without a wife."

Mr. G. Maxwell Cutts, of the Croydon Radio Club, responded to the toast of kindred clubs. Mr. Cutts said the Croydon Club was only a baby, as it was only half a year old. He fully endorsed the chairman's remarks that Wireless was a help in every way to boys; it made them stay in at nights keeping them off the streets and preventing them leading an aimless life.

Mr. G. Marsland (treasurer) proposed the toast of "The Visitors." In a few months' time, he said, the club would have much more in the way of gear to show visitors, whom the club, of course, was pleased to see at any time. He was glad to see so many present that evening.

The toast was seconded by Mr. E. Bowman (Vice-President), who gave some amusing anecdotes of the Club's earlier struggles. No one knew much about wireless then, and even for those who did, there were only spark signals to receive—no concerts or telephony. Consequently the club had to go further afield for attractions, such as socials, excursions, and similar amusements. The club rooms had been built by the members' own labor—and they appeared no worse for it. Mr. Bowman mentioned that the club was one of the first to receive Mr. C. MacLurean's initial concerts. It was due to the kindness of Mr. Geddes that the club had progressed.

Mr. F. Geddes, in responding, said that he had done no more than any man would. He was always glad to see fellows interested in a science such as wireless; he would always be glad to assist the club in any way.

Mr. D. Williams said he was pleased to be present, as at one time he had been associated for two years with the club, occupying the position of vice-president. The club had gone ahead; he hoped it would continue to do so.

Mr. T. L. Holsgrove, who at one time was president of the club, expressed his pleasure in being present. It had been due to the members' work on Saturday afternoons that he had joined. He was glad to see the progress made by the club.

An enjoyable interval was spent then by the company in listening to the programme of Broadcasters Ltd. The music came through well on the club's loud-speaker.

The toast of "The Office Bearers" was taken by Mr. D. Graham, who said that the officers were hard-workers. He mentioned the work done by the treasurer, the secretary, the most hard worked of all the officers; and last, though by no means least, the President, who was really the leader of the club. The remaining office bearers all helped in their various ways.

This was seconded by Mr. Burrows, who also thanked Mrs. Graham and Miss Bowman for kindly supplying the Club's birthday cake, which was decorated with five candles. The ladies' health was drunk along with that of the office bearers.

In responding, Mr. Perry said he would adopt a motorist's motto: "the longer the spoke the greater the tire," and be brief. He regretted he was not up to the mark sometimes with regard to certain promises, but he would do his best to remedy it. The officers were always glad to do all they could.

The concluding toast was proposed by Mr. G. Thomson, "The Pioneers of the Club." He remarked that there were only two foundation members left, messrs. Bowman and Burrows. Both were assets to the club. Mr. Bowman particularly by his practical work, and Mr. Burrows in different positions he had occupied, he hoped they would still continue to carry on the good work.

Mr. L. De Groen seconded this proposal, endorsing all the previous speaker had said.

Mr. Bowman replied briefly, thanking the company for the toast. Mr. Burrows said that the other founders should not be forgotten, Messrs. R. D. Charlesworth, Frank Geddes and others. They had done much for the club in the past.

In conclusion, Mr. Howell asked the meeting to remember Mr. Frank Harvey, now operator at Port Villa, New Hebrides. He, before he was compelled to resign from the Club, had been a great worker.

The National Anthem was received from Broadcasters, and after "Auld Lang Syne" had been sung the business concluded.

A Storage Battery Broadcasting Station.

How many new things applied science actually forces us to learn! Developments which, ten years ago, were absorbing the interest and efforts of perhaps a dozen experts or research men, are now the subjects of conversation by the layman, forced on his attention because they continually intrude upon his daily round of work and pleasure. How many people we find to-day who are vitally interested in the proper mixture of air and gasoline vapour to get the maximum power from the explosion! How many people have had their concepts of the boundary of the earth's atmosphere clarified and put into quite definite form by the newspaper items to the effect that "Manure had reached the ceiling," that the air was so thin and cold at the height of seven miles that a

gasoline engine could not properly function! We learn applied science of this sort nowadays without effort; or rather, it is absorbed, not learned.

Not many years ago, the idea that the currents which the ordinary continuous-current generator delivers is not exactly uniform, or "smooth," was of interest only to a few telephone experts who were trying to make their long-distance lines more quiet. The very term "commutator hum" meant nothing at all even to most technically trained men. Yet to-day the twelve-year-old boy, tuning in on some broadcasting station before the programme has commenced, announces—"Yep, I've got 'em, 'cause that's their commutator hum."

And his idea is right. As the commutator, with its hundreds of segments, revolves at a high speed, a slight disturbance is set up every time a segment breaks its connection with the brush which serves to carry the current to its load—vacuum tubes or what not. In the ordinary generator there are set up each second about one thousand of these disturbances which travel out into the wires connected to the generator; these disturbances communicate themselves to the modulator tubes of the broadcasting set and so the characteristic commutator hum is heard even before the modulator is excited at all by its microphone circuit. Very little experience is necessary to recognise some of the broadcasting stations by the quality of this hum; in fact it is even possible for the engineers familiar with the behaviour of electrical machinery to tell by this hum whether or not the operator of the station is giving his generators proper care.

In a well designed modulator circuit this commutator hum is largely suppressed by suitable "filters"—combinations of coils, resistances, and condensers. It is reduced to such a low limit that it is inaudible during the programme, except in the pianissimo passages.

A new station has just been granted a licence, and put into operation, in the radiation of which the commutator hum will be entirely absent—for the very good reason that there is no commutator in the station. The Willard Storage Battery Company has started broadcasting from its station, WTAM, where all power requirements for oscillators, modulators, amplifiers, etc., are furnished by their well-known storage batteries. About 1,400 full-size storage cells, all connected in series, are required to give a high voltage power

for the plate circuit of the oscillators and modulators, and other batteries are used for filaments, control circuits, etc. The station is at a good distance from other disturbing factors, such as trolley systems, so that when the microphone of the modulating system is short-circuited the transmission should be completely quiet. The only way to hear the station when the oscillators are putting current into the antenna and the modulators are silent will be to set up oscillations in the receiving circuit so as to get the beat note.

From the description of the station it should prove a real addition to the list of high-class broadcasters.

Crystal Detectors

USEFUL HINTS.

In the following notes, Mr. L. D. Bell details a number of points which will be handy to those operating crystal sets.

*The detector I have found to give the best results is the steel-carborundum type. Most of the books I have consulted, recommend for the steel factor, a piece of spring pointed at the end. Now it is exceedingly difficult to get a first class point in this way. A very fine sewing needle (about No. 9) may be used as it remains in position much better under any vibration to which the detector may be subjected. It should be soldered at its upper end to a small moveable brass strip which should have a fair amount of play for adjustment. The crystal should be set in a cup by means of solder, which I have found superior to anything else, with the roughest side exposed. The needle rests very lightly on the crystal by means of its own weight, until the best position is found when increased pressure may be applied without much reducing the effectiveness.

It is necessary to use a potentiometer in series with this type of detector, which can be made by winding about 20 yards of 36 Eureka wire on a former and fitting it with a sliding contact. A small torch battery is sufficient to operate this.

The results I have obtained in the manner described have been remarkably clear, constant and loud enough so that when a horn was attached to the receiver, the reception could be heard faintly in the room several feet away.

The Internationale Intermediate

New Letters Wanted

Did you ever hear U.S. IAW call Canadian 9AL and instead of separating the calls with "de" (known as the intermediate or interval sign), use "an" instead? And did you hear 9AL, answering, use "im"? Probably you did and maybe you have heard Canadian stations working among themselves using "s" while U.S. stations use "de." Works fine, doesn't it—as long as you keep those arbitrary intermediates in mind—which you don't because the Canadians often use "Can" in front of their calls when signing off, just to make sure the rest of the world won't make a mistake and log them for a British, American, Cuban or Australian station. When we made this arrangement with the Canadian amateurs, across-the-border traffic was "sitting pretty," and it worked out more, or less satisfactorily, but we didn't take into consideration that across-the-water work was at the threshold of amateur radio, and before long we would be QSO and logging our British, French, Mexican, Cuban and Australasian conferees and getting an extra couple of tubes handy to copy South Africa, Japan and the Argentine. This is materialising faster than we realise, and with it comes the necessity of correctly identifying the calls we hear, especially since no international amateur call letter arrangement is in force like the commercial calls and different countries are assigning their amateurs similar calls.

The present Canadian-U.S. arrangement was O.K. in theory, but if extended in practice to include other countries it would mean the assignment of various arbitrary intermediates of all kinds and conditions, and a card index to keep them straight and decode them when logged. Some brave souls even undertook to write this dictionary of intermediates for future use, but soon found themselves so involved in the vicious circle that friendly advice prevailed and they went back to pounding brass again. The need grew more imperative nightly, and gave rise to several excellent plans which received publicity through QST in the form of articles and communications; a call for criticism or counter-suggestions brought forth more valuable material on which to work. The fact that

the SOS produced six acceptable plans also indicated if these six plans were submitted to the world at large they would produce thirty-six additional pet schemes and a sheaf of amendments; it was likewise apparent we could not pick out any one scheme, polish it up and tell amateurs of other countries this was absolutely the latest wrinkle and if they wanted to be listed correctly in "Calls Heard," they would have to fall in line and use it. The only feasible course lay in picking what seemed to be a perfectly workable arrangement, writing every representative radio club, amateur organisation, or prominent amateur of every country of which we knew at the time for an expression of opinion, constructive criticism or counter proposal, to present in the end the consensus of opinion, the vote of the majority of international amateurdom as nearly as we could gauge it. Eleven different countries were secured, representing hundreds of thinking amateurs, and after a year's correspondence and fifteen pounds of letters had been tabulated and marshalled into line, the proposed arrangement with minor changes was awarded first honours. Some correspondents backed it without reservation, some had slight changes to make in form, some had certain points which needed clearing up, but all were enthusiastic and the interest displayed showed clearly the thing we had hoped for—a unified international amateur plan as nearly representative as we could get.

Let us first consider what requirements must be met in order that the needs of the situation be filled, and actual identification of all amateur signals, no matter what nationality, be assured:—

- (a) Should not increase in length of calling now used between amateurs of various countries.
- (b) Should make identification, both of call and nationality, reasonably sure.
- (c) Should not employ arbitrary signals.
- (d) Must be capable of use by amateurs of all nations.
- (e) Must not change assigned government calls.

(f) Must identify amateurs of the same country working each other, when heard by amateurs of another country.

(g) Should take care of present and future requirements for several years, or until such time as the next International Radiotelegraphic Convention meets and assigns a better scheme on the basis of the present commercial assignment of calls.

In considering the plan in its final form, it should be remembered that it doesn't comply with all the above exactly but aims to come as near as possible. With that in mind, let us get down to business.

Replacing the present arbitrary intermediates used between Canadian and U.S. amateurs with the initials of the respective countries, we find it quite easy to identify each, provided they are arranged correctly so that the initial of the country called comes first and the initial of the calling country second. For purposes of illustration, assume the initial "c" is assigned to Canada, "u" to the United States. Canadian 9AL now calls U.S. IAW in the regular way, but instead of separating the calls with "fu" he uses "uc," meaning IAW (u) is being called by 9AL (c). In other words, "IAW IAW IAW uc 9AL 9AL 9AL."

When IAW answers 9AL he turns the intermediate around to indicate in the same manner as above what nationality is called and by whom called. In illustration, "9AL 9AL 9AL cu IAW IAW k." It works out beautifully and requires little effort to remember, since in almost every case the initials are those of the two countries, except where two countries of the same initial have amateurs; in this case it has been necessary to assign an arbitrary initial to one, but you will notice that with one exception these arbitrary initials are phonetically sug-

★

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gestive of the country, which makes it that much easier. They are as follows:—

- A—Australia.
- C—Canada.
- F—France.
- G—Great Britain.
- I—Italy.
- M—Mexico.
- N—Netherlands.
- O—South Africa (the exception).
- P—Portugal.
- Q—Cuba (phonetic).
- R—Argentine (phonetic).
- S—Spain.
- U—United States.
- Z—New Zealand.

This leaves twelve letters still unassigned for future developments, and as the call arises they will be allotted and the proper publicity given.

Note another point: when calling an amateur of your own country use the initial of that country, once only, as the intermediate, since your signs have a habit of travelling over the international boundaries and oceans and things, and even though you want the fellow in the next block, a station three countries off may hear and like to know who you are. That is, if

Canadian IAR calls Canadian 3BP, he says: "3BP 3BP 3BP c IAR IAR IAR," and the same intermediate is used in answering. Someone suggested this intermediate initial be repeated twice, as "cc," for the sake of greater accuracy, but it seems unnecessary, as the whole series will probably be repeated several times.

Now a word as to the legality. The last International Radiotelegraphic Convention, known as the London Convention, did not provide for amateurs, and we therefore have our being through our respective governments who licence us, generally in accordance with their own radio regulations, which latter are generally in accord with the London Convention articles. Each government, therefore, is the one to smile and give its blessing, and while the plan is not strictly according to regulations, nevertheless it has been unofficially in operation in modified form between Canadian and United States amateurs for several years without Government protest, and since it would amount to an agreement between amateurs only, for the betterment of their operating conditions without in the least affecting commer-

cial, military or broadcast interests, or causing confusion in calling, we do not look for objection from that quarter. Several Governments have unofficially indicated approval, and since it is a matter involving a slight technicality, we see no necessity for official action, unless specifically requested to do so.

The one exception is in the case of British amateurs: their Government has unfortunately raised technical objections, stating the only acceptable plan would be for them to prefix their assigned call letters with the initial of their country, retaining the "de" as at present. For example, in calling British amateurs, the first plan will hold, but the British amateur answering, will prefix both calls with the country's initial, instead of using the initials as the intermediate sign. For example, if British 2SH calls French 8AB, he would send "FRAB FRAB

Continued on page 9

FOR SALE—Twenty Yard Aerial, complete with fifteen feet masts and Telephone Head Set. Apply, Frank Smith, Box 2234, G.P.O., or City 9148.

American Broadcasting Station heard with "BECO" Radio Equipment

Just recently, with three witnesses present, OAKLAND BROADCASTING STATION HAS BEEN HEARD IN N.S.W. with apparatus purchased from us. This speaks for itself. Efficiency and quality of our Radio equipment is undeniable.

Farmers' Broadcasting has been heard over 200 miles from Sydney on a "BURGINPHONE" Receiver in the daytime on a Loud Speaker.

This also shows the merit of "Burginphone" Equipment. Send for Price List Immediately.

BURGIN ELECTRIC CO.

WIRELESS ENGINEERS & SUPPLIERS

Show Rooms and Sales Dept., 1st Floor, Callaghan House,

391 GEORGE ST., SYDNEY

Results of Transatlantic Broadcasting Tests

The following is a report of the trans-Atlantic broadcasting tests, in November and December:—

British transmission: 10 to 10.30, Eastern standard time, on Sunday, Tuesday, Thursday and Saturday, November, 25, 27, 29 and December 1. American transmission: 10 to 10.30, Eastern standard time, on Monday, Wednesday, Friday and Saturday, November 26, 28, 30 and December 1.

How America Heard England

It is safe to say that hundreds of American broadcast listeners heard England. The telegrams and letters that have poured into the office of "Radio Broadcast" indicate that the waves from the British stations were received as far north as Nova Scotia, as far south as Texas, and as far west as Davenport, Iowa and scattered points in North Dakota.

Reception on the first night was not particularly good, on account of unintentional interfering transmission on the part of certain American stations, as well as on account of unfavourable atmospheric conditions. However, programmes from stations 2LO, London, 5SC, Glasgow, 5NO, Newcastle, and 2BD, Aberdeen, were reported heard, in part at least, over the eastern section of the United States.

Tuesday night reception was better. All eight of the British stations were reported heard. Atmospheric conditions on Thursday evening made reception poor in America. On the last night, Saturday, December 1st, reception of the English stations was as good as at any time during the week's tests.

A survey of the telegraphic reports and letters received from American enthusiasts seems to indicate that best reception was had in the vicinity of Davenport, Iowa (station WOC sent in many letters from its listeners, telling of English stations heard), Pittsburgh, Pa., Schenectady, N.Y., Portland, Me., St. Louis, Mo., and parts of Minnesota. Eighteen states in this country and two provinces in Canada are represented in the reports of successful reception received by radio broadcast. They are: New York, New Jersey, Pennsylvania, Virginia, North Carolina, Alabama, Ohio, Indiana, Illinois, Kentucky, Texas, North Dakota,

South Dakota, Florida, Iowa, Missouri, Kansas, Oklahoma, and in Canada, Ontario and Alberta.

The following telegrams are typical of those sent in the "Radio Broadcast" office:

Quincy, Mass.

Received British broadcast piano solo fine. Heard Bournemouth very clear.

George F. Boynton.

Ridgefield, Conn.

Heard 5SC, 5WA, 5NO by far the best.

George R. Phelps,

Paul Hampden,

Ridgefield School.

How England Heard America

The tests were organised and conducted by "Radio Broadcast," the British Broadcasting Company, and the "Wireless World and Radio Review" (London). A telegram from each of these co-operating agencies in England give some indication of the way America came in on the other side of the Atlantic:—

LCO, Doublepage, NY.

WGY complete. WHAV part received throughout England, Scotland. Atmospheric bad. Stop congratulations. British Broadcasting Co.

LCO, Doublepage, NY.

American broadcasting heard throughout country. Best WGY. National Anthem, speeches, Lynch, Young also. WHAV, KDKA, WMAF, KSD, WOR, WGR, WBAH, WDAR. Full report expected to-morrow.

Wireless World.

The principal reason why American stations were so generally heard in England is that they were using more

power for transmitting than the British stations used in sending to America.

The eight British broadcasting stations which operated were:—2LO, London, 263 metres; 6BM, Bournemouth, 385 metres; 5WA, Cardiff, 353 metres; 5SC, Glasgow, 415 metres; 5IT, Birmingham, 423 metres; 5NO, Newcastle, 400 metres; 2ZY, Manchester, 370 metres; 2BD, Aberdeen, 495 metres.

Two-Way Working

On the final night of the tests, Saturday, December 1st, in spite of severe static, the following stations in America were able to hold two-way conversations with England: WGY, KDKA, KSD, WOC, and WGI.

Inasmuch as up to the present time complete reports are not available, we may be omitting some stations that actually were received.

The following were among the American stations that co-operated in the tests, and that signified their eagerness to co-operate with "Radio Broadcast" in these tests. Most of them put on special programmes during the American test period:—

KSD, KPO, KDKA, WGY, WOC, WGI, WSAI, WTAM, WLV, WCAE, WMC, WHAZ, WFAA, WSY, WOS, WOO, WOAW, WNAV, WBAH, WMAF, WDAR, WJAZ, WJZ, WFAF, WJAX, CKAC (Canadian). Besides the many other stations which did not advise "Radio Broadcast" of their participation, they put on programmes which may have been heard in England.

BOOKS ON WIRELESS

Wireless Telephony.—A Simplified Explanation by R. Bangay, Price 3/9 posted.

American Book of Wireless Circuits, by F. Haynes, Price 3/9 posted.

Directive Wireless Telegraphy, Direction and Position Finding, by L. Walter, Price 3/9 posted.

Wireless Receivers of To-Day, Their Use and Adjustment, Price 2/3 posted.

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

Continued from page 7

F8AB de G2SH G2SH G2SH k." As this is the only exception to the general plan, it is hoped the British Post Office may be induced to change at a later date.

Amateurs reading of this plan for the first time will probably light on several objections, and, therefore, to forestall doubt or dissatisfaction where it may exist, they will be answered before asked.

(1) Some countries will have same initial. As explained previously, in case of such conflict, an arbitrary initial will have to be assigned, but every effort will be made to do so phonetically.

(2) Not enough initials for all countries in the world. Quite true, but neither does every country boast an amateur, and with twelve initials left, the supply will last for five years or so, before which the International Radio-telegraphic Convention will have met, and probably considered the international assignment of amateur calls itself.

(3) Incorrect logging of the inter-

mediate initials may result from QRZ or QRM signals. Yes, but when calling foreign amateurs or those over long distances, the call sequence will be repeated more than usual, giving the logger several chances.

A word about the plan that ran second to this and its objections. Several endorsements of the plan to be used by the British amateurs were received, but careful analysis brought out the following disadvantages:—

(a) The prefixing of a call with an initial (F8AB G2SH) would not be permitted by several Governments, as the calls are assigned originally by the Government and no change thereto may be made by the amateur.

(b) Some Government services have already been assigned calls commencing with a letter, followed by a numeral and one or more letters, so that conflict would certainly result, should the amateurs use this system generally.

(c) It increases the length of call unduly. Twenty-five per cent. in the case of three letter calls, 33 1-3 per cent. with two letter calls.

(d) Unless calls are sent very carefully and received quite clearly, the prefixed initial may be transposed by the logger as constituting the last letter of the call. (F8AB may be logged 8ABF.)

As we have said somewhere before, the first plan is not absolutely watertight, but it was the one which received the united support of international amateurs over the other plans, and the main need right now is to get started—quickly—before the Trans-Atlantics and other tests. The Traffic Manager has approved and endorsed the scheme. Midnight, December 15, 1923, is the date it goes into effect; get set, O.M. read this again to make sure you understand it perfectly, tell the rest of the gang, and—let's go!

—"C. A. S."

Tell your friends about
"Wireless Weekly"

ANNOUNCEMENT

WE are pleased to notify our Customers of the Wholesale Trade, that we have just received a new shipment of all Radio Parts which may be inspected at our showrooms

PACIFIC ELECTRIC CO.
SECOND FLOOR, KINCOPPAL CHAMBERS
No. 38, MARTIN PLACE - SYDNEY

Image Transmission

What is the future of radio-photography? Some fascinating possibilities of the science are put forward in this article.

Can we dispense with the use of the Morse Code in wireless, writes G. H. Daly in "The Broadcaster," and in its place have our actual handwriting sent and reproduced at some distant station? This would mean that if we received a radio-telegram we should recognise it by the characteristic handwriting just as it is possible to recognise a letter which has been sent through the post.

It can be safely said that at the present time it is quite possible to send and receive handwriting by the Belin system of transmission by wireless, but whether it is possible or practicable to substitute this arrangement for the present method of dot and dash transmission and reception is a different matter. Nevertheless, there

are a number of people in favour of it.

The Morse code has undoubtedly many disadvantages—it is liable to be inaccurate over long distances owing to atmospheric disturbances, and certain Eastern languages, such as Chinese cannot, in the ordinary way, be sent by the Morse code, as they contain numerous signs which represent thoughts. It is, in fact, usually necessary to translate a Chinese message into some other language before transmitting, and then, of course, it must be re-translated at the receiving end.

With image transmission, however, it is quite possible to transmit accurately and correctly any language, no matter how many signs, thoughts or other peculiarities it may possess. It is also a simple matter to transmit ordinary handwriting, either short or long hand, and by using shorthand it is estimated that far greater speeds can be obtained than even by automatic transmitters.

Image transmission can also be used for sending by wireless photographs, drawings, maps, charts, and numerous other subjects; and, in fact, the Belin apparatus, which was invented by the well-known French wireless expert of that name, was primarily designed for the transmission of photographs. But its most practical application would certainly appear to be for the substitution of the present system of dots and dashes, for image transmission of handwriting, in which direction M. Belin has achieved remarkable success.

Transmitting Handwriting.

A hand-written message, in order to be sent in its actual formation by the Belin system, is first of all photographed or printed on to a sheet of chemically treated paper, which in turn is wrapped round a hollow metal cylinder similar in shape to the old type phonograph records. The cylinder has previously been so treated that

Continued on page 12



Radio Company

Limited

15 LOFTUS STREET

Circular Quay

SYDNEY



Of importance to Experimenters and to those about to enter the field of Wireless

DURING the month of February **LARGE REDUCTIONS** will be made of our stocks of **EXPERIMENTAL SETS and PARTS** at **COST** and under **COST PRICES**, all of which will carry our guarantee to give satisfaction. A Small Transmitter with Tube Modulation complete with Valves and Batteries ready for use at £25 is just one of our many bargains. *Stocks limited. Send your Order as early as possible*

NEWS IN BRIEF

Owing to the unfavourable atmospheric conditions it is stated, valve sets on Friday night, January 25, experienced a good deal of trouble in reception.

Wireless Weekly has received a number of reports from crystal set users who claim that they received Broadcasters' programme very clearly with very little interference.

An enthusiast at Lavender Bay states that using a 25ft. aerial between two verandah posts, he heard the whole of Broadcasters' programme without interruption.

Variable Resistance and Capacity for grid control are provided in a single device which has recently appeared on the market. The resistance may be varied in a gradual and positive manner from one-fifth to twelve megohms, while the capacity may be gradually varied from .000002 to .005 mfd., according to the manufacturer. It is said by those who have employed this grid control that signal strength is increased 25 per cent. in the case of critical circuits, such as the Reinartz.

Experiments with a radio receiving set are being conducted on one of the mine rescue cars of the Bureau of Mines. The results thus far show that messages can be received just as clearly when the car is in motion as when it is at rest. An effort is being made to establish whether the radio

has a practical application on mine-rescue cars.

In the House of Commons, Sir Laming Worthington-Evans (Postmaster-General) said no agreement had been reached by the Post Office with the Marconi Company in regard to Empire wireless.

Powers to investigate the possibilities of radio for life-saving in mine disasters have been vested in the international officers of the United Mine workers of America. It is explained that experiments have proved it possible to operate a receiving set 1000 feet underground.

New Radio Circuit for Poland.—October 4th marked the opening of direct radio communication between New York and Warsaw, the station of the Radio Corporation of America working with the new Polish Government station just completed in the latter city. This makes the seventh direct circuit to Europe operated from New York City. The importance of this communication to the two countries concerned is indicated by the fact that during the calendar year just past 71 per cent. of the total international telegraphic traffic of Poland was with the United States.

A capacity Finder has been introduced by a manufacturer of radio condensers. This consists of two strips of metal across which are bridged five condensers of different capacities. The two strips are connected with the grid circuit, and it then becomes possible to try various capacities until the best results are obtained. The device is then removed and a fixed condenser of the desired capacity is put in its place.

According to an announcement made by the Postmaster-General (Mr. Gibson), another license has been granted for wireless broadcasting in Victoria, this being the third issued in the State. The Associated Radio Company, of Beckett St., Melbourne, has been given permission to establish a service with a wave length of 480 metres. It is understood that operations will be commenced by the Company shortly, and that its service will include market reports, shipping reports, and matters generally of public interest. Operations are for the present confined to testing the new installations.

WIRELESS APPARATUS

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beautifully made.
Guaranteed superior to to any others.
Price . 35/-
complete with cord.

FEDERAL APPARATUS
THE WORLD'S STANDARD

Phone: B 5565

Continued from page 10

the image from the paper is now transferred on to its surface in such a way that the message is in relief—or slightly raised above the surface of the cylinder.

This record is now placed on a revolving drum, and as the record revolves a fine needle travels along its surface. This needle is attached to a make and break apparatus and controls the output of the transmitter.

As the cylinder revolves the needle point is raised whenever it touches any part of the message—which, as stated above, is slightly raised above the rest of the cylinder. This causes the needle to make and break the primary circuit of the transmitter and radiate wireless waves.

These waves are picked up at the receiving end, and by means of amplifiers they actuate a powerful electro-magnet which causes a small mirror to be deflected from its normal position. (This part of the apparatus is known as a Blondel oscillograph.)

A beam of light from an arc lamp is permanently focussed on this small mirror, and when the current from the transmitter is actuating the electro-magnet the mirror is moved, and

reflects this beam of light on to a slot in a light proof box. Inside this box is a cylinder which is made to revolve at exactly the same speed as the transmitting cylinder—the two being automatically synchronised. Round this cylinder is wrapped a photographic film.

Now when the needle of the transmitter comes in contact with any part of the message a burst of current is transmitted. This is picked up at the receiver and causes the electro-magnet to deflect the mirror in such a way that the beam of light strikes the sensitive surface of the photographic film through the slot and leaves an impression.

When no current is being transmitted the electro-magnet does not function, and consequently the reflected beam of light does not enter the slot. When the message is complete, the film is removed and prints taken from it as with an ordinary photograph.

It is claimed that in this way it is possible to send 2,000 words by shorthand in less than four minutes and absolutely accurately even if atmospherics are present.

Photographic Transmission.

It will perhaps not be out of place

to describe a somewhat similar although more interesting type of the Belin system which is used for the transmission of images of varying shades such as half-tone photographs.

The subject to be transmitted is prepared in the same way as above and placed on the revolving drum. The needle which travels over its surface however, is not attached to a simple make and break, but is connected to a carbon microphone and varies the resistance of the continuous current flowing through the microphone thus obtaining a modulated current.

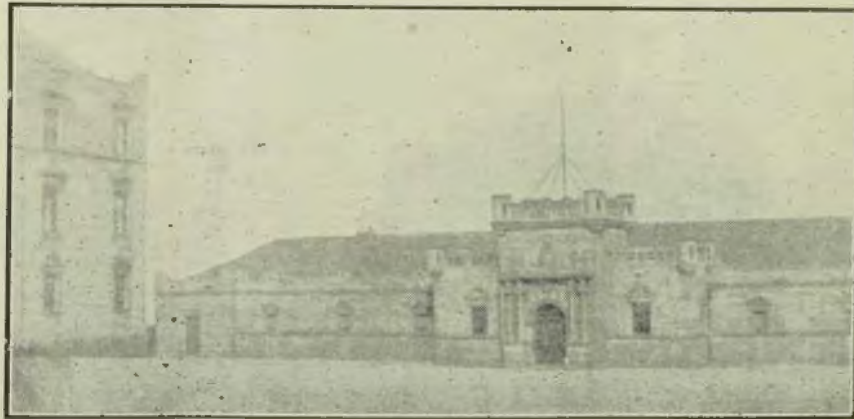
The transmitted waves in this case are undamped, being obtained from a vacuum transmitter or arc generator.

At the receiving end this modulated current is continually deflecting the small mirror; the amount of deflection depending upon the strength of the modulated current being received at the moment.

In this case, however, the light from the arc lamp is reflected by the small mirror through a graduated screen—that is, a screen which at one end, say the left hand, will allow this beam of light to penetrate easily through it.

Continued on page 15

A NEW SCIENCE IN HISTORIC SETTING



The aerial erected at George Heriot's School, Edinburgh. It is interesting to note the view of the Edinburgh Castle that can be seen in the background.

□ **RADIOCULOUS** □

Attendance at our meeting house
Was limited to one starved mouse;
Until the thought struck Deacon Snow
To make us good by radio.
The folks they all turned out for fair
To get religion from the air;
But Deacon must have crossed his
wire—
'Cause that dern box up in the choir
Yelled out, "Babe Ruth is now at bat,
Dusted the plate off with his bat.
Strike one — the crowd in great sus-
pense;
Busted a homer to the fence."
A fool kid whooped right out,
"Eeyow."
And Deacon mopped a clammy brow;
But our folks 'ten church as they
should
Since science came to make us good.

M.H.R. in Louisville
Courier-Journal.



THE LISTENER-IN: "This is fine for a crystal set. I'll wear 'em—sniff—sniff—through to Varmouth."

Professor (lecturing): Oxygen, gentlemen, is essential to all animal existence; there could be no life without it. Strange to say, it was not discovered until a century ago, when—

Student: What did they do before it was discovered, Professor?

Only Once.

An old gentleman, a little astray, stopped a solemn youth.

"I want to go to the railway station," he said.

The youth contemplated him.

"Well," he finally replied, "you may just this once. But you must never ask me again."

"Meggendorfer" (Germany).

Collapse.

Man of the House (in a wrathful voice): Confound it. Shut that door. Be quick.

Servant (suddenly appearing with dignity): I should like to know who you are shouting at?

Man of the House: Oh, pray pardon me. I thought it was my wife.

—Sendags Nisse (Denmark).

Bert: 'Ere, Bill, our trade union leader's retirin', and we wants to get somethin' up for 'im just to sorter show our appreciation like.

Bill: Well, wot about gettin' up a farewell strike?

—"Bystander" (Eng.)

Help Wanted.

"Is this the Fire Department?" yelled the excited chemistry professor over the phone.

"Yes, what do you want?"

"How far is it to the nearest alarm box? My laboratory is on fire and I must turn in the call at once."

—"Black and Blue Jay" (U.S.A.)

Of Two Evils.

Tim: Howdy, Tom, old man. Congratulations upon your engagement to Jeanne. I guess you're a pretty lucky man. She certainly has a pile of cash. But then agsin she's pretty fussy, I hear, and she'll probably make you cut out drinking and smoking.

Tom: Oh, well—I suppose so. But if we hadn't become engaged, I would have had to cut out eating.

"Sun Dodger" (U.S.A.)

First Author: Who is that man sitting in the box over there?

Second Author: He is the author of the comedy.

First Author: Well, I should think he would have better taste than to laugh so uproariously.

Second author: Oh, it's all right. He is the author of the play, but he never heard those jokes before. They were put in by the comedian.

"Strix" (Sweden)

Tell your friends about
Our Big Competition

Very Suspicious.

"You don't feel quite sure of your wife's affection?" said the very confident friend.

"Not quite."

"But she is always lavishing expensive presents on you."

"Yes. But the presents do not denote the solicitude for my comfort and safety which I should like. First, she gave me a polo pony; then she gave me a racing car, and now she is trying to persuade me to accept an aeroplane."

—"Sans Gene" (France)

"M'riar, M'RIAR. Open the door."

"Kind o' deaf, ain't she?"

"Naw, she hain't deaf, but tryin' to listen to the fonygraf an' the party line 'phone an' the wireless, an' havin's only two ears, it's sort o' hard sometimes to git her 'ention — M'RIAR."

"Judge" (U.S.A.)

Progressive Warrambah

WIRELESS IN OUR MIDST.
(By R. K. KING, Gamarren)

To the large number of people, even at this period of radio enlightenment, the word "wireless" does not convey any special message. "Oh, yes," they say, "wireless, quite so! Wonderful thing when it is perfected, but no use to the man in the far south-west. One needs to be an expert with a sound knowledge of radial electricity." But nothing could be further from truth. The wireless telephone is now perfected and absolutely simplified, so that now, while a general knowledge of electricity is of some assistance, it is by no means essential.

It has now been definitely shown, here, within 80 miles of Cunnamulla, that wireless is an accomplished fact. It has been the writer's good fortune, for some time now, to listen to radio concerts broadcasted nightly from Sydney, 600 miles away. At Warrambah a wireless plant has been installed, and the two towering masts, supporting the aerial, lend a new significance to life in the bush. No longer is the western man or woman separated from the outside world by distance. Sydney, with its latest songs and dance music, is but a fraction of a second away. Now one may listen to a perfectly rendered violin or 'cello solo, next to a song by some artist whose name is on everybody's lips, for Broadcaster's Ltd. spare no expense to secure the best.

And the wireless telephone has come to stay. For the business man there are stock reports, wool market conditions, and perhaps the greatest of all, the weather advices. International news of great importance comes through in a few seconds. Racing news, general sporting, and in fact news about everything that is of interest in life, is all broadcasted. There are those who will say, "Oh, yes, very fine, but doesn't it all get mixed up with other wireless messages?" But, as most people know, the different broadcasting companies have different fixed wave lengths, and one simply tunes one's own receiver to that length, thus entirely eliminating all other sounds.

Then for the man who can read Morse, there are unlimited fields. From the far corners of the earth come the high-pitched notes of the great world famous sending stations! From near at hand the boats off the Australian coast, and our own sending stations,

such as Sydney, Pinkenba, etc. And not all these messages are in code.

And while so far, it has been the good fortune of only a limited number of persons to carry on individual conversations, the time is not far distant when everyone will use the wireless telephone, just as at present we use the ordinary telephone. The heavy expense of maintaining large lines, complicated exchanges with their large staffs will all be obviated. For the greatest advantage of wireless is comparative cheapness, just two poles, a few wires and a small polished box, and distance has lost its meaning. And to those people who made all this possible the world owes much. The cheapness of wireless will bring it within the reach of everybody.

Warrambah purchased their plant from Messrs. Colville and Moore, who

are very well known figures in the wireless world. This company has spared neither time nor money in assisting those who have purchased sets to give guidance from their great experience, their assistance is of extreme value to the amateur who erects his own plant. They arrange all licenses, registrations, etc., and act as guides and friends to the subscribers of Broadcasters, Ltd. Their office is at 10 Rowe Street, Sydney, and from what the writer knows of them, anyone who wishes to purchase a receiving set can be assured that, from that firm for certain he will receive help, courtesy, and the utmost consideration.

The Warrambah plant has been erected for the last six months, though of course broadcasting has not been carried out until recently.

TRADE MARK



PRAISED BY EVERY LISTENER



Shielded 32/- Unshielded 30/-

**THE NEW IMPROVED
AUDIO TRANSFORMER**

No Squeals and Grinding Sounds

CLARKE & HAGBLOM JOHN V. REX
Carlton, Melbourne 82 Pitt Street, Sydney, N.S.W.

Continued from page 12

but which gradually changes, getting less and less transparent to the light until at the opposite or right-hand end of the screen practically no light can pass through at all.

The light from the mirror which penetrates the graduated screen is directed, by means of a special type of reflector, towards the slot in the light-proof box in which revolves the photographic film.

It will be seen that the intensity of the beam which passes through the screen into the light proof box varies, and thus a more varied image will be impressed on the film, which gives a photograph with more detail than if sent by the more simplified method. The average time taken to send a photograph in this way is eight minutes.

It is an historic fact that M. Belin actually succeeded in receiving a photograph of the Carpentier-Dempsey fight which was transmitted from the American naval station at Annapolis and received in Paris.

But although photography is undoubtedly quite efficient, the possibil-

ity of using the system for sending ordinary radio-telegrams in either short or long hand, written or typed is much more practical, especially when we consider its infallibility with regard to atmospheres, an asset not common to any other method of wireless transmission.

In connection with this it has been found that at a time when it is absolutely impossible to receive by Morse, reception by the Belin system is quite accurate, for this system depends upon a large number of impulses which form an image, and not on dots, dashes and spacing. Even the effect of very bad atmospheric disturbances merely leaves miscellaneous marks on the film and does not interfere with the image, which is invariably quite distinct and readable.

It is hardly likely that image transmission of radio-telegrams would be economical for short distance or ship work, but at high power stations, where a great amount of trans-oceanic traffic is dealt with, it could undoubtedly be used to great advantage, and there would be practically no chance of stoppage owing to bad atmospheric conditions.

Autoplex Circuit

The Autoplex Circuit is the latest to attract the attention of those who like to build their own sets and who are forever seeking something different. The autoplex circuit is, in reality, a super-regenerative set. It makes use of two standard variometers, one for the grid and the other for the plate; an L1250 coil in the antenna-ground circuit; a filament battery, rheostat, and vacuum tube; and the usual "B" battery and telephone or loud-speaker, a small loud-speaker without amplifier. Indeed, the autoplex will operate among the usual run of receiving circuits. As it now stands, it appears that the autoplex circuit is by no means a polished product. Unless it is properly constructed and manipulated it produces distorted sounds. Nevertheless, it represents some interesting experimental possibilities for those interested in the experimental side of radio.

An illustration of our

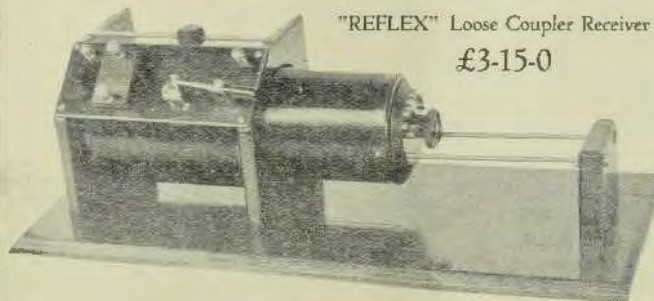
'REFLEX'

Loose Coupler
Receiver

as Quoted in our Price List

Special Features

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Complete Set of Parts to make the above Set 36/6

Postage 1/6

RADIO HOUSE
619 George Street, Sydney





The Leichhardt and District Radio Society

At the sixty-fourth general meeting of members of the Leichhardt and District Radio Society, held at the club-room, 176 Johnson Street, Annandale, on Tuesday, January 22nd, a motion of sympathy was passed for the widow and family of the late Mr. F. Moore, it also being decided that the society be represented at the funeral, and that a floral tribute be sent.

The main business of the evening was a lecture by Mr. F. Lett, the subject chosen being "Regenerative and non-regenerative circuits." The lecture proved to be a very instructive and interesting one, and at its conclusion Mr. Lett was kept busy for some time replying to questions put to him by those present.

The launch excursion held under the auspices of the society on the 19th instant, was very successful, a large number of members and friends spending a very pleasant evening. With the permission of the Manager of Telegraphs and Wireless, a set was installed on the launch for the occasion, and music was received from 2SB throughout the trip.

Members are looking forward with considerable interest to the series of lectures to commence on February 12. The syllabus arranged is a very comprehensive one, and the first lecture, "Aerials and Earth Connections," will be delivered by Mr. F. Thompson, on the date mentioned. Others will follow on the second and fourth Tuesdays of every month, and all will be delivered by members of the society—a fact which members are rather proud of.

The next meeting, to be held on Tuesday next, is a business one, and a good roll up of members is anticipated.

Inquiries are welcomed, and should be addressed to the Hon. Secretary, Mr. W. J. Zech, 145 Booth Street, Annandale.

Newcastle District Radio Club

A special meeting of the Newcastle District Radio Club was held on January 23rd, to meet Mr. Armstrong, Assistant Radio Inspector for New South Wales, who was visiting Newcastle.

The President, Mr. Seward, in extending a welcome to Mr. Armstrong, said that the Department's efforts to keep in touch with experimenters showed an attitude for which the amateur should be grateful and every effort should be made to co-operate with the authorities in administering the regulations.

Several matters were brought forward, on which members were not too clear, and the visitor went to great pains to explain the situations arising therefrom.

At the conclusion of the meeting, Mr. Armstrong congratulated the club on its fine attendance, and the meeting closed with a hearty vote of thanks to him for his attendance, and the information he had given.

After the meeting was closed, the transmitter was given a short run, and the wave length checked by Mr. Armstrong's wave meter.

Croydon Radio Club

On Saturday, January 19th, the Croydon Radio Club held its usual weekly meeting at "Rockleigh," Lang Street, Croydon, at 7.30 p.m. There was a fair attendance of members, but the committee would like to see more attend the meetings in future. The usual business was conducted, with Mr. C. W. Slade presiding.

The chief item for discussion was the club's transmitter, which is nearly completed. It is hoped to be able to demonstrate the operation of a transmitter to members on Saturday, February 9th. On Saturday, February 2nd, Mrs. Ashby and Mr. Slade are entertaining the members of the club at a social evening at "Rockleigh."

Mr. Slade gave some interesting details of the S.T. 100 circuit to the meeting, and the rest of the evening was given up to buzzer practice, as each member wishes to increase his speed.

All communications should be sent to the Hon. Secretary, G. Maxwell Cutts, "Carwell," Highbury Street, Croydon.

Experimenters' Rally

"Aerial" broadcasts a reasonable complaint on behalf of the genuine experimenter.

It is a matter for congratulation that definite steps are now being taken to ensure solidarity amongst the ranks of the experimenters.

Truly the numbers of those holding experimental licenses has greatly increased since the word "broadcasting" has first been heard in Australia. There are some, however, who are very bitter against experimenters, more particularly among the ranks of those who have some interest in broadcasting, whilst on the contrary others see no harm in the present situation.

On behalf of the authorities whose duty it is to administer the wireless regulations it may very fairly be claimed that they have done their best to be fair to all interests and in issuing licenses have been placed in the position of requiring that the conditions can be complied with by the applicant hence they have had no option but to grant licenses in all such cases, and this position must continue.

It has been mooted that there is an effort afoot to make broadcasting available to all on payment of a flat rate charge of £2/10/ per annum, on a sort of broadcasting pool system, this arrangement to include holders of experimental licenses.

It has been stated "that the genuine experimenter if he could be weeded out, was a man who could be excluded from such a charge, but in view of the promiscuous issue of experimental licenses it is impossible to discriminate."

Whatever the outcome, the fact remains, that those experimenters who value what they hold and the privileges they justly enjoy must rally now or never and present a united front in the protection of those privileges.

The Wireless Institute has publicly announced its intention of consolidating the interests of the experimenters, and when one considers that the best brains in experimental circles are concentrated in the Institute, it must be believed there exists a necessity for the step which it is hoped will meet with fullest success.

Canadian Concerts

There are many trading posts in the northern part of Canada which are completely cut off from the rest of humanity during the long Arctic winter. The Hudson Bay Company, it seems, intends to try to reduce the monotony of its factors' lonely existence by installing receiving sets, hoping that radio entertainment will be tuned in from Southern Canada and the United States. Two of the Company's trading ships, we are informed, are carrying Westinghouse receiving sets far above the Arctic Circle, to try out the scheme this winter. If radio broadcasts can be received satisfactorily so far north, probably all the Hudson Bay Company's posts will be fitted with sets for next winter. The ships steaming north have reported so far that New England stations are received very well; but as the ships will soon be ice-bound we shall not hear of the performance of the Arctic sets until they return to civilisation next spring.

We learn also that the engineers mapping north-west Canada are now using radio to keep in touch with their bases and for entertainment. These

engineers, whose object it is to lessen the number and area of the blank white spaces on the Government's maps, have previously been completely out of touch with the world for months at a time. The only news they received was by Indians and trappers who passed the news along by word of mouth. With the modern compact field sets, however, the engineers keep in touch with home although they are often half a summer's journey away. In these two cases radio is proving a most important and useful contribution of applied science, to those who have needed it badly.

Demonstrating Radio

The national Chamber of Commerce of America has recently been urging on the radio manufacturers the great possibilities of the county fair as the medium through which they could get in touch with prospective customers from the farming districts. It is an indisputable fact that the farmers of the country can profitably absorb a great number of radio receivers; and fairs are the proper place to demon-

strate the "profitable" part of above statement, as one is generally in the mood to be shown when at a fair.

The manufacturer of good radio apparatus can well afford to send their representatives to these fairs to demonstrate the possibilities of radio as a source of useful information. Surely the market reports and weather predictions must be of importance to the farmers of the country, or the Government would not be sending them out.

We hope, however, that the demonstrators do not try to outdo the vendors of tin horns, squawkers, and unlubricated farm machinery, as must have been the case last month with a radio dealer we know quite well. To his summer camp he took his radio and loud speaker, partly for his own amusement and partly to boom business among those who might be summing in his neighbourhood. One of his neighbours had a camp close to that of the dealer, and he came back this fall with sentiments that could not be called friendly to radio. When will some of our dealers understand the prospective buyer's reaction to such performances and profit by the knowledge?

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Nine Receiving Sets

The Risorhead Receiving Station of the Radio Corporation of America was planned for a capacity of nine receiving sets, so we learn from a paper recently read before the American Institute of Electrical Engineers. Of these, six are now in daily operation. Mutual reactions are minimised by careful screening of the various component elements, and by the astatic winding of coupling coils. In addition a two-stage filter is introduced in each circuit between the detector and the audio-frequency amplifier. These precautions have made it possible to operate the several sets with the same filament and high tension batteries, without trouble from back coupling.

The Trans-Atlantic Broadcast Test-formed an interesting feature of Na-

tional Radio Week, which was observed from November 25th to December 1st. Various broadcasting stations abroad, and likewise here, were connected together by land line so as to function as powerful units, from a common microphone. Our leading broadcasters were intercepted by British amateurs, just as British stations were intercepted by American amateurs. Nevertheless, the fact remains that trans-Atlantic broadcasting reception requires the most elaborate type of super-heterodyne receiving sets, which are available to only a very small number of amateurs.

How a Radio Receiver Works

A telephone receiver consists of a permanent magnet, which acts upon a

metal diaphragm. Around the poles of the magnet are wound fine coils of wire which vary the magnetic attraction upon the diaphragm and thereby cause it to vibrate at the frequency of the "audio" waves. The alternating current resistance effect of the coil to the carrier frequency, which is 875,000 cycles per second at 360 metres is very high. The voice frequency varies from 300 to 1200 generally, and it is the superimposed voice envelope which is the current actuating the diaphragm.

In order to shunt the carrier frequency across the headphones, which are in series with the circuit of the receiving set, a small condenser is placed parallel to the headset. This will not permit audio frequency to get through, but forces it to circulate through the headphones.

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Standardise on the above components and build the best set possible.
Ask to see them—

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British Radio Policy

It was a foregone conclusion that any solution of the radio problem in England must be one which would link together all the high-powered stations, not only in the United Kingdom, but in all the colonies and dominions across the seas. It seemed at first that the Marconi Company and the Government would proceed separately, with possibly also other interests operating in the radio field, but a despatch from our London Consul indicates that private and government interests have been pooled. An agreement has been reached between the Post Office Department and the Marconi Company, and tentatively with the Eastern Telegraph Company, to operate their stations as a single system. This will obviate the necessity of duplication of stations and will unquestionably result in less interference than would otherwise occur. According to an announcement of the Department of Commerce, it is the opinion in England that:

"The agreement reached by the Post Office with the Marconi Company is believed to be unique in the history of telegraph operation. The telegraph services of the Empire are to be conducted by the wireless pool, consisting at present of the Marconi Company and the Post Office, although it seems certain that the Eastern Telegraph Company will be taken in at a later date should its plans for stations in India and China meet with success. The wireless stations necessary for the proposed imperial service will be furnished in certain agreed proportions by the two parties to the contract, the company furnishing two stations in the first instance and the Government one. The position of the Government in the communication field is greatly strengthened by the consummation of this agreement and it is probable that the approaching coordination of land telegraph, international radio, and submarine cables will form a world wide system of communications for the British Empire that will result in very effective government control of the whole field."

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Date _____

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Praise for Broadcasters Ltd.

The advancement of broadcasting in Australia up to the present juncture, has wholly been due to the untiring efforts of Broadcasters (Sydney) Ltd., who have given a fine service to the public, second to none. American experts recently answered from the States say that the service given by (2SB) is as good if not better than anything they heard in America or Canada.

The station commences at noon each day, and continues till 10 p.m., giving a service of news and entertainment. Up to the present using only half power, they have had glowing reports of the reception from distances up to 2200 miles. Invercargill, N.Z., Charters Towers, Queensland, Tasmania, all report excellent continuous reception.

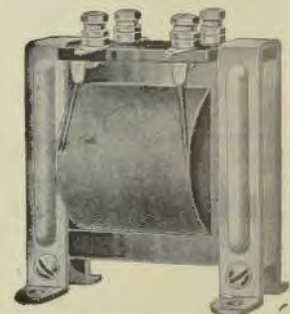
Transmitting Efficiency. — In no branch of radio telegraphy has greater progress been made during the last two years than in the design of the grounding systems of large transmitting stations, according to Prof. G. W. O. Howe, writing in "The Electrician." For many years the effectiveness of a station was judged by its so-called power in kilowatts, which sometimes was supposed to represent the power actually supplied to the aerial, but more often represented the power supplied by the dynamo or alternator to the transmitter. The power actually radiated from the aerial was rarely considered, though this, after all, was the only thing that mattered. It is now fully realised, however, that the only measure of the effectiveness of a station is the radiated power, and since, for a given frequency, this depends on the product of the effective height and current, this product is now specified, instead of a meaningless number of kilowatts. To obtain the maximum radiated power for a given total power delivered to the aerial, every effort is now made to reduce the various losses. These consist of the losses in the aerial wires, tuning inductances, etc., and in the towers, stays, etc., losses due to brush discharge from the wires, and last, but by no means least, losses in the earth under the aerial.

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Secondary Sliding Rods, nickel plated, pair ..	0 2 8
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Equitable Buildings, George St., Sydney
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United Distributing Company Ltd.
(Wholesalers)
28 Clarence Street, Sydney.
Telephone: City 3566.

W. Harry Wiles
60-62 Goulburn Street Sydney.
Telephone City 3688 1 door from Pitt St.

Wireless Supplies Ltd.
21 Royal Arcade, Sydney
Telephone: M 3378.

Pitt, Vickery Ltd.
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96 Bathurst Street
Telephones: City 869, 2596.

Radio Company Limited.
15 Loftus Street, Sydney.
Telephone: B 5586.

Radio House
619 George Street Sydney
Telephone: City 1487.

Colville-Moore Wireless Supplies
10 Rowe Street Sydney.
Telephone: B2261.

Ramsay, Sharp & Co. Ltd.
217 George Street, Sydney.
Telephone: City 3176.

The Home Electric
106a King Street, Sydney.
Telephone: B 5565.

Pacific Radio Co.
Temporary City Address:
2nd Floor, 121 Pitt St., Sydney.
And 38 Donnelly St., Balmain.

O'Sullivan's Electric Shop
(Frank E. O'Sullivan)
296 Pitt Street, Sydney.
Telephone: City 8070.

Swains
119-123 Pitt Street, Sydney.

N. P. Olsen,
18 Hunter Street, Newcastle.