WIRELESS WEEKLY

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VOL. 5. No. 14. 3D FRIDAY, JANUARY 30, 1925.

FEATURE

A Short Wave Crystal Receiver

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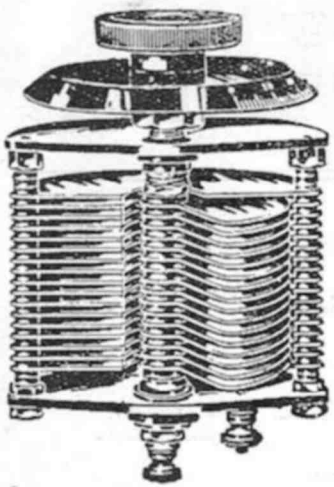
When coils are used with .001 mfd variable condenser in aerial circuit and .0005 mfd variable condenser in plate circuit, the following approximate wave lengths will be obtained with the coils in the following positions (but it will vary considerably under different aerial and general conditions):—

Approximate wave length	Aerial	Anode	Reaction
150-300	25	35	50
200-400	35	50	75
300-500	50	75	100
400-600	75	100	125
500-1100	100	125	150
700-1200	125	150	200
850-1600	150	200	250
1100-2400	200	250	300



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Official Organ of the New South Wales Division of the Wireless Institute of Australia, with which is incorporated the Affiliated Radio Societies and the Australian Radio Relay League.

FRIDAY, JANUARY 30, 1925. VOL. 5, No. 14.

CONTENTS:

EDITOR: A. W. WATT The Editor will be glad to consider Technical and Topical Articles of interest to Australian Experimenters. All Manuscripts and Illustrations are sent at the Author's risk, and although the greatest care will be taken to return unsuitable matter (if accompanied by stamps), the Editor cannot accept responsibility for its safe return. Contributions should be addressed to the Editor, "Wireless Weekly," 12/16 Regent Street, Sydney, N.S.W.

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EDITORIAL

Low Power Transmitters

A COUPLE of weeks ago we commented in these columns upon low power transmitters and suggested that perhaps the scope of the existing regulations could be widened so that a man situated in the country, with a genuine desire to alleviate the inconvenience of his isolated position by the use of a wireless telephone set, could achieve his objective without the usual formality of a technical examination. We pointed out that in such cases there is neither time nor inclination to study up a great deal of theory which after all is often beside the point and could safely be dispensed with where it is desired to operate a simple form of home made transmitter, the construction and working of which would entail no super technical knowledge.

With the object of ascertaining the attitude of the authorities upon this subject and to render a services to those of our readers interested—and we have reason to believe that a great many of them are—we communicated with the Chief Manager of Telegraphs and Wireless in Melbourne. In his reply to our communication, Mr. Malone pointed out that the conditions of licensing such stations were covered in Regulations 36 and 37 under the heading of Land Stations.

Regulation 36 refers to points which may be regarded as formal and reads as follows:—

An application for a land station license shall be in writing and contain the following particulars:—

(a) The locality of the station in respect of which the license is applied for;

(b) The name of the owner of the property on which the station is situated and whether the applicant is owner or lessee;

(c) A description of the system of wireless telegraphy to be used (transmitter and receiver), including source of power and maximum power taken by transmitter;

(d) Type of aerial;

(e) Wave-lengths (in metres) of transmitter;

(f) Source of and maximum power;

(g) Maximum power taken by transmitter;

(h) Name of station or stations with which it is desired to communicate;

(i) Normal range of signalling (in miles)—(a) by day, (b) by night;

(j) Charges for service; and

(k) The telegraph or telephone communication now available. If none, the nearest telegraph or telephone office.

An elaboration of one or two of the above clauses is necessary in order to make the position quite clear. In (h) it is quite obvious that the owner of the station must indicate definitely with whom he wishes to communicate and that the scope of his transmissions is limited. The clause (k) is the most important, because an application from persons who are already in touch by telephone or telegraph will presumably not be granted on the ground that the service which it is desired to conduct would be competing with the existing means of communication. Even this, however, appears to have been provided for in paragraph 4 of regulations No. 37, which says:

(4) Unless specially authorised by the Minister, the licensed installation shall not be utilised for conducting commercial traffic constituting competition with the Postmaster-General's telegraph and telephone services. Whether this is inserted to cover probable installations by commercial companies is not clear, and since it is not laid down definitely, we may assume that even where telephone facilities are available the case of a private individual requiring a wireless telephone set would still merit consideration, provided the installation were used for purely domestic purposes. Many of our readers have asked us the nature of the license that is required and a survey of clause 3, regulation No. 37 is illuminating. It reads: "The licensed installation shall be operated by a certificated operator or by a competent person who shall be approved by an authorised officer." In this case also, it will be noted that discretionary powers are exercised by the Minister

through an authorised officer, in this case the Radio Inspector in each State, subject to the approval of the Chief Manager of Telegraphs and Wireless. In other words it is left to the Radio Inspector to decide whether the license may be granted, whether the applicant possesses a certificate or not. It will be easily seen that, under this proviso, genuine cases are assured of consideration, while probable abuses of the regulations are obviated, or at least checked by the first portion of the clause relating to a certificated operator, because where the authorities are reasonably sure that an applicant would not be a suitable person to operate a transmitter, then they merely have to stipulate that the operator must hold a certificate.

Now the meaning of the words "for domestic purposes" should be quite clear to most people. It really refers to all communication other than purely commercial. For instance, orders could not be solicited or goods offered for sale under this particular license in the cases we are referring to.

All boiled down then, those persons in whom a wireless telephone set would prove of value from a domestic point of view should at once make application to the Radio Inspector at the State capital for a Land Station License and these applications will, we feel sure, receive sympathetic consideration.

RADIO IN AMERICA.

IN America a year ago it was predicted that the demand for radio receiving sets would slacken, since it was believed that the market was becoming saturated, but according to reports to hand from the United States Department of Commerce the reverse is true. A notable increase in the sale of receivers was shown in the past year, retail sales approximating nearly forty million pounds sterling.

During the recent American summer receiving sets were purchased on a far greater scale than any time since such apparatus became available to the public. A feature of the development that is of particular interest is that there is little sale for the cheap set, but a big demand for high-class 3, 4, and 5-valve sets, built on approved radio engineering principles and set in a high-grade cabinet. There is little doubt that in America the industry has become stabilised. There is every indication that Australian conditions are tending towards a demand for better sets, both in regard to workmanship, performance, and appearance. In the country that is particularly noticeable.

Interstate Notes

VICTORIA.

Mare's Nest in the Press.

THE perfervid enthusiasts who write for the press without understanding their subject have lately bloomed out in a journal which gives free scope to their imaginations. The first issue contained three howlers. The incautious listener-in is informed (a) that two 4000 ohms telephones in series offer 1,000 ohms resistance; (b) that —?— turns of S.W.G. 26 cotton-covered wire weighs 15 ozs., and (c) that O. J. Neilsen's station has the call sign of 3ZU. The correct answer to (a) is of course 8000 ohms resistance, since the telephones would have to be in parallel to offer only 1000 ohms resistance. In (b) the weight of —?— turns of S.W.G. 26 d.c.c. wire is —?— ozs. In (c) the call sign of O.J.N. still remains 3UZ as ever. Another funny blunder in the daily press is the announcement that Max Howden had been made a member of the Wireless Institute for his achievement of two-day code practice with G2OD. But aren't we all members? Of course the officials of the Institute take themselves very seriously so very probably it was they who misled the simple reporter in this case. Another statement about Max Howden is that his reception of G2OD was preceded by 2CM's message to the King, sent through the same English medium. A Victorian journal really ought to have known better. In the same source of misinformation we read that Hertz was an obscure German scientist whose researches into electro magnetic waves were dug up by Marconi out of a second hand book shop and made available to the admiring world. This indeed is what may be called news, as distinct from mere truth. The moral of course, is that listeners-in must still depend on Wireless Weekly for reliable news, and all others are merely eavesdroppers.

NEW ZEALAND TRANSMITTERS.
ADDITIONS.

Add the following to your list:—
1FL—Dr. J. B. Liggins, Thames.
1FM—J. E. B. Warn, Auckland.
1FO—E. R. Cooper, Auckland.
2BY—N. C. Shepherd, New Plymouth.
2BZ—L. R. Keith, Elphinstone, Hawera.
2GA—J. Johnson, Palmerston North.
4AS—P. H. Mason, Dunedin.

HEADQUARTERS
Royal Society's House
5 Elizabeth St.
SYDNEY, N.S.W.

Wireless Institute of Australia

N.S.W. Div. Inc.

Incorporating the Affiliated Societies and The Australian Radio Relay League

Phil. Renshaw, Hon. Sec.
Box 3120 G.P.O. Sydney
Phone B2235
A.H.Ferrett Publicity Officer.

NEW SOUTH WALES DIVISION.

Delegates Council Meeting.

The Delegates Council Meeting held at the Institute Headquarters on January 16 did not receive quite the support that it should do from the Affiliated clubs. While there were 11 (eleven) clubs represented, including the newly formed Wahroonga Club, quite a number of important clubs did not send a Delegate, and this action is to be deplored, particularly as in one case an important matter had been placed on the agenda paper by one of the unrepresented clubs.

The importance of attending these meetings cannot be over estimated, and while primarily the club concerned is the chief loser yet it affects the whole experimental movement to this extent, that some phase of the matter as viewed by an unrepresented club might be overlooked, and the interests of some section of the experimental movement might not be fully represented.

As one of the conditions of Affiliation is that a club shall have at least 15 financial members, it is only a logical conclusion that in the event of the regular delegate being unable to attend there are 14 other potential delegates from the same club. Even eliminating 50% of these for various reasons, they still will have seven available members to act as delegates. In the majority of cases club membership is not limited to the necessary 15 members, and therefore the excuse for being unrepresented becomes all the more inexcusable.

Representatives from the following Clubs were in attendance. R. Shelton, Campsie and District Radio Club; N. P. Olsen, Wireless Society of Newcastle; W. Graham, Illawarra Radio Club; A. Cameron, Northbridge Radio Club; W. H. Barker, Concord Radio Club; C. Clarke, Railway and Tramway Inst., Radio Club; A. Burrows, Waverley Radio Club; K. Campbell, Strathfield Radio Club; G. M. Cutts, Croydon Radio Club; W. L. Hamilton, Marrickville and District Radio Club; — Bourne Wahroonga Radio Club. Mr. Renshaw was present as the representative of the Wireless Institute and Secretary of the Council. The Publicity Officer was also present.

The question of club lectures was discussed and the present position was fully explained. It does not seem to be realised that an enormous amount of work is entailed in arranging this roster but matters are now on the way, and the new roster promised to be quite a success.

Relay League.

It was decided by the Delegates Council that in the matter of the Relay League a new committee should be formed, without prejudice to the existing committee, to further the interests of the league, and to get matters on a thorough working basis. The following gentlemen were elected to serve on the committee, Messrs. Nolan, Cutts, Hamilton, Olsen, Bourne, Barker, Shelton, Graham, and Renshaw, with power to add to their number. This committee will get busy and great results are expected at an early date. The question of Club policy with regard to research work was also discussed, and many suggestions were made, but this matter has not yet been finalised pending the discussion of the matter by the Affiliated clubs, and it will be brought forward at the next meeting.

It was decided that the meetings of the Delegates should take place on the second Friday of each month, and delegates or their deputies, should make a careful note of this date. Notification will, of course, be made in due time, but if on account of delays in the postal arrangements notices are not received by the Delegates, they should make it their business to ring Headquarters, B 2235, and enquire whether there has been any alteration from any cause.

Institute Membership.

Once again we have pleasure in recording that membership of the Institute is growing by leaps and bounds. The Qualifications Committee recently interviewed no fewer than eight prospective members, and there are already three more waiting to go before this committee.

Standard Transmissions.

Station 2CX notifies us that preliminary standard length transmissions will probably commence next week. There has been some delay in getting this going, owing to the large range of wavelengths required, and various circuits have been tried with more or less success.

The results of these experiments, however, is about to bear fruit, and at an early date this trans-

mission should be in full working order. It is anticipated that the range will extend from 250 metres down to 70 metres, or even lower. Full details of these transmissions together with the schedule of working will be published as soon as matters are finalised.

Q.R.M.

2BB is not the only one who spends sleepless nights. Recently 2CM was disturbed in the middle of his beauty sleep by a thunderous crash. Hasty investigation proved that one of his masts had collapsed. It was not the one erected by 2CM and 2CX.

Talking of masts 2GM is erecting a new one. it is 70 feet high, and will be erected by means of a motor car. How about trying an aeroplane 2GM? The motor car might be more appropriate for putting in an earth.

Whereabouts on the wave band is 2ED? Nobody can find him.

2DE should have an interesting log. He is working early morning and late at night, but whether it is all wireless we are not prepared to say.

2MJ is still very quiet. We should be glad to hear from him again.

The "round the world" DX tests seems to have died down. What fresh thing are experimenters hatching now?

Two elderly gentlemen going down George St. were overheard repeating the following which was evidently a fragment out of the ether. "Is that you 2JM. 2RJ speaking. Hullo 2JM, 2RJ here." B.C.L's. evidently listen to the hams sometimes.

A. H. PERRETT
Publicity Officer.

THE LEICHHARDT AND DISTRICT RADIO SOCIETY.

Members of the Leichhardt and District Radio Society held their 115th General Meeting at the club-room, 176 Johnston St., Annandale, on Tuesday, January 20th.

The attendance was good, and the evening was spent at Morse practice and a discussion on experimental wireless matters in general.

Next Tuesday evening the Society will hold its 28th monthly business meeting, when official business on hand will be dealt with. On the following Tuesday the second lecture of Syllabus No. 3 will be delivered by Mr. E. J. Fox, who will entertain members with a very interesting discourse under the heading "Aerials and Their Erection." A club debate will be conducted on Tuesday, February 17th, and from that date onwards the various items on the syllabus will be dealt with in their respective order. Details of the syllabus appeared in the last issue of Wireless Weekly, and the Society's Hon. Secretary, Mr. W. J. Zech, of 145 Booth St., Annandale, will be pleased to forward a copy of the syllabus to anybody interested in the wireless experimental movement. Details of matters appertaining to rules and membership will also be gladly supplied on application.

STRATHFIELD AND D'STRICT RADIO CLUB.

The ordinary weekly meeting of the above club was held at the Club-rooms, corner Albert Road and Duke Street, South Strathfield, on Monday evening, 19th inst. The attendance was very fair and in interesting evening was spent by members.

A short period was devoted to business matters and a general discussion of subjects of interest to experimenters generally, after which Mr. T. Harris gave a short lecture on the operation of low loss receiving apparatus. Another short lecture on valve theory was then given by the Secretary when the characteristic curves of the UV-201A valve as a detector and amplifier were analysed and the action of the valve in each case briefly explained. The committee of the club meet this week and among other business they will deal with the preparation of a suitable syllabus of club activities on definite lines. The club's financial condition having very much improved of late the purchase of additional apparatus for the use of the club is another matter which will have the attention of the committee. This accomplished the club will then be in a position to conduct useful experiments and as finances permit keep on adding useful pieces of apparatus and eventually (before very long we hope) carry out experiments both in transmitting and receiving.

Inquiries regarding the Club's activities addressed to the Hon. Secretary, Mr. K. Campbell, 44 Bayard Street, Mortlake, will receive prompt attention.

WAVERLEY RADIO CLUB:

Mr. G. Thompson, the club's technical adviser, at the meeting held on January 20, favoured the members with a highly interesting chat on "The Operation of Transmitters." Mr. Thomson followed the subject from the simplest circuits to modern amateur outfits.

In the syllabus for the ensuing month drawn up at this meeting is a sale of gear by the members, also a debate on the subject, "Alternating Current v. Direct Current." The month will be concluded with the anniversary celebrations and official opening of the transmitter.

Details concerning the club's test with 2XA (Mr. H. K. James) on the next two nights were finalised. 2XA at this time was at Goulburn. After different minor matters had been discussed the meeting closed. Mr. A. Burrows occupied the chair.

With Our Readers

Membership of the Victorian Institute.

(To the Editor)

Sir,—As a present member of the Wireless Institute who shares, in common with many more, the danger of being disfranchised by an utterly unconstitutional action on the part of officials elected by ourselves (but who apparently regard themselves as life members) may I appeal to fellow members through your columns to wake up to the gravity of the situation brought about by the issue of the new Membership Form. With the ostensible object of improving the status of the Institute the Executive without any authority from members, has determined to make membership subject to election only on a statement of certain unspecified qualifications which are to be submitted not to the sections but to the central body. This of course is a drastic superseding of the present universal suffrage laid down in the Constitution as a result of the appeal for unity issued to the various Clubs about two years ago. As a result of that appeal the Clubs that were then already in existence or becoming so in consequence of a revival of interest in wireless were induced to transfuse their new blood into the moribund veins of a rather discredited Institute and thus gave it a new lease of life. The Institute was further revivified by the success of the Wireless Exhibition held last year, that was again saved from being an utter fiasco only by a last minute S.O.S. to the sections that up to the eleventh hour had been ignored by the central executive. In consequence of these achievements those men whom the complacent sections have allowed to remain in power are now suffering from an aggravated form of megalomania that is only possible in this easy-going community. They have already insulted numbers of members by labelling them with the needlessly offensive epithet of B.C.L. with the result that many of the sections now lack the support of men of experience and capacity who did much to build up the Institute and in a desperate attempt to loom large in the public eye the officials are constantly posing as the whole of the Institute without reference to the rights and wishes of the component sections. This sort of thing may doubtless bring a lot of notoriety to the would-be permanent heads, but can do nothing but harm to the cause of Wireless as a popular pursuit in Australia. The Wireless Institute moreover, has a definite constitution that does not permit of the restrictions on membership as promulgated by the Executive and if these restrictions are allowed to go through by default owing to the lukewarmness of the members of sections who still

WIRELESS INSTITUTE OF AUSTRALIA, VICTORIAN DIVISION.
APPLICATION FOR MEMBERSHIP.

The Honorary Secretary,
..... *Section,*
.....

Dear Sir,—

I herewith beg to apply for admission to the above Institute as a ..... *Member, and, if admitted, agree to abide by the Constitution and By-laws, and all amendments to same.*

(*Signed*) .....
(*Address*) .....
.....

Proposed by .....
Seconded by .....

QUALIFICATIONS FOR ADMITTANCE AS A MEMBER.

Type of Licence held by applicant (if any) .....
Details of any scientific experiments carried out by applicant .....
.....
.....
General Qualifications .....
.....

(For use of Institute only.)

Examined .....
Remarks .....
Elected .....

.....
Honorary General Secretary.

(The form referred to by our correspondent, "Untrammelled Member.")

remain on the books, it will only be owing to their complaisance and indifference to the rights of others. It is hardly an Australian sentiment to say, "let the galled jade wince, my withers are unwrung," or in more modern language, "my troubles about the other fellow, so long as I'm a member." The point is that to demand a statement of qualifications is foreign to the democratic character of the Institute and that it at present possesses no qualifications of its own that make it competent to decide who is or is not fit to be a member. No doubt the Executive comprises a lot of good fellows very interested in wireless, but most of them are notoriously prone to agree to anything proposed by one or two of the swelled heads without taking into consideration the good of individual private members, of the section, and of the Institute as a wide-awake body representing wireless in Australia as a whole. The silly nonsense talked of obliterating the B.C.L. requires to be knocked on the head, and unless this is done forthwith by electing delegates truly representative of what the sections ought to be, the Wireless Institute in Victoria will degenerate into a hobby-horse for a few hunters after notoriety and with no influence for good over the great and growing population of listeners-in and young experimenters for whom it should open wide the doors of membership.—Yours, etc.,

AN UNTRAMELLED MEMBER.

Melbourne, 18/1/'25.

(To the Editor.)

Sir,—Who is this gentleman Mr. Macrow?

I would be very sorry to do him an injustice, but, judging by the tone of his recent correspondence, I am forced to the conclusion that he is really asuming too much authority in the matter of what he terms: "Gramophone Fiends."

In your issue of the 9th inst., he starts off in a very commendable spirit, and one had hopes of a better conclusion. He benignly mentions Christmas as being a time for "goodwill towards all men" follows on with a qualified but most condescending generosity towards Mr. Nolan; and later becomes somewhat dictatorial, and says that a certain amateur "will have to be stopped." Is this gentleman Comptroller General of Wireless in Australia, or what are his credentials that he "Ma'crow" about in things wireless? I have been reading wireless literature for a considerable period, and I have to confess that I haven't heard of him before—but, of course, that is no criterion—possibly due to my lack of observation—or gross injustice on the part of the wireless publications.

It would seem to me that the "gramophone fiends" know—and further—act more in the spirit of Christmas than does Mr. Macrow. I am sure that these fiends transmit music as being something of interest and entertainment for "mankind," and I therefore think that considerable appreciation is due to them instead of the very destructive criticism that has been recently hurled.

With regard to the particular transmission mentioned as extending from 10.30 a.m. to nearly midnight on a recent Sunday, I wish to state that I—and there must have been hundreds of others—appreciated it greatly; but I can easily understand that it would be anathema to some people; for, during the time I listened, the programme was highly classical; and, in my humble opinion, displayed a well developed musical taste on the part of the transmitter.

Mr. Macrow's argument re faulty rendition of gramophone records via wireless would suggest that there is some scope for experiment, rather than that it is a reason why it should be discontinued, but does not the same apply to the programmes of the broadcasting companies—both vocal and instrumental items—but I presume that they will nevertheless be permitted to go on.

Mr. Macrow claims some credit for having assisted W.W. in relieving the public from gramophone horror. This is somewhat surprising. Was there ever a public vote taken on this matter? Did the public depute anybody to do them this "kindness"? And further, I was unaware that W.W. was intent on eliminating this "nuisance." Now, I think that I am one of the majority class of W.W. readers—who have no intentions in the transmitting line — who have a limited knowledge of Morse—and who merely dabble in the making up of receivers. Such being the case, I would point out that the "gramophone fiend" facilitates additional entertainment for us; affords us considerably increased interest and satisfaction by enabling us to ascertain the distance of our reception, and therefore the efficiency of our outfits. The exclusive Morse transmitter, is a nonentity with us. In these circumstances, if, as alleged, it is true that W.W. is in opposition to the gramophone music transmitter, I would suggest that there is some scope for a reconsideration of its attitude.

Of course, there is a limit to all things, but I fail to understand why an experimenter cannot be permitted to "grind out" some music for entertainment purposes, and yet at other times (or concurrently) advance his knowledge of the science; but apparently there are some individuals who would hold the cancellation cudgel over their heads continuously ready to drop on the first occasion of relaxation. These individuals could be aptly termed

(Continued on Page 36)

BRINY REMINISCENCES

By "BRASSO."

A NUMBER of the German vessels captured in Australia during the war were not fitted with wireless apparatus, and it was not until after they had been allowed to browse around the wide oceans for a couple of years, minus the S.O.S. contraption, that the naval authorities suddenly decided to fit them up in accordance with the needs of the moment. The ex-enemy vessels were at that time under the control of the R.A.N. and the personnel, except for the wireless operators, was under the control of my old friend, of the "Ulysses," Captain Brewis, a stern old martinet who, when you percolated under his service mannerisms proved to be extremely big in the heart and afforded me one or two kindly actions which meant quite a lot to me at the time. However, the old gentleman, backed by years of naval discipline and etiquette and with a pathetic misconception of merchant service ideas and customs, frequently bumped trouble of his own making. The officers of those ships were as a rule rabidly democratic in their ideals; picturesque uniforms were tabu and the usual somewhat elaborate discipline peculiar to English vessels was regarded as totally unnecessary. Hence, when Captain Brewis, on one occasion pulled the officer on the gangway up for not saluting him, that individual spat neatly over the rail and requested him to go to blazes, whereat there was much ado, and a new officer was required. One or two of the skippers and some of the officers on these steamers, however, used to more important vessels, stuck religiously to their gold braid, much to the disgust of Captain Brewis, who threw a brickbat by issuing instructions that black buttons and braid should be worn. Nobody took any notice of this, except to comment humorously upon it.

The wireless personnel was administered by a Department rejoicing in the vain glorious title of the Royal Australian Naval Radio Service, under the control of Commander Cresswell, who upon the establishment of this Department, had succeeded in elevating himself above the privileges covered by the somewhat meaningless designation of Fleet Wireless Officer, carrying the rank of Engineer Lieutenant. Rumour had it that the R.A.N.R.S., to abbreviate it a little, was regarded as somewhat of a joke by the rest of the Naval Service, and whether or not this was so, it is certain that by the sea going operators, it was considered the most Gilbertian affair ever staged in the history of Australia. It was presumably this Department which originated the infamous document, upon signing which, an operator renounced all rights as a private citizen without being afforded the same rights and privileges granted to one who had forsaken his ordinary avocation to offer his services to his country in time of war—which was in effect what the sea going operators did. They agreed to be attached to the allied fighting forces afloat or ashore wherever it was considered necessary and to faithfully serve their King—but under the distinct understanding that they were not eligible for pension or other rights granted to the ordinary enlisted individual. It requires no extraordinary sense to realise what a strangle-hold the executives of this glorified mushroom Department which by public demand was wiped out of existence after the war, had over the unfortunate wireless operators. Besides Commander Cresswell, two other individuals directed, or misdirected, the destinies of operators on the merchant ships run by th Australian Government they were Lieut. Newman, an obscure individual, pitch-forked into the job as Assistant, and Chief Petty Officer Evans, a hidebound service man whose conception of merchant service conditions was probably on a par with the average citizen's conception of the phenomena of electro-magnetic waves. These three were ensconced in fine offices in Collins House, surrounded by maps and garbed in uniforms befitting their dignity.

As an indication of the Wall Street business methods adopted by the "Service," I may instance the case of sustenance allowance granted to operators temporarily ashore, which in 1914 was 8/- per day, subsequently shrunk to 6/-, and by a final triumphant stroke of the pen, was in 1917 reduced to 3/- per day—and I have in mind the case of two junior operators each receiving £9 per month, under my charge, suddenly unloaded upon the beach in London in the middle of winter. Both were mere boys, entirely without friends, and being a bit up against it myself, I was forced to accommodate them in the Seamen's Home, near Whitechapel, where for a month they ate at tables with Dagoes, Swedes, and the riff-raff of the water front. No arrangements whatever were made to

advance them money in London, and had it not been for the fact that a shipping company generously came forward with an advance, they would have been penniless. Such then was the highly efficient machine under which a number of promising young men found themselves during the war, and the sigh of relief which went up when the ex-enemy vessels, together with their oprators were formally handed over to the Commonwealth Government Line late in 1917, was almost sufficient to blow Messrs. Cresswell and Newman off their chairs through the roof of Collins House. Almost immediately afterwards, the Radio-Telegraphists' Institute became active, and conditions thereafter improved steadily until at the present day, the wireless officer of the Australasian Mercantile Marine occupies a position considerably in advance of that enjoyed under any other flag.

However, back to our armchair psuedo Admirals. About June, 1917, I signed off the Aberdeen White Star Liner, "Miltiades," at Melbourne, and after loafing around that gay and festive burg for a couple of months, received instructions to join the S.S. "Cooee," a dropsical dromedary of a ship then run by the Australian Government and used for the conveying of freight from Australian ports abroad. She had no wireless apparatus on board, but was in the process of being fitted up. In due course, a lorry arrived bearing one Australian Ford set which was constructed at Randwick workshops, then administered also by the R.A.N.R.S. I have already brought coals of fire upon my head by commenting upon this type of set, but I often wondered why on earth the designers didn't call in the services of a practical marine operator to advise them how it should be built. Apparently, however, the Randwick Workshops were full of theorists whose colossal brains were forever evolving something new, but unpractical.

Anyway, the chart room having previously been divided into two sections, the Ford was heaved aboard, and rolling up our shirt-sleeves, Inspector Crawford and myself proceeded to instal it—at least he did the installing, while I assumed the attitude of watchful waiting, one famous to diplomats and tacticians the world over. The whole job occupied about three hours, and after Inspector Crawford had gone I was left alone to contemplate the 8 x 8 dog box into which fate and the R.A.N.R.S. had pitch-forked me. The set was mounted on the forward bulkhead, while the bunk ran fore and aft and a washbasin reposed in the corner hard against a two foot settee. There was no wardrobe and nothing on the floor—and nothing by way of bed clothing on the bunk. Apparently my hide was considered thick enough to keep out the wintry winds. The chief steward had no extra bedding aboard and the Captain assured me that the R.A.N.R.S. must move in the matter of bedding. Promptly, therefore, I communicated with friend Newman on the subject, but that individual couldn't raise a brain wave, and accordingly therefore, the "Cooee" sailed minus bedding for the chief wireless operator, a most pathetic state of affairs. Still, such were the good old days under the R.A.N.R.S. —one never knew what little privileges or pleasures to expect or what happy hours Cresswell, Newman & Co., spent mapping out plans for the comfort of those who had signed the infamous document and if their accumulated genius often resulted in these merry little escapades such as a bedless voyage or a prowl round the London streets without money —well, we should worry, and get wrinkles. As Omar puts it, "They were good fellows, and 'twill all be well."

Fortunately, however, we were proceeding to Sydney, and the two nights at sea I spent dreaming pleasantly on the settee in the 2nd engineer's cabin where the clatter and bang of the adjacent engine room, like a lullaby, soothed my slumbers. We landed into Sydney in the middle of the seamen's strike, and as one man, our crowd donned their go-ashores, packed their blueys, and beat it. After two months, hovering around waiting for the various factions ashore to fight it out, we sailed again for Melbourne with a volunteer crew of bushwhackers, and after a perilous voyage during which most of the crew were seasick, eventually hit Melbourne again. Here I was suddenly transferred on the eve of sailing to the "Barunga," my effects and myself being hauled up the side in most undignified manner, as she moved away from the wharf, and in the middle of the heaviest rain Melbourne had experienced for 25 years.

RE - RADIATION

HOW CRYSTAL AND VALVE SETS MAY INTERACT TO THEIR MUTUAL BENEFIT.

By "Crystalion."

LAST year I had the pleasure of making some observations in these columns about several long distance receptions on crystal sets, and pointed out that the theory of re-radiation although not sufficient to account for some of these results, was yet full of interesting possibilities. In view of further developments and remarks made by other contributors, and notably by "Valve," in his article on "The Crystal Menace," in the last issue for last year, I again return to the subject. Now, a great deal of misconception exists as to the relative importance of crystal and valve, and this in spite of the excellent results so many people have obtained either on a crystal alone or with a stage or two of valve amplification. The fact is that the crystal looks so absurdly easy to handle, and is so little subject to intricacies of manufacture, that most persons regard it as no serious rival to the valve and fit only for children and beginners. This attitude towards the most marvellous of wireless discoveries is quite a mistaken one. If the same care and precision were lavished on a crystal set as on a valve set, some of the so-called "freak" receptions would become quite normal. Occasionally some amateur, through ignorance or industry, bestows extra care upon the construction of his crystal set and lavishes extraordinary patience on the somewhat tedious adjustment of the catswhisker or is lucky enough to get an extra good crystal, or finally adds to all these the advantages of being in a favourable geographical and meteorological position, and telephony rolls in from over a hundred miles away. Then the hardened user of valves nods his head knowingly and remarks with superior wisdom that re-radiation explains all that, but forgets to explain how it is that re-radiation explains it.

Then again the user of a single valve gets busy o'nights and with his little P1 receiver emitting oscillations upon the stilly ether, rakes in stations far beyond his recognised range, and of course, occasionally gives a howl of excitement like a Scotchman dancing to the bagpipes. Sometimes he exceeds the range by a thousand miles or so and hears KGO or thinks he hears G2OD, and his brother of the bi-valve, who makes the world his oyster, again whispers "Re-Radiation," and calls Heaven and Earth and all his legislators to stop these howling nuisances. He, too, forgets to explain how it is that Re-radiation is responsible.

Finally there comes into the mind of an amateur that he was born to circumnavigate the ethereal globe, and he sets out on a three-decker valve set to do so. He is accompanied on the voyage by a score or so of listeners-in who hang like porpoises about his track and occasionally go all the way with him. This time we hear nothing about re-radiation, yet nothing is surer than that the effect is just as likely to be in operation in this case as in the others. Now let us look into the matter for ourselves. What is re-radiation? The little prefix "re" is quite a common one in the English language. At school they tell you it means "again", but that is only half the story. Its full meaning is to do over again in the opposite way. To re-turn is to turn back over the same track to where you started. To re-act is to do something or somebody else what that thing or person has done to you. To re-radiate is to radiate out again into the ether on the same wavelength the signals you are receiving. It does not mean what is often too loosely implied — that re-radiation is necessarily an evil. From the very nature of re-radiation is must be of the same character as what is heard in the phones of the re-radiating receiver, and if that is good, the re-radiation is a benefit to all concerned and might be made to serve an extremely useful purpose, of which more anon. But let us just at present look further into the matter of how re-radiation is brought about. First of all, consider how a wireles aerial picks up signals from the ether. We all know of course that wireless waves are traversing all space from the broadcasting station as centre. As they pass along they encounter here and there a wireless aerial. What happens? There are those who loosely tell you that the waves enter the aerial and pass down it to the set, which is absurd. The aerial is not a sponge or a sluice or a pipe conveying fluid from a reservoir. Electricity is not that sort of thing at all. It works in quite another fashion. It isn't a substance and has no specific gravity, about which a recent correspondent in these columns so affectionately enquired. It is as well to remind ourselves that besides substance there is in this world a thing called force, and electricity is as nearly a disembodied force as this world knows of.

Wireless waves are waves of force propagated through the ether and they don't drip down through aerials like rain through a spout. Let us look a little deeper. Everybody has held a magnet over a needle and watched how in some mysterious way that needle moves without any visible connection with the magnet. Every other force except light and radiant heat and one or two other surer ones act with a more intimate material connection between the doer and the sufferer of the force. If you hammer a nail or drive a steam engine there is contact between hammer and nail or steam and piston to produce the effect of force, but between your magnet and needle there is a great gulf fixed of several inches and across this chasm science has been striving for years to throw a bridge of explanation. The result nowadays is that as one great scientist has told us, we at present know more about electricity and magnetism than we know about water. So far from being a mystery to those who want to understand, electricity is one of the best explained things known to man. If you ask a student what electricity is, he can tell you much more precisely than he can tell you what a loaf of bread is. There is mystery in all things, but not more in electricity than in anything else. Now go back to your needle and magnet. The needle, it is found, becomes itself a magnet and forms a little sub-centre of magnetism that is more or less permanent according to circumstances, but at any rate the needle re-radiates magnetism so long as the magnet is near it. The magnet in fact is giving out a species of static wireless that is our earliest introduction to this vast subject. But now, instead of a magnet hold a straight piece of wire connected to an electric battery over the needle. The needle again moves because the electrified wire is radiating magnetism and setting up magnetism in the needle. For the needle, substitute another wire and send an oscillating current through the first wire and you will get an oscillating current through the second. Or rotate a magnet near a wire and you will get the same effect. An oscillating current is produced or, as we may say, induced in the wire in both cases. Finally, at some far-away transmitting station send out electro-magnetic waves generated by a system of batteries and magnets or magnetic coils and the very same effect is produced by the very same means on a wire stretched out to receive it. Only we call the effect wireless and the wire an aerial. There is no soaking up of invisible waves, but just the same old inductive effect. The wave in passing on its way induces an impulse in any wire THAT IS IN TUNE TO RECEIVE IT. Incidentally this explains how it is that we can use isolated wire for an aerial. If the aerial were simply a sponge soaking up electricity from the air, then of course a covering of insulation would prevent it from absorbing electricity, but if the effect is inductive, then the insulation no more interferes than it does in a dynamo or motor where insulated wire revolves in a magnetic field and has currents inducted in it.

This last point now brings us to a view of the aerial that is essentially a sound one. Curious as it may seem, the aerial is really as much an electric generator as the most complicated turbo-generator in any power station. It is a dynamo reduced to its simplest parts, but with all its properties intact. In a dynamo, electricity is generated through a wire cutting lines of magnetic force. Well, the aerial is the wire, the lines of magnetic force are furnished by a distant station, and the cutting is brought about by the oscillation of the electro-magnetic waves of wireless. This is not simply an analogy, it is an identity. So let us consider a little further what else happens in a dynamo. When the wire in a dynamo revolves in the magnetic field, it does so merely for mechanical convenience. In some dynamos in fact the magnetic field revolves and the wire is stationary. Since the magnetic field emanates from magnets the magnets themselves also are revolved, but even this is not essential, as there is an interesting class of electrical machines where the magnetic field revolves although the magnets also are stationary. The essential thing is to get a moving magnetic field cutting across a wire, and when that is achieved, currents are generated in the wire. Now our little prefix "re" comes again into play and there is re-action in the wire. Round every wire through which a current is passing, there radiates a magnetic field so we have a field producing a current and that current re-radiating a field. The wire electrified by magnetism re-radiates magnetism. Now we see where we are coming to. The aerial is such a wire. It accordingly re-radiates electro-magnetic impulses and if these are boosted up by any internal or local means the aerial becomes a source of auxiliary oscillations and acts as a relay for the distant signals. Now in the case of two adjacent wires, we are likely to get what is regarded by my fellow contributor, "Valve," as "The Crystal Menace," whereas it is more than likely to be either a menace or something better, due to a valve or merely to proximity. Take two aerials parallel and adjacent. The effect of wireless waves cutting across these two is likely to be more than double

the effect on each alone, provided they are both in tune and particularly provided that their inductances are approximately the same. The effect is exactly equivalent to two turns adjacent in the same coil. Each helps to build up the inductive effect of the other, because each re-radiates to the other the effect of the inducing force. This is called mutual inductance, but it does not act in opposition nor by way of leakage as "Valve" apparently assumes, and if his experiments show a cancelling effect he must look elsewhere for the reasons. Good absorbers are bad radiators in wireless, so that if the signals in a valve set fail when an adjacent crystal set comes into tune the fault is with the aerial of the valve set for radiating so strongly and it would be interesting to look on both sides of the question and enquire into the effect on the accused crystal set as well as on the accuser. Again, in the case of the howling valve niusance, which incidentally we may remark is a very real and objectionable one, let us see whether re-radiation is concerned. A valve howls when its own oscillations are out of tune with the incoming carrier wave to such an extent as to obliterate the modulations. It must always be slightly out of tune in order to get the heterodyning effect, and it is highly probable that a lot of howling is due to corporate heterodyning to different amounts by not one but a multitude of neighboring valve sets. In a recent issue of the Victorian amateurs' magazine de-tuning is deliberately recommended by the Editor as a means of improving one's own reception, but no reference is made to its possible effect on neighboring receivers, although if the detuned set is a powerful one and the aerial a good radiator, the howls that fly by night may quite conceivably come home to roost on all the aerials in the neighborhood. So far we have been considering re-radiation as an unintentional blessing or curse. It may help or hinder a crystal set or multi-valve set. The combined and intelligent efforts of pre-concerted experimenters to get some long distance station on code or telephony are more likely to be crowned with success or failure than when only one or two have a try. Isolated listeners-in may be either better or worse off than those in a crowd. It greatly depends on the other fellow. If every amateur in Australia knew how and did his best, to hear telephony from England, then there would be as many more likely to hear it than otherwise. That much is so certain that it is almost as certain that a good deal of the excellent DX work done at night is due to the preponderance of night workers over those of the day. Signals fade not altogether because the sun rises, but because experimenters retire. Of course that is not all the story, but it is an interesting sequel.

But now the question arises, how can we make conscious and deliberate use of re-radiation for the betterment of reception? It is already done to a small extent, as when the B.B.C. in England picks up American transmissions and re-broadcasts it for the benefit of local crystal and few-valve receivers. It is to be done in Hobart by AR's new station there, which, besides broadcasting its own programme, proposes to pick up and re-transmit music from the mainland station. But it ought to be done and doubtless will be done in a still broader way from other centres. There is not the slightest reason why stations of relatively low power proportions should not be erected at centres like Bendigo, Albury, Swan Hill, Sale, Hamilton, or other convenient country centres, perhaps municipally and partly by local subscriptions, on the lines of the old free library idea, so as to act as local broadcasters and save the settlers outback the expense of otherwise necessary multi-valve sets. If broadcasting is to benefit the struggling settler outback, it must certainly be brought to his immediate vicinity and that can only be done by relay or re-radiation stations feeding a radius of 50 miles or so. Settlers in some districts, of course, could club together and subscribe for a regenerative set and a suitable aerial in some central position from which all could reap the advantage and even the dealers would in the long run benefit from the increased sales of smaller sets, although perhaps the sales of super-expensive sets would diminish. In a sparsely-populated country of wide spaces like Australia the idea is more necessary than in the restricted areas of the old world, and that it is quite feasible all authorities are agreed. All that is needed is some pioneering work such as the Wireless Institute, should be in a position to undertake, but at any rate, two stations anywhere are in a position to make most interesting experiments on the problem. Instead of handing on 3LO or 3AR or 2FC or 2BL or 6WF unconsciously to your neighbours, do it deliberately. Make your aerial a good average cross between transmitting and receiving. Cut out all absorption losses in the set. Put in a super-regenerative receiver that will do exactly what you want it to do. Tune in, and retire to your neighbor's set to listen in. Or, if you yourself are the neighbor, come to terms with him, and instead of ascribing all your triumphs to your own unaided acumen, try (although this is hard!) to find out how much is due to the other fellow's assistance. No man, and especially no wireless man, lives to himself alone, but re-radiates in his turn what he receives from others.

THE POULSEN ARC

By Wireless Weekly

PROBABLY some of our readers are familiar with the characteristic note of the Poulsen arc. There is nothing more interesting than reading the long range station Singapore or Mauritius; both arc stations may be heard in Sydney any night using a valve regenerative receiver. In the ordinary spark system where a condenser is charged up by a high voltage alternating current and discharged across a spark gap, a damped train of waves is produced, which means that the aerial oscillations only exist for a comparatively small proportion of the time of a dot or dash. It therefore follows that if full power is being used, the aerial is being charged up to a maximum voltage once in each train of wave only.

When undamped oscillations (that is high frequency alternating currents) are set up in the aerial, it becomes charged to its maximum voltage, and will be radiating at its maximum rate for the whole duration of the dot or dash instead of for about one hundredth of it as is the case with the damped or intermittent wave. The transmission of the energy in the electro-magnetic waves is more efficient with the undamped waves and the tuning of this system is considerably more sharp than with the spark systems, for the two reasons that only one wave is being radiated and that this wave is uniform instead of being damped.

The Arc.

The fact that an electric arc was capable of setting up oscillations in a circuit containing inductance and capacity was probably discovered by Duddell who, with his apparatus known as the singing arc, succeeded in producing oscillations in a circuit having a very large capacity and inductance across an ordinary electric arc. The natural frequency of this circuit was low enough for the note to be audible and the pitch was found to correspond to the natural frequency of the circuit. For these experiments it was necessary to use a large capacity in the oscillating circuit, for this reason it was not possible to use the singing arc method for radio, owing to the small aerial capacities used. Poulsen, however, after introducing his improvements to the arc, made it possible to use it for practical radio purposes. These improvements consisted chiefly of forming the arc in a water-cooled box, between a water cooled copper anode and a carbon cathode in a magnetic field which tends to steady the arc and bow it up on the electrodes.

A water pump which is worked by an auxiliary motor, pumps the water round the sides of the arc chamber and through the copper tip. The carbon rod is rotated by means of the same motor used with a flexible drive which ensures the carbon rod burning away evenly. The whole box or arc chamber is filled with hydrogeneous vapor which was produced by methylated spirits dripping slowly into the arc chamber near the arc. Choking coils of high inductance were also introduced into the supply mains and the arc was burnt in a powerful magnetic field. As a result of these and later improvements, the arc is now capable of producing oscillations in an aerial having only a very small capacity.

Fig. 1 shows an arc connected to a direct current supply through two choking coils with a steady current flowing through the inductances and the arc. The actual value of the current depends upon the arc length, the direct current voltage and the resistance of the circuit.

How H.F. Oscillating Currents are Obtained from The Arc.

When the oscillating circuit is connected across the arc, currents will flow in this circuit, which starts to charge the condenser. This current cannot come from the main supply owing to the inductance of choking coils, instead, the arc itself will be robbed of current. This will result in an increase of the D.P. across the arc and hence a further charge in the condenser. The voltage in the condenser eventually rises to that across the arc and then starts to fall as the current flows out of the condenser. The condenser now increases the current through the arc and consequently decreases the D.P. across the arc, which results in the condenser being allowed to discharge still fur-

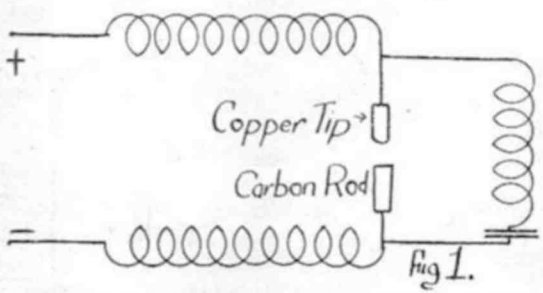
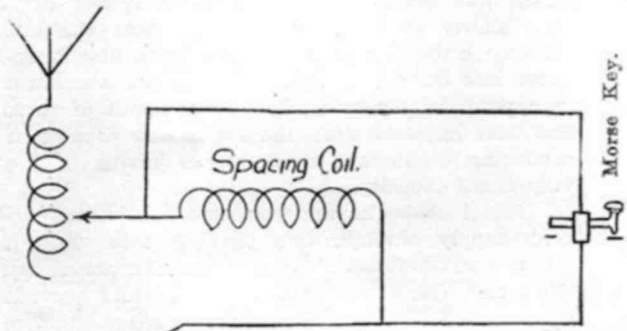


Fig 1.

ther. When the condenser is fully discharged the inductance comes into play and charges the condenser in the opposite way.

In this manner the condenser current becomes oscillatory and the oscillations will be undamped or continuous all the time the arc is burning. Fig. 2 shows a typical Poulsen arc circuit showing the marking and spacing wave method of signalling. As was explained previously the arc is always burned in a powerful magnetic field which tends to stabilise the arc, preventing it from moving from point to point on the electrodes. It also causes the arc to be drawn up into a bow so giving a large cooling surface. It will be readily seen that the oscillating circuit simply consists of the capacity and inductance of the aerial itself, together with an aerial tuning coil which provides a wide range of inductance, for the reason that the wavelengths used with the Poulsen arc systems are much longer than those used with spark systems.



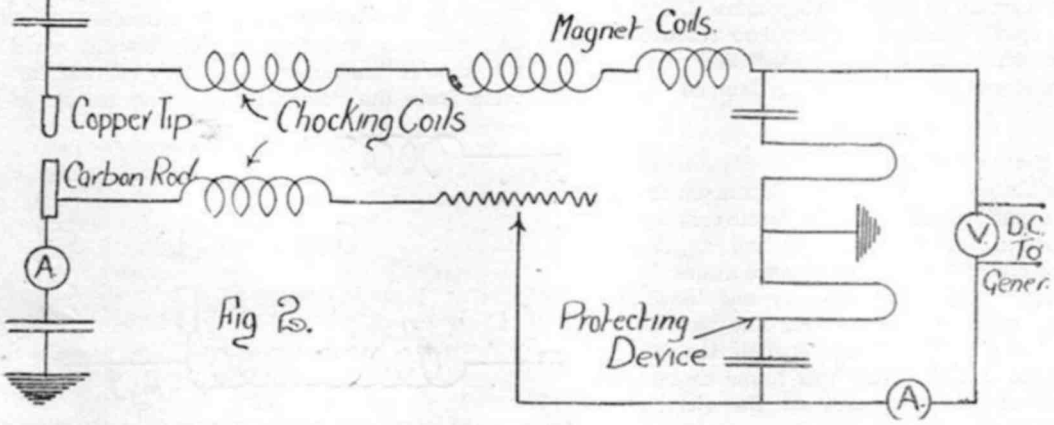


Fig 2.

Method of Signalling.

It is not possible to make and break the charging circuit in order to make Morse signals, as is done with the ordinary spark method. Therefore the aerial is always kept oscillating, but when the key is pressed the wavelength radiated is altered by a coil termed the "spacing coil", being short circuited by the key. With this method one wave termed the spacing wave is being sent out when the key is at rest and another shorter wave termed the marking wave, when the key is pressed. When the receiver is correctly tuned to the marking wave, the spacing wave will not be heard. Usually a difference of 10 per cent. of frequency between marking and spacing waves is used. Another method of signalling, known as the back shunt method, is now extensively used. Here the arc is allowed to burn on a separate circuit (tuned to the exact transmitted wave) at intervals of sending. So that when the key is pressed the arc is burning direct on aerial circuit when at rest it is burning on back shunt circuit. The following table showing arc stations and wave lengths used, will probably be useful to some of our DX readers.

Call Sign	Station.	Wavelengths in Metres	Where Situated
F1	Eiffel Tower	6,500 and 10,000	France.
YN	Lyons.	8,000 and 15,000	France.
BWP	Ponta Delgada	4,000, 4,700 and 4, 800	Island in Atlantic.
BWZ	Bathurst	4,000, 4,700 and 4, 800	West Coast of Africa
BXW	Singapore	4,400 and 5,000	Malay Straits.
BZG	Mauritius	4,400 and 5,000	Island in Indian Ocean.

WIRELESS IN QUEENSLAND

MR. J. W. ROBINSON, Manager of the Queensland Radio Service, recently issued an interesting statement setting out the intentions of the Government in regard to wireless in the Northern State.

During the past few days, Mr. Robinson stated, some definite steps have been taken towards the immediate establishment of a broadcasting service on a large scale in Queensland.

Practically the whole of the most important matters in connection with the construction of a high power station have now been finalised, and during the next few days actual constructional work should be commenced. As is generally known, the State Government has secured the only "A" grade license allotted under the wireless regulations to Queensland, and intends to carry out a broadcasting service in a manner similar to that in which such services are carried out in other parts of Australia. In order to establish such a service it is necessary to construct a high powered telephony station, modern broadcasting studios, and to organise up-to-date services whereby news of the day, market reports, sporting information, etc., may be transmitted at regular hours daily, to say nothing of course of the high-class musical entertainments, which will also be broadcast.

The selection of a suitable site for the establishment of these studios and station is also necessary, and a wavelength on which all tranmission from the station will be effected must be decided on. Decisions regarding all these matters have been made during the past week.

The Government (Mr. Robinson continued), has accepted the tender of Amalgamated Wireless (Australasia) Ltd., for the supply of a modern 5 K.W. broadcasting transmitting set, and also for the supply of the necessary aerial and earth materials, sound collecting equipment, microphones, control panels, and general receiving equipment.

The roof of the State Insurance building at the corner of George and Elizabeth Streets, Brisbane, has been selected as the most suitable for the establishment of the station and studios, and the necessary details for the drawing of plans, and the compiling of specifications for those buildings have been handed to the Public Works Department.

It has been decided to ask the Federal Authorities to allot a wave length of 425 metres to the Queensland Government.

The Apparatus.

The 5 K.W. broadcasting transmitting set, which will be installed, is of the most modern type, is manufactured in Australia, and should enable constant communication to be maintained for a distance of 500 miles by day, and 1000 miles by night. The apparatus comprising the main control and amplifying panels is of the type used in most of the leading stations in the world, and will enable very delicate control of the station to be maintained by the operator, thus ensuring perfect transmission of all items. The handling of a full choir of full brass band will be quite as delicate as the handling of a single solo item. The equipment will also include portable units, which will enable collections of musical items, speeches, etc., from outside points to be made.

Station and Studios.

The studios which will be erected on the roof of the Queensland Insurance building will embody every modern idea, and will be constructed in such a manner as to enable perfect reproduction of speech and music to be effected. They will be built so as to be sound proof, will be draped in a scientific manner, and will be specially ventilated. They will comprise two transmitting rooms, one being larger than the other, and will both open from a main reception room.

In other parts of Australia, the stations have been placed at some distance from the studios, but the gathering of all the buildings including offices, studios, reception rooms, control room and station under one roof, should result in a more efficient service being maintained at a lower cost.

Service.

In reviewing the possibilities of broadcasting in Queensland Mr. Robinson stated that the actual service rendered by the Queensland Broadcasting Station should be invaluable to the community. From the studios at regular intervals, he said, late news items, stock exchange information, up-to-the-minute market reports, fashion topic for women, afternoon tea music, sporting information, high class instrumental and vocal music, discussions on topics of public interest, and many other features will be flashed with the speed of light throughout the length and breadth of Australia.

The advantages which such a service will confer on the State and the manner in which the

broadcasting station will serve the whole community, are almost too numerous to mention.

It is expected, he concluded, that the station will be ready for transmission, and a very comprehensive service organised with very little delay.

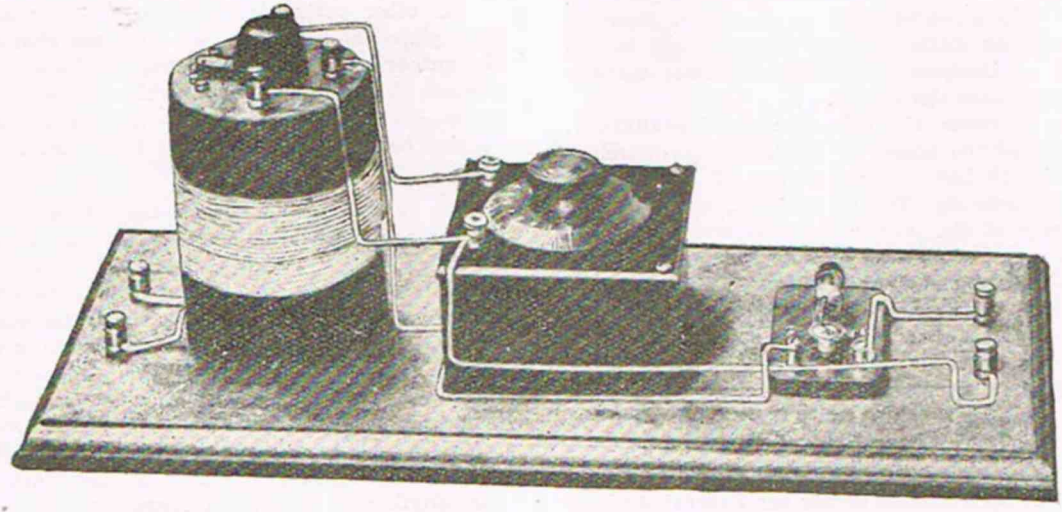
The Manager of the Queensland Government Radio Service (Mr. Robinson) is well known to most Sydney wireless enthusiasts. He was attached to the staff of 2FC from the time of its inception up to a few weeks ago when he resigned to take sole charge of wireless in Queensland on behalf of the Government.

A SHORT WAVE CRYSTAL RECEIVER

By "Insulator."

LAST WEEK when I was building my low loss receiver the thought passed through my head that the average crystal man was neglected as far as sets to receive amateurs are concerned. Here's one that will receive amateurs O.K., and is quite easily put together. I remember in the early days when 2CM and the Burwood Radio Club were on the air on about 1,100 metres. My, what interesting times they were! The 400 metre band was then exploited, many new transmitters joining the happy throng. Down they came again to the 200 metres band (How many remember the popular concerts of 2BB on this wavelength?), and now the amateur transmitters are to be found on anything between 80 and 220 metres. I expect that before this article appears in print most amateurs will have dropped to 10 or 12 metres, or maybe perhaps minus 5 or 6 metres. Glory knows just how far down they'll go.

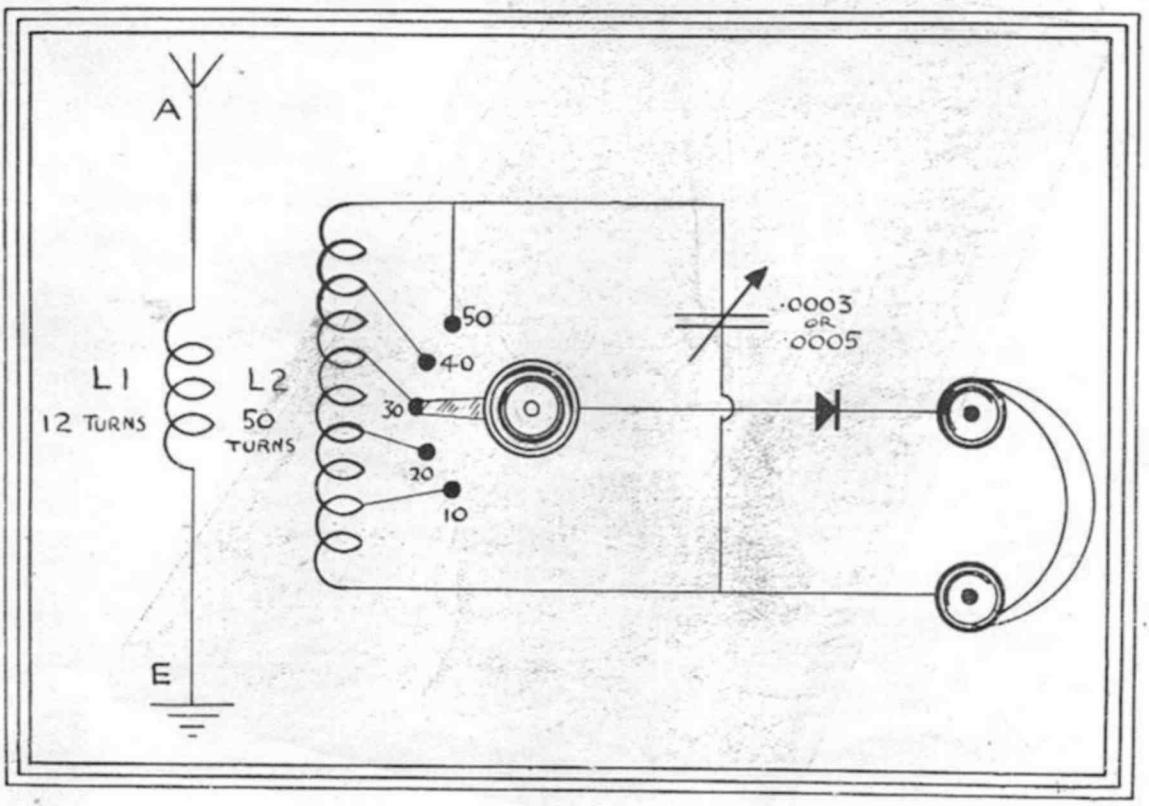
Our receiver this week is of the double circuit type, the primary being untuned, while the secondary is tuned with a .0005 variable condenser. This is quite selective. Of course, understand clearly that only the low wavelengths are covered by this receiver, Farmer's being entirely out of the question, and Broadcasters just come in and no more. One great drawback with chasing amateurs is the frightful hours they keep—to hear them at all one has to wait till Uncle George goes to bed. Then the amateurs begin. Quite a number still send gramophone records which are often worth while, and 2AY'S, especially transmission, is all that could be desired. This little set has brought in quite a number of amateurs clearly and well, and excepting for the variable condenser most of the parts can be raked up from the junk heap. However, let's get on with the "how to make it" part of the business. Here is what I used:



Side View.

1 Maple baseboard (loose coupler size).
1 3½-inch former.
2 Wooden ends, 3½ inches.
1 Switch arm.
5 Contact studs.
7 Terminals.
1 .0005 Variable condenser.
1 Crystal detector.
4 oz. 22 d.c.c. wire.
130 feet 16 d.c.c wire.

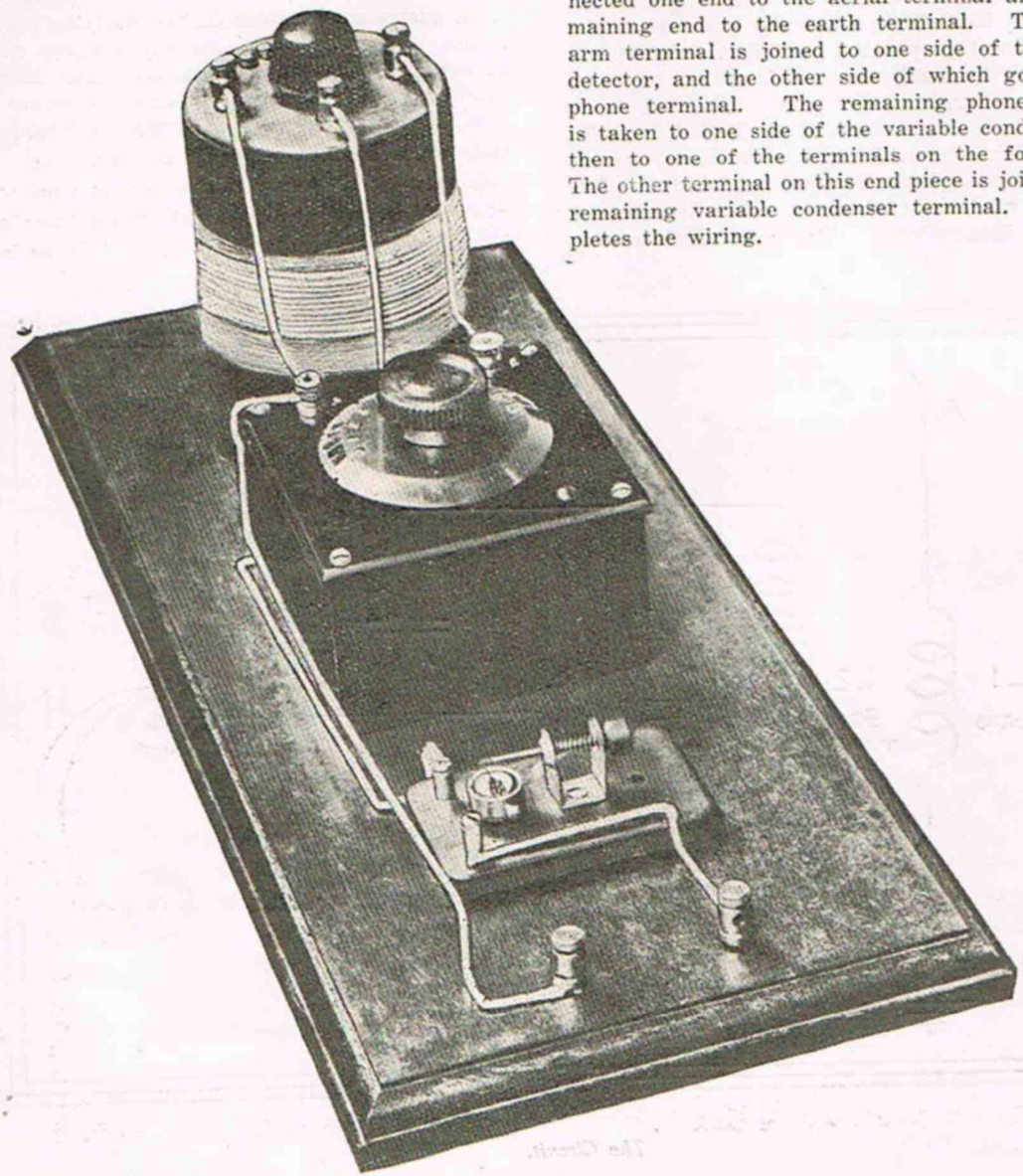
The variable condenser, it will be noticed, is enclosed in a box. This should be quite a simple matter to most people, but be careful to see that the wood is perfectly dry. This wood, together with the baseboard and end pieces, has to be sandpapered, and shellaced, or if desired French-polished. Mine got a lick and a promise. One of the 3½-inch end pieces has to be marked out for the switch arm, three terminals, and five contact studs (see illustration). The cardboard former now claims attention. Fifty turns of No. 22 d.c.c. wire has to be wound on this, tappings being taken at every ten turns. The fifty turns covers just on two inches, so you may desire to cut the tube to suit, or do as I have done. Following me, are you? Alright! Coat the whole tube inside and outside with a coat of black enamel. When thoroughly dry —thoroughly dry, mark you—not like mine was when it was wound, half dry and half wet (the wet half is still sticking to my fingers), pierce three holes triangular fashion and thread the beginning of the 22-gauge wire through these, thereby securing the beginning inside the tube. Wind on ten turns, pierce another pinhole, and doubling (say) six inches of wire, thread this through the pinhole. Proceed to wind on another ten turns similarly, tapping through another pinhole as before. Repeat this operation until fifty turns are wound on, and secure the end as you did the beginning. Wind this wire tightly, as you have now to wind over it at the "beginning end" (Irish) twelve turns of the No. 16 gauge d.c.c. wire. Pierce a hole as before,



The Circuit.

and wind on these twelve turns over the existing fifty turns. Finish this off by threading the end through to the inside. A short length of cotton will keep these turns secure. On the already drilled end, mount the switch arm, three terminals, and five contact studs. Bare the ends of the tappings inside the tube and connect up as follows:—Beginning of the 22 gauge wire to the terminal (Looking from the back of this terminal is on the left hand side of the switch). The first tapping to the stud nearest, the second tapping to the next stud, third to the third stud, fourth to fourth, and the end of the coil to the fifth stud. This end is also joined to the terminal opposite that which takes the beginning of the coil. Read that over again. The switch arm is connected by means of a short length of flex to the terminal behind it.

Look again at the illustrations and note the layout of apparatus on the board. At the top we have the aerial and earth terminals then the coils, next variable condenser, crystal detector and phone terminals. Mount yours the same way using the remaining 3½ inch end piece to secure the coil to the board. Now wire up. Both ends of the 16 gauge d.c.c. wire (aerial tuning coil) are brought back through the bottom of the former and connected one end to the aerial terminal and the remaining end to the earth terminal. The switch arm terminal is joined to one side of the crystal detector, and the other side of which goes to one phone terminal. The remaining phone terminal is taken to one side of the variable condenser and then to one of the terminals on the former end. The other terminal on this end piece is joined to the remaining variable condenser terminal. This completes the wiring.

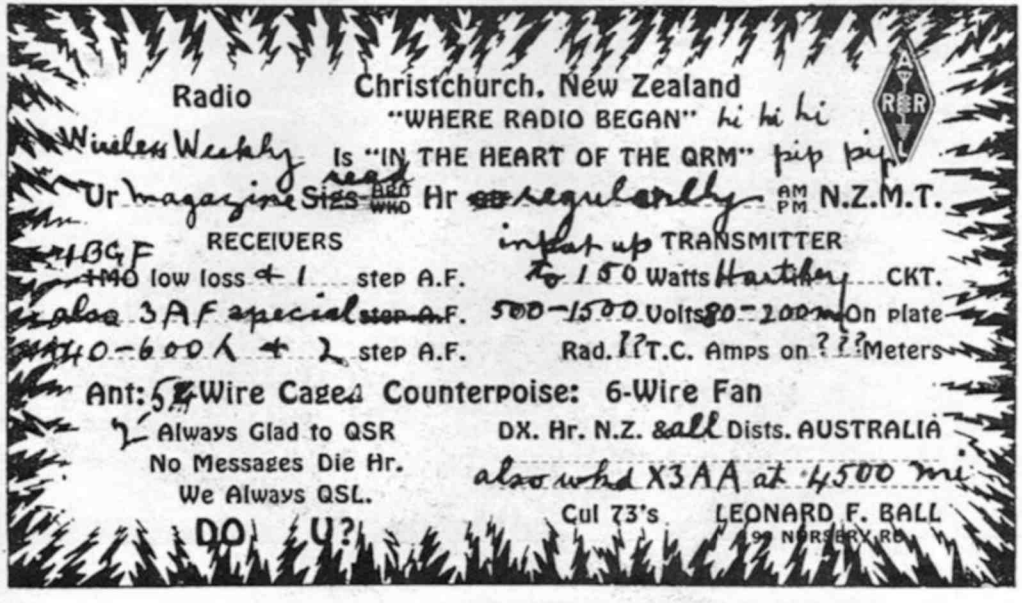


Q.S.L. CARDS

WHAT THEY ARE.

A Q.S.L. card is a form of acknowledgement which is becoming so popular amongst wireless enthusiasts that a few words explaining their origin and general composition would not be out of place. They originated in America, and who first thought of them is somewhat of a mystery but according to a yarn we were told by an American amateur, they were started by a railway operator who was also operating an amateur transmitter. Becoming tired of writing letters, he adapted the official Railway Telegraph message form to his fell purposes, and every time he heard a distant station, simply filled in the form with modifications and sent it along by way of acknowledgement. This led to a brain wave which prompted him to have a number of cards printed. The idea rapidly caught on, and at the present day there isn't an amateur transmitting station without a supply of Q S.L. cards. The meaning of the three letters QSL, which are taken from the abbreviations drawn up by the International Radio Telegraphy Convention is to acknowledge receipt of, or please give me a receipt. Thousands of cards pass through the mails, and since they form such a convenient method of letting a distant transmitter know that his signals have been heard, they are used very largely by those who make a habit of listening in for amateur stations. Naturally, each transmitting amateur receives shoals of cards and there are one or two stations where the walls are almost covered with cards from various parts of the world. Although peculiar at one time to transmitters only, the QSL practice has spread widely and many people owning receivers only use cards.

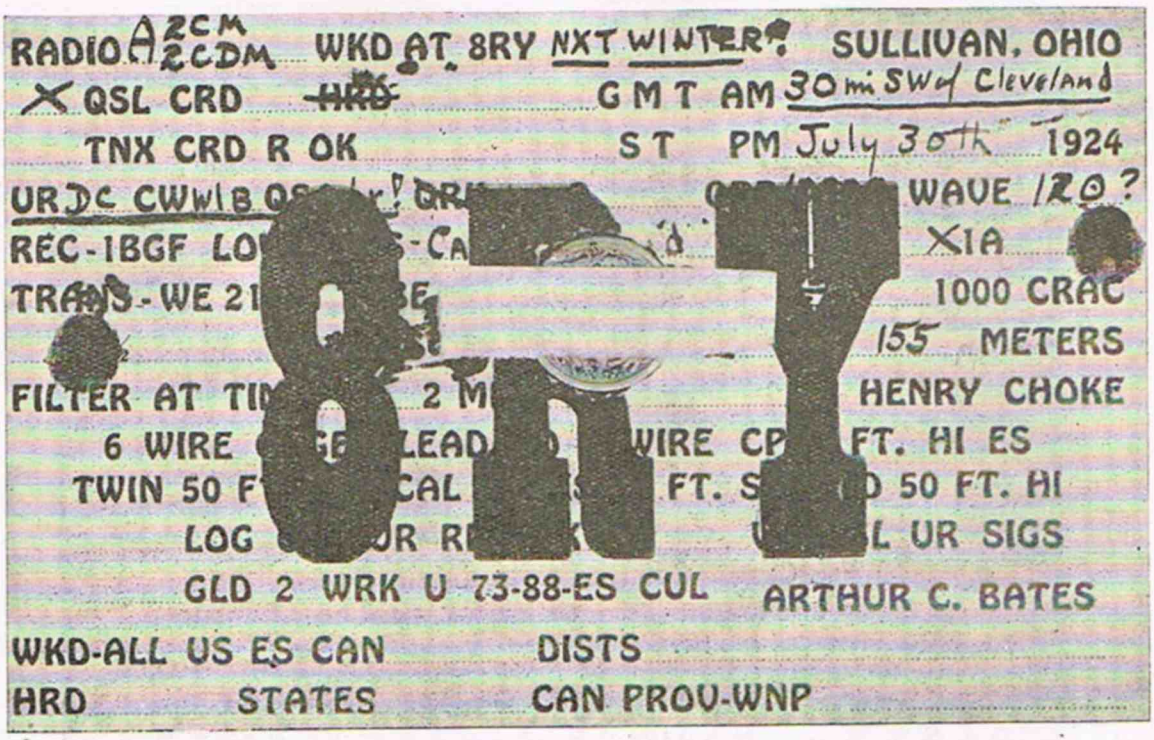
The design of the cards is subject entirely to the individual tastes, and among the many that reach us at times is displayed a variety of designs reflecting the temperament of those who send them. On the average QSL card, provision is made for certain particulars such as the sender's name and address, and, if a transmitter, his call sign, power used, receiver in use, and any particulars concerning the strength of signals heard, whether fading (represented by the letters QSS) was noticed, and DX or long distance working with other stations. In block No. 1 is shown quite an original design sent us by 3AF, New Zealand, and being deciphered reads that Wireless Weekly is read regularly over there. The letters N.Z. M.T. refer to New Zeal-



Block No. 1.

and mean time. His receiver is a 1BGF, this being the call sign of the American amateur who first designed the low loss receiver which is in general use among long distance friends in Sydney. With this receiver, the card states that one step of audio frequency is used, also that a 3AF special type of tuner is used on the station. The circuit (ckt) of the transmitter is a Hartley and the input is anything up to 150 watts. The letters Ant refer to antenna, the American version of aerial, and as stated on the card, is composed of two 5-wire cages, while the counterpoise is a 6-wire fan. QRS means to relay, so the words "Always glad to QSR" indicate that 3AF will be pleased to pass messages to and from others who cannot effect direct communication with each other. "No messages die hr" (here) means that messages accepted by 3AF for relay are not filed and forgotten. According to the card, he worked with station 3AA at 4500 miles. C.U.L. is an abbreviation for "See you later" and the figures 73's is a purely amateur expression signifying "Best Wishes."

The card shown in block No. 2 was received by 2CM from 8RY (U.S.A.) and the coin gummed in the centre was a little humorous touch. The rest of the card is self-explanatory. Those two cards, however, are essentially those of transmitters, and are perhaps a little too elaborate for the ordinary listener-in who simply wants to intimate that signals have been heard from some particular station. The plain card shown in block 2, designed by Publicity Press Ltd., is one that is suitable for both the listener-in and the transmitter. If used by a listener-in, then the lines devoted to "transmitter" and "counterpoise" may be ignored. The card is quite a simple one, but will prove very useful indeed to those who like to report having heard signals. They are always appreciated by the transmitters, and needless to say, obviate the tiresome necessity of writing letters.



Block No. 2.

Q.S.L.

DE .....

TO RADIO ..... YOUR ..... SIGS. ..... HERE

ON ..... AT ..... CALLING RADIO ..... ON .....

STRENGTH ..... Q.R.M. ..... Q.R.N. ..... Q.S.S. .....

RECEIVER .....

USED ..... ON U.

TRANSMITTER .....

AERIAL .....

COUNTERPOISE .....

DX. .....

REMARKS: .....

Q.R.K.? ..... PSE. QSL.

Block No. 3.

STATIONS HEARD

SOME very good lists reached us this week, the two first showing a long series of American amateurs logged on a single night.

C. W. Slade, Lang Street, Croydon, used a low loss and one step similar to that described in "Wireless Weekly" in the issue before last. The valves used were a True Blue as detector and a V24 as amplifier.

6.10 p.m., 6XI; 6.20 p.m., 7IJ; 6.30 p.m., 2HM; 6.50 p.m.,, 8GQ; 6.51 p.m., 1AK; 6.55 p.m., 4AA; 7.12 p.m., 6CGW. (Tea till 7.40 p.m.) 7.45 p.m., 8AP; 7.46 p.m., 4AA; 7.47 p.m., 2JM; 7.49 p.m., 4AA; 7.53 p.m., 6AWT; 8.16 p.m., 2AP; 8.20 p.m., 2CR; 8.21 p.m., 2YI; 8.22 p.m., 2CR; 8.30 p.m. (following message from 2AP to 2YI intercepted): "To 'Wireless Weekly,' Australia. Will send pictures to-morrow; had great trouble getting them taken.—Sig., 6AHP."

9.55 p.m.—2AP, ZA, 5LO, PSE, QSL. Hrd you calling 5LO just now, but QRM on ur wave very bad. Sigs. QSA.

9.43 p.m.—2YI, 2YI, 2YI, AUST., U6CGW.

9.46 p.m.—2YI, 2YI, 2YI, AUST. U6CGW. (Relayed call to 2YI through 2JT.)

9.58 p.m.—2YI, DE, 6CGW, AR.

9.59 p.m.—CQNZ, CQ, Aust, 6CGW, AR.

10.18 p.m.—CQNZ, CQ, Aust, 6CGW, AR.

10.23 p.m.—6CGW, DE, 2AC, QSA, QRK-K.

10.30 p.m.—CQ, NZ, CQ, Aust, 6CGW, AR-K.

10.35 p.m.—6CGW, DE, 2AC, QSA—QRK-K.

10.42 p.m.—6CGW, DE, 3JU, AR-K.

10.43 p.m.—6CGW, DE, 5BG, K.

10.45 p.m.—6CGW, DE, 3BD-R-ur Sigs. Best U.S.A. can hear u all over room on 2 valves.

10.46 p.m.—3BD, DE, 6CGW. Did you get me first OM ur QSA, QRK?

10.47 p.m.—6CGW, A,, 3BD-R-Tnx om psed QSA. I sed ũ loudest U.S.A. here ur note. Vy rough. What rdn? 1.7 amps here.

10.50 p.m.—3BD, 6CGW, TKS. Very om for dope. What did you say abt 2 a.m.? Am rad 4 amps.

(Went to bed.)

W. L. Woolnough, Florence Street, Killara, using two valves, logged 41 Americans on Jan. 17th and 35 on Jan. 19th. Here is his DX list outside Australasia:—

AMERICAN.—1ALL, 1CMP, 1ER, 1OW, 1PL, 1ZT, 2AG, 2BRB, 2CEE, 2CQZ, 2CVU, 2KU, 2KX, 2PD, 2RK, 3ADP, 3ADQ, 3AUV, 3BCO, 3BM, 3CHG, 3WB, 4BQ, 4FZ, 4GW, 4GZ 4IO, 4KU, 4OA, 4SA, 4SB, 4XE, 5AC, 5AEX, 5AFU, 5AGQ, 5AIL, 5AJK, 5AKN, 5ALR, 5AME, 5CN, 5EW, 5GK, 5IN, 5QY, 5ZAI, 5ZL, 6AAO, 6AAQ, 6AC, 6AFG, 6AGK, 6AHP, 6AIB, 6AKW, 6ALO, 6AO, 6AOC, 6APW, 6ARB, 6AWS, 6AWT, 6BCP, 6BDT, 6BHW, 6BJJ, 6BON, 6BPS, 6BQL, 6BRA, 6BUR, 6CAE, 6CBB, 6CCT, 6CGK, 6CGO, 6CGS, 6CGW, 6CHL, 6CMI, 6CMU,, 6CNL, 6CQE, 6CRS, 6CSS, 6CW, 6EA, 6FH, 6FY, 6HP, 6LJ, 6MS, 6OI, 6RN, 6RV, 6VC, 6VD, 6XI, 6ZH, 7AIP, 7APO, 7BRC, 7FQ, 7GB, 7GM, 7IJ, 7LR, 7MQD, 7NO, 7PM, 7QD, 7SF, 7WM, 8AXK, 8BAU, 8BNH, 8BPA, 8CYI, 8PL, 8RG, 8ZE, 9ABF, 9BCJ, 9BFG, 9BFN, 9BGH, 9BHT, 9BHX, 9BJL, 9BWV, 9CFI, 9CJC, 9DLT, 9DMI, 9EFZ, 9EHT, 9NY, 9ZA, 9ZT, NKF.

CANADIAN.—1AR, 5GO.
BRITISH.—2KF, 2NM, 2OD.
FRENCH.—8SSC.

Norman H. Full, 337 Abercrombie Street, Redfern, used a low loss with detector only:—

U.S.A.—9WGH (on continual ABC's).

N.Z.—1AA, 1AO, 1AI, 1AR, 2AO,, 2AI, 2AP, 2AC, 2AE, 2AL, 4AG, 4AK, 4AA, 4AQ, 4AD, 4AJ, 4AO, 4AM.

VIC.—3JU, 3JH, 3OT, 3BD, 3BQ, 3BM, 3EM, 3TM, 3NF, 3NS.

N.S.W.—2JS, 2GQ, 2CR, 2CS, 2BY, 2FP.

QRA?

The names and addresses of the amateurs heard by Mr. Woolnough are published below. Those that are omitted from his list have already been published.

AMERICAN.

1ALL—L. M. Harding, 22 Dean Street, Bridgewater, Mass.

1CMP—W. E. Jackson, 32 Clarence Street, Bridgewater, Mass.

1ER—P. F. Hadlock, Stearn Street, Wellesley, Mass.

1ZT—No record.

2AG—C. R. Runyon, 544 N. Broadway, Yonkers, N.Y.

2CEE—W. H. Bostwick, 1334 Putnam Avenue, Plainfield, N.J.

2CVU—M. I. Hein, 1861 McGraw Avenue, Westchester, N.Y.

2KU—O. Oehman, 29 New Jersey Avenue, Brooklyn, N.Y.

2KX—R. Hendrickson, Jr., Littleworth Lane, Sea Cliff, N.Y.

2PD—A. H. Hardwick, 35E Highland Avenue, Orange, N.Y.

3ADP—J. W. Burn, 203 W. 24th Street, Chester, Pa.

3ADQ—E. E. Miles, 206 W. 24th Street, Chester, Pa.

3BCO—J. R. Stetser, 300 9th Street, Ocean City, N.J.

3BM—M. K. Pillsbury, Wash. Market Buildings, Trenton, N.J.

3CHG—E. R. Gabel, 412 Meredith Street, Kenneth Sq., Pa.

4BQ—G. L. Hight, 200E 9th Street, Rome, Ga.

4FZ—T. H. Hall, Jnr., 117 Oakhaven Street, Macon, Ga.

4GW—B. R. Hibbler, 59 Woodfin Street, Asheville, N.C.

4GZ—R. M. Barnes, 256 Lee Street, Atlanta, Ga.

4IO—J. S. Morris, 58 Fredrica Street, Atlanta, Ga.

4SA—R. Bartholomew, Garrochales, P.R.

5AC—N. S. Hurley, 710 Carolina Street, Mobile, Ma.

5AEX—S. A. Jones, Graford, Tex.

5AFU—P. A. Ford, 20th and Townsend Streets, Ada, Okla.

5AGQ—I. Mitchell, 400 Catherine Street, Terrell, Tex.

5AIL—C. S. Mosteller, Hill and Grove Streets, Pilot Point, Tex.

5AJK—D. Lynch, 260 Washington Avenue, Mobile, Ala.

5AKN—J. H. Robinson, 522 Cumberland Street, Dallas, Tex.

5ALR—R. E. Shelby, 1114 W. 9th Street, Austin, Tex.

5AME—D. C. Sanford, 308 St. Charles, Birmingham, Ala.

5CN—L. K. Rush, 4-2d Street, Bemis, Tenn.

5EW—M. J. Willson, R.F.D. No. 2, Box 117, Brownsville, Tex.

5GK—C. Andres, Jr., 2748 Gladiolas Street, New Orleans, La.

5IN—N. C. Finney, 3500 Normandy Street, Dallas, Tex.

5ZL—J. M. Clayton, 1301 Welch Street, Little Rock, Ark.

6AAO—W. L. Martindale, 1229 W. 24th Street, Los Angeles, Cal.

6AAQ—C. S. Yeutter, 107 E. Buckthorn Street, Inglewood, Cal.

6AC—J. W. Little, 879 47th Avenue, San Francisco, Cal.

6AFG—J. H. Deeny, 336 N. Electro, Los Angeles, Cal.

6AGK—A. E. and A. H. Towne, 1834 19th Street, Santa Monica, Cal.

6AIB—F. M. Gullick, E. Chapman Avenue, Orange, Cal.

6AKW—L. R. Potter, R.F.D.I., Lancaster, Cal.

6AOC—W. C. Cutting, Campbell, Cal.

6AWS—B. Molinari, 653 Union Street, San Francisco, Cal.

6BCP—E. A. Atmore, R.F.D. Box 38, Santa Paula, Cal.

7BDT—Wah Soon Shin, 1941 Funchal Lane, Pauva Road, Honolulu, Hawaii.

6BHW—R. M. Schino, 3929 Angelo Avenue, Oakland, Cal.

6BJJ—A. F. Ewald, 615 N. Geneva Street, Glendale, Cal.

6BON—A. Humburg, 195 Santa Tersa Street, San Jose, Cal.

6BPS—H. L. Hackley, 714 30th Street, Sacremento, Cal.

6BQL—A. M. Snell, 575 21st Avenue, San Francisco, Cal.

6BRA—L. Shapiro, 3711 Barbee Street, Los Angeles, Cal.

6BUR—L. E. Smith, 340 N. Painter Avenue, Whittier, Cal.

6CAE—L. Higgins, 1449A Elm Avenue, Long Beach, Cal.

(Continued on Page 38)

6CBB—T. J. Cheesman, 1347 La Brea, Hollywood, Cal.
6CGK—P. Hanley, 823 11th Street, San Pedro, Cal.
6CGS—A. H. Webb, 1418 Genessee Street, Los Angeles, Cal.
6CGW—K. L. Riedman, 243 Euclid Avenue, Long Beach, Cal.
6CHL—A. Martini, 3948 26th Street, San Francisco, Cal.
6CMI—W. T. Campbell, 9410 E. 14th Street, Oakland, Cal.
6CMU—H. L. Hardy, 4928 7th Avenue, Los Angeles, Cal.
6CQE—No record.
6CRS—No record.
6CSS—No record.
6CW—H. C. Hand, San Corlos Street, Sacremento, Cal.
6EA—H. C. Seefred, 343S Fremont Avenue, Los Angeles, Cal.
6FH—H. H. Steen, 2007 K. Street, Sacremento, Cal.
6FY—G. E. Thompson, 144 Sunset Blvd., Modesto, Cal.
6HP—E. A. Poage, 143 15th Street, Richmond, Cal.
6LJ—M. E. McCreery, 628 W. 49th Street, Los Angeles, Cal.
6MS—A. G. Sundeen, 1558 E. 48th Street, Los Angeles, Cal.
6OI—B. Wentworth, Stanford University, Cal.
6RN—J. B. Henry, 1199 Oak Knoll Avenue, Pasadena, Cal.
6RY—H. R. Bradford, 447S 12th East Street, Salt Lake City.
6VD—H. B. Drake, 123 Cherry Street, Box 387, Anaheim, Cal.
6ZH—L. Picker, San Ysidro, Cal.
7AIP—W. Hanley, 1169 Moore Street, Portland, Ore.
7APO—No record.
7BRC—No record.
7FQ—L. R. Goddard, 527 Water Street, Tekoa, Wash.
7GB—C. F. Butler, 811 N. Anderson Street, Tacoma, Wash.
7GM—J. B. Hendry, 1407 32nd Street, Seattle, Wash.
7IJ—No record.
7LR—R. V. Howard, 312 Blair Street, Eugene, Ore.
7MQD—No record.
7NO—C. A. Maginn, Jr., 422E Front Street, Aberdeen, Wash.
7PM—No record.
7QD—V. Jarl, 641 Pine Street, Medford, Ore.
7SF—E. E. Griggs, 1578 1st Street, Aberdeen, Wash.
7WM—T. W. Bentz, 1255 So., Grant Street, Tacoma, Wash.
8AXK—F. Walker, 2612, Marsh, S. Norwood, Cincinnati, O.
8BAU—F. Gibb, 212 N. 20th Street, Columbia, O.
8BNH—W. E. Slabaugh, 142 Union Street, Akron, O.
8BPA—C. M. Jacobs, 481 E. Perry Street, Tiffin, O.
8CYI—J. Hertsberg, 307 Clay Avenue, Rochester, N.Y.
8RG—H. S. Bear, Box No. 59, 3rd Street, Freefort, Pa.
8ZE—E. Thatcher, 263 Elm Street, Oberlin, O.
9ABF—B. J. Woolsey, 7242 Oleander Street, Chicago, Ill.
9BFG—R. H. Phillips, 123 S. 4th Street, Clear Lake, Ia.
9BGH—J. P. Gillett, R.R., No. 2, Rippey, Ia.
9BHT—J. F. Smith, Lorimor, Ia.
9BHX—E. Winter, 1538 Marietta Street, Decautur, Ill.
9BJL—D. Middleton, 5601 Lowell Avenue, Indianopolis, Ind.
9BWV—J. E. Davidson, N. Polk Street, Albany, Mo.
9CFI—V. D. Wilson, 128 N. Cedar Street, Ottawa, Kans.
9CJC—J. C. Mosby, 428 Fairlawn, Webster Groves, Mo.
9DLT—M. B. Magers, 2720 Patee Street, St. Joseph, Mo.
9DMI—S. O. Myers, R.R.s Box 37, Nappanee, Ind.
9EHT—N. Douglas, 1622 New Hampshire, Lawrence, Kans.
9NY—H. F. Warsing, 2401 S. Chicago, S. Milwaukee, Wia.
9ZA—No record.

CANADIAN.

1AR—I. I. Fassett, c/o Arcadia Sugar Refinery, Dartmouth, Nova Scotia.
5GO—E. Chang, 466 Pender Street E., Vancouver, B.C.

BRITISH.

2KF—J. A. Partridge, 22 Park Road, Colliers Wood, Merton, S.W., 19.

(8SSC unknown.)

(Continued from Page 13)

"Wireless Puritans" or to use a populer word, "Wireless Wowsers." They say "must" this and "must" that, and imagine that they are lords of the ether. Like the (Ma) crows, they are ready at all times to mercilessly pounce down on their prey.

In conclusion I would suggest that the set built by Mr. Macrow and which he now unkindly refuses permission for the "Experts" to inspect, must have caused most of the "astonishment" owing to his having to put up with gramophone music on the one wave length during the whole of one Sunday. Couldn't he have hit the blessed thing in the panel with an axe? or—Ah—a brain wave—not De Forest's or 2CM's either—he could have put a great big piece of cotton wool in each ear; and then he would have had the same whole day's joyful entertainment that he would that others should have. Wishing Wireless Weekly every success.

Yours faithfully

R.B.C.

Greenwich, 16/1/'25.

(Editors Note—Our policy is for the advancement of the Experimental Movement. If, as seems likely, this advancement is jeopardised by a few whose actions do not tend to do the movement any good, then we are in opposition to those few.)

(To the Editor.)

Sir,—Your Editorial of the 2/1/25 issue states that it would be a very good idea if the Secretary of the Esperanto Society endeavoured to formulate a scheme which would be of practical assistance to amateurs. The statement is certainly business-like and worthy of serious consideration especially by radio enthusiasts whose transmitting outlook is not confined to their own states nor to English speaking countries. The only practical suggestion for those who wish to learn Esperanto is to form a class and the Sydney Society will supply a teacher. Arrangements could be made for the holding of a preliminary meeting where the pros and cons could be discussed. Members of our Society are only too willing to help, therefore the next move is yours. Esperanto is already used by radio people of many countries and why not Australians? There are Esperanto Societies in all states of Australia and persons seeking information can get some from the local Hon. Secretary, 150 George's River Road, Croydon Park, Sydney.

Yours etc.,

LESLIE E. PFAHL,

Hon. Secretary, Sydney Esperanto Society.

To the Editor, "Wireless Weekly."

Dear Sir,—I recently constructed the "Reinartz All Wave Tuner" from the article in "W.W.," September 5th inst. Wonderful results were obtained until last Thursday, when the rain started. I could not make it oscillate on either 2BL or 2FC or any of the amateurs, and the strength diminished to a whisper. I overhauled everything for a fault, and found none. Then I thought of baking the coils in the oven for a while. Half an hour later I took them out and tuned in 2BL, who romped home as usual. The coils were wound with 18 d.c.c. instead of 16 or 14. The valves used are D4 detector and D5 amplifier, All American 5 to 1 transformer. Although the set will oscillate freely between 175 and 1700 metres, below 175 he will not oscillate as freely as I could wish for; on even local C.W. it is not too good. Could you advance any reason for this? On clear nights 3LO and 3AR come in at good strength, and 2HM comes in like a local bird. As for its selectivity, 2XY, who lives about 200 yards up the street, can be cut out at will. Hoping for more hook-ups like the Reinartz, and wishing every success to you and your paper.

Yours, etc.,

H. SIGAL.

91 Jersey Road, Woollahra.

To the Editor, "Wireless Weekly."

Sir,—This afternoon, a few minutes after five o'clock, I was listening-in after 2BL closed down, trying to pick up some amateurs. I heard a number of gramophone selections, but could not pick up his call sign. A piece called "Feather Your Nest" was followed immediately by "Whispering." Perhaps some other reader or the operator himself could enlighten me as to the call sign, etc. I was using a P.1, one radio, one audio, and detector. Wishing "W.W." every success in the future—I consider it indispensable.

Yours, etc.,

W. R. FELTON.

244 New Canterbury Road, Petersham.

"Who belongs to de army of de Lawd?" shouted the coloured preacher.

A man in the back seat jumped up and said, "I does."

"To what branch ob de army do you belong?"

"To de Baptist."

"Get out. Yo' don't belong to de army; yo' belong to de navy."

—"World Wide Wireless."

Short Circuits.

KGO MAY RE-BROADCAST BRITISH PROGRAMMES.

According to advice received by Mr. P. J. Browne, of Randwick, next winter we may listen to 2LO, London, through the medium of KGO. The following letter speaks for itself:—

"Mr. P. J. Brown,

"131 Avoca Street, Randwick.

"Dear Sir,—Replying to your letter of November 24th, we enclose a card showing the schedule maintained by KGO. This keeps practically an absolute check on all the hours we are broadcasting.

"We shall be very glad to hear from you if you can let us know if anybody in Australia is getting our programme. We suggest that the dance music programme from 10 p.m. to 1 a.m. on Monday, Tuesday, Thursday, and Saturday nights will be the programme which you will probably hear. For instance: 1 a.m. Sunday morning will be 7 p.m. Sunday night, your time.

"Please let me know if you can hear KGO distinctly, as we are going to some trouble here in the way of trying to receive England and other foreign countries, whereby you will be able to hear these countries in Australia. They are re-broadcasted from KGO. It is useless for us to carry on these tests unless we know you are getting us with sufficient strength to make use of it in your own country. Will you kindly let me know by letter as soon as possible if you are getting it? We are aware of the fact that it will be easier for you in the winter months on account of the static, as, according to what you told me when you were here at our station, you said that seven o'clock was almost broad daylight, so we advise you to wait till winter before you come to a conclusion.—Yours very truly,

"(Sgd.) H. I. MILHOLLAND,

"Radio Broadcasting Publicity Dept., K.G.O."

* *

A QUERY FROM HOLLAND.

MR. LESLIE PFAHL, hon. secretary of the Sydney Esperanto Society, receives some very interesting mail at times. Amongst others which reached him lately was a letter from a Hollander interested in wireless, which read as follows:—

"Dear Sir,—I do not often request your aid, because I well know that you have much to do; but now, dear sir, I very urgently need your help. I have had my receiver for a month (four valve set) at a farm, Teesink, near the village Boekelo, which is 1½ miles journey from my hometown, in order to try whether I could get better results than in the city, but the result was not what I expected—namely, Sunday, 4/9/24, at the 11-¾ hour, middle European time, I listened in vain for the transmission of Mr. Piltik, from Praha, Chekoslavakia. Did any radio people hear it in Australia? Would you mind sending me a copy or copies of national radio gazettes? Can you send me the addresses of any Radio-Esperantists in Australia, because I would very much like to correspond with them about radio? And I also require the addresses of radio stations of different lands.—Yours, etc.,

"G. VAN HEEK.

"Steynstraas 72, Hengelo, Nederlands."

This was, of course, translated from Esperanto. If there are any Australian Radio-Esperantists we would be glad if they would get into touch with this correspondent.

* *

WIRELESS BEACONS.

The first experimental wireless beacon to be erected on the coast of Great Britain has been installed by the Marconi International Marine Communication Co., Ltd., with the permission of Trinity House, at Nash Point, between Swansea and Cardiff, and has been subjected to severe practical tests over a period of six months with most satisfactory results.

The use of direction finding apparatus for navigational purposes has increased rapidly during recent years, and it has been found that in many places the existing land stations are not sufficiently numerous to meet the needs of ships desiring to take bearings by wireless. The land stations, having been erected primarily for telegraphic purposes, are not necessarily situated in the best position for direction finding work; and also they are in such constant communication with ships that there is inevitably a great deal of interference, which may cause confusion in attempts to take bearings by direction finder. These difficulties can be overcome by the construction of wireless transmitters operating on a special wavelength and situated in positions selected primarily for the purposes of navigation.

The installation at Nash Point consists of a Marconi ¼ k.w. quenched spark transmitter, which automatically transmits its own call sign, GKD, on a wavelength of 1000 metres. It is operated by

means of an Austin paraffin-petrol engine, the petrol being used for starting, and the machine automatically switching over to paraffin. The power used is sufficient to enable bearings to be obtained by means of the Marconi marine direction finder at a distance of 50 miles. The beacon, however, does not interfere with broadcast reception outside a range of three miles from the beacon.

This beacon has already proved very useful in the Bristol Channel, where the opportunities to make us eof a direction finder are very limited, and the trials have been sufficient to show that such transmitters will be of great assistance to navigation on many other parts of the coast.

* *

ONE WAY OF DOING IT.

A wireless enthusiast in Dublin was very much disturbed by the "oscillators" in his district, and he did not know how to go about settling the disturbers. It is not quite possible to go into a man's home—after all, it is his castle—and tell him that he is nightly upsetting the ether. Then the enthusiast discovered that the B.B.C. have, gratis, an excellent pamphlet by Captain Eckersley on "How to Prevent a Set Oscillating." He wrote and obtained 100 of these, and sent them round with a polite note explaining matters to any house where an aerial was visible. The result was beyond his wildest anticipations. He can now tell when a new set comes to the district.

* *

WIRELESS TELEPHONES FOR GREEK BUSINESS HOUSES.

Wireless telephony has been seized upon as a valuable aid to the conduct of business by a number of business houses in Greece, where the wireless regulations permit of the private use of this means of communication. Four important firms are already equipping their premises with the Marconi "Popular" wireless telephone set (type XP), to link up their head offices in Athens with their branch offices in the Piraeus, and further enquiries for similar sets have been received from other commercial firms. This type of wireless telephone set has been designed for use by people possessing no technical knowledge, and is as easy to operate as an ordinary telephone.

* *

WIRELESS IN CHILI.

In Chili public interest in broadcasting has grown to such an extent that, although two years ago the country could boast of not more than half a dozen receiving sets, 6000 receiving sets are now to be found in Santiago alone. A number of transmitting stations are already in existence, and wireless dealers are reported to be doing exceptionally well.

It is rumoured that a broadcasting station is shortly to be erected in Poland, a company backed by a French interest supplying the necessary capital.

* *

ALWAYS ONE THOUSAND MILES FARTHER.

The A.R.R.L. says:—"This last year has done much to eliminate for some radio fans the desire to get distance; for others, the DX idea refuses to be squelched, and the station just a little farther away will ever thrill. With this latter class, slowly the one-tube receiver gives way to the two and three-tube; finally, the Superheterodyne or other multi-tube set is installed, and the listener heaves a sigh of complete satisfaction.

"Now he feels that no station in the country is beyond his grasp, and favourable weather conditions will bring in Europe. But is he right? Is London the limit of his receiving range, and can he truthfully say this gives him the greatest experience radio offers? No, he cannot; for with every additional thousand miles the skilled amateur, with a low loss receiver, goes a thousand better. There is a distinct advantage to be gained listening on the short waves.

"For every thousand miles that the superpower broadcast station hurls its programmes through the ether, the low power amateur transmitter sends its dots and dashes one thousand miles farther. The limit that it is possible for any set to receive or any transmitter to send was accomplished when amateurs in France and New Zealand recently made contact half around the world, 12,500 miles.

"There is no listener, though he may have sixteen tubes, who can honestly say that he has received a greater distance than any other man, for there is an amateur within a hundred miles who can justly claim, 'I can go you one thousand miles farther.' The amateurs of the American Radio Relay League do it every day."

* *

RADIO CHESS.

For five and one-half hours a group of students at Haverford College recently sat before several tables moving chessmen in accordance with the instructions shouted at them by a radio operator in the next room. At the same time, another group of students of Oxford University, England, 3000 miles distant, were making the identical moves and discussing the same point.

(Continued on Page 42)

INFORMATION

Conducted every week. Except in the case of subscribers a fee of 1/- is charged for not more than four questions. Questions will be answered by mail in the order of priority and, when considered of sufficient general interest, will be published under this heading.

G.R.T. (Stockton):

Question: Re the 3 valve reflex receiver described in Wireless Weekly of January 2nd, 1925, please say whether the radio transformer coils may be tuned with a duo anode condenser.

Answer: Yes; but you must remember that most duo anode condenser are only .00025 mfd. and that you will therefore need larger honeycomb coils for the various wavelengths.

W.B.R. (Newcastle):

Question: I have been contemplating building a receiver but have held off because I am told the position of my house is a bad one. It is on a corner, and in front there are power mains consisting of one set of 11,000 volts, one of 6,000 volts and one of 2,200 volts with a periodicity of 25 cycles. The lighting main on the side of the house is 450 volts, 50 cycles. I believe the S.T. 100 circuit is very subject to induction, but that a later circuit has been evolved which cuts it out. Placing my aerial at right angles to the power mains I can get 50 feet, and at an angle of 45 degrees, about 70 feet. Which do you advise? Would it be possible to get 2FC and 2BL on a loop?

Answer: In Wireless Weekly of November 28, we published an article entitled, "How to improve your S.T. 100," showing the modified circuit of the S.T. 100 which should overcome A.C. hum. With this modified S.T. 100, you will notice that the first valve is still reflexed but the secondary of the iron core audio transformer is not in the earth circuit as in the original S.T. 100. This circuit will successfully operate with an inside aerial and earth at Newcastle but we have no cases on record where reception of Sydney broadcasting has been received up there with two valves on a loop. We strongly advise you to place your aerial at right angles or as nearly so as possible to the high tension mains. You could also try a counterpoise.

R.S.P. (West Maitland):

Question: I have constructed the five valve tuned anode circuit, published in Wireless Weekly on December 19, and have the following parts:—Frost rheostats, 201A valves, New York condensers, Hoosick valve holders, and Jefferson 41 transformers, Radiola A and Hellesen B batteries. In operation there is a continual grating noise in the receiver, otherwise the signals from 2FC are loud and clear. This grating continued with both aerial and earth disconnected, showing that the defect is within the set. The voltage of the A battery is 6 volts, carrying a full load and is working smoothly with the filaments burning low. However I find when testing the B batteries that they show a one volt drop between tappings, that is 3½ instead of 4½ with a total of only 70 volts, whereas the cells are marked 105 volts. These cells were purchased by me as new. I noticed when the cells were first used that sparking occurred when the plugs were inserted, but this doesn't happen now. Would you please help me in this matter, as these cells should last some considerable time. I am enclosing a diagram showing the connections from the potentiometer and rheostat, and would be glad if you would let me know whether the wiring is correct.

Answer: The grating noise you speak of is undoubtedly B battery trouble. Probably they were old stock when you bought them and we advise you to write immediately to the dealer who supplied them as they should last at least ten weeks on a five valve set. The spark you mention should always be visible (in a dark room at any rate) when your filaments are burning and you make and break the plate circuit. The wiring of your potentiometer and rheostat is quite O.K. You should examine your grid leaks and make certain that they are quite O.K. as noise may also be traced to faulty grid leaks.

A.P.S. (Newcastle):

Question: I wish to construct a small portable set for use in my office to listen in to cricket scores, etc., and as there is no space available for a decent aerial I am anxious to make up a two valve set for use without an aerial. Could you give me a circuit suitable for this purpose, and what air line distance do you think it should operate? I intend to use a loop using No. 18 d.c.c. wire on a three foot spare frame as per the rough diagram I am sending you, spacing each turn about one inch. Would this be efficient?

Answer: The only two valve set we can recommend you to operate under the conditions you men-

(Continued on page 46)

(Continued from Page 38.)

For novelties in broadcasting, America should certainly be handed the palm. At station WIP, Philadelphia, a bedtime story was transmitted for the first time from the bottom of the sea! Yes, it sounds extraordinary, but it was carried out genuinely enough. The "Uncle" whose duty it was to do the story-telling, got into a special diving suit with a microphone in the headgear, and was lowered fifty feet (or perhaps one should say "full fathom eight") under the Atlantic Ocean. From the microphone, waterproof cables ran up to a transmitting apparatus which relayed the submarine speech to the broadcasting station, whence it was put on the ether for the radiophans to hear. The "Uncle," standing there on the bed of the sea, told a bedtime story, read out a list of names of children who are regular listeners to the station, and then sang a twilight song, which (one hopes) put thousands of children to sleep!

But the result might have been somewhat different if that "Uncle" had accidentally met a shark!

DIRECTION-FINDING.

So valuable has direction-finding by wireless proved upon the air lines that an extensive system is to be arranged. This will include several new wireless stations in various countries, notably England, Belgium, and France, so that all the machines flying in the airways in Western Europe will be in communication, and consequently the chances of pilots losing their way owing to fogs and bad visibility will be reduced to a minimum.

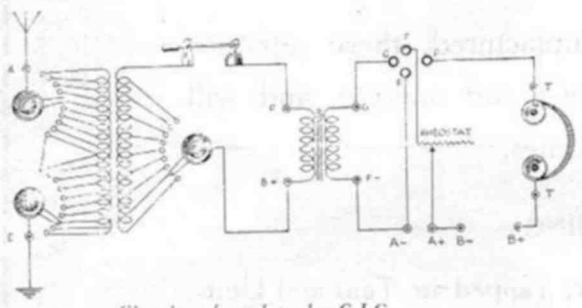
Wireless telephony has proved a great factor in the successful building up of civil aviation. The very few accidents which have occurred on the passenger lines in comparison with the huge amount of mileage flown is a wonderful record, and this has no doubt been achieved, not only by reason of the excellent machines, engines, and skill of the pilots, but also by the co-operation of radio communication to ground stations and from machine to machine. A pilot nowadays, surrounded by fog or dense clouds while flying, may call up a ground station by wirelesss and be given his exact position over the map in sometimes less than a minute. The safety of many passengers may depend on such communication, and it will be seen how important the co-operation of wireless telephony is to the safety and success of commercial aviation.

tion is the S.T. 100, which was fully described in Wireless Weekly on November 28 last. With this you would need to use a small indoor aerial with an earth. One detector and one audio would no doubt be O.K. with a good outside aerial, but you will find a high frequency amplifier as in the S.T. 100 necessary if you don't intend to erect an outside aerial. If you decide to use a frame aerial you will need at least two stages of high frequency and on a frame the size of which you mention, you would require at least 200 feet of wire which would be approximately 33 turns, to tune in 2FC.

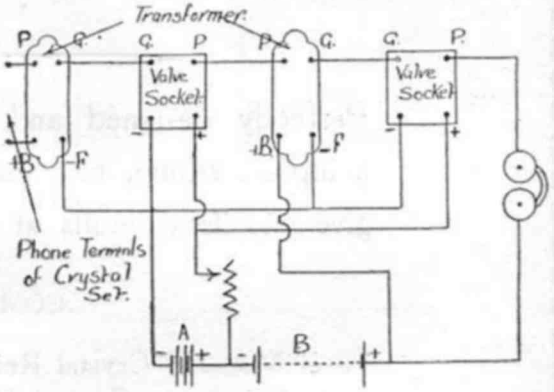
C.J.G. (Upper Hawthorn, Vic.):

Question: With regard to the loose coupler with a stage of audio amplification which was published in Wireless Weekly on December 19, please supply me with a sketch showing an extra stage of audio. The crystal set I have in use [illegible] coil, 8 turns of 10, 10 of 1, with a [illegible] comb coil wired to the last stud of the [illegible] to reach to 3LO (1720 metres). Signals from other stations I find, are drowned out by code from Melbourne radio which is only five miles away. How and you suggest any remedy for this? My agent in Camberwell supplies me regularly with Wireless Weekly.

Answer: Below is a sketch showing a complete two stage amplifier which you should hook on to the phone terminals of your crystal set. With regard to interference from V.M we refer you to the issue of October 31, in which an article appeared on the elimination of interference.



Circuit referred to by C.J.G.



SHORT WAVE TRANSMISSIONS.

The A.R.R.L. announces the following short wave transmission schedule:—

NKF—U.S. Naval Radio Research Laboratory, "Bellevue," Anacostia, D.C.:

54.3 meters—Mondays, Wednesdays, and Fridays, 8.0 to 8.10 and 9.0 to 9.10 p.m., E.S.T.

72 to 82 meters—Mondays, Wednesdays, and Fridays, 8.30 to 8.40 and 9.30 to 9.40 p.m., E.S.T. Exact wavelength will be announced during each test.

54.3 and 32 meters—Simultaneous transmission, daily except Sundays, beginning at 10.0 p.m., E.S.T., working traffic with NPL.

1XAM—J. L. Reinartz, 371 Hartford Rd., South Manchester, Conn.:

25 meters—Daily from 6.0 to 7.0 p.m., E.S.T.

55 meters—Daily from 7.0 to 8.0 p.m., E.S.T.

Both transmissions by semi-automatic transmitter.

Note.—8 p.m., E.S.T., would correspond with 11 a.m., Sydney time. From this the other times may be reckoned.

AN OPEN LETTER TO COUNTRY AND INTERSTATE TRANSMITTERS.

— . — . — **Dear Fellers** — . . . — **This came to us from 2YI over the line telephone the other day:** — . . . — **2GQ wants to know why all the publicity is given to the blokes in the city** . . — — . . **This is our reply:** — . . . — **How the** . . — — . . **can we publish dope about people when they don't give it to us themselves?** . . — — . . **We ain't thought readers, and we can't listen-in on everybody at once, much as we'd love to. So, if you've got anything you think is worth while passing on, drop us a line and we'll publish it. We thank you.** — . . . — **"Wireless Weekly."** . — . — .

WHAT THEY SAY ABOUT WIRELESS WEEKLY.

JUST lately we had a letter from a reader at Manly who threw us a brickbat and said that the articles we published were bunk and why didn't we get something different. Most courteously we wrote him asking for some suggestions, but our correspondent evidently cannot think of anything, or else he's too shy to tell us. There's a moral in this, of course, and it is this—criticism, to be of any value at all, must be constructive. When its destructive, it does no good to anybody.

WHAT OTHERS SAY.

A Macquarie Street Doctor, writing on the 19th inst., says: "I enjoy the Weekly greatly, and have urged on many the advisability and even necessity of being regular subscribers. With the best of good wishes for a prosperous and successful New Year."

From a subscriber at Murwillumbah: "A paper conducted along the lines Wireless Weekly is pursuing cannot fail to keep in front of its contemporaries, and I never fail to further your interests."

Kyneton (Vic.): "Thanks for your kind advice—believe me, it's another indication of the service you have given me."

From Griffith: "I must thank you for the great service you are rendering to those in the country."

From a Melbourne subscriber: "I buy all my parts direct from an advertiser in your paper and his service to me has never failed."

Armidale, N.S.W.: "I subscribe to another wireless journal, but I give Wireless Weekly pride of place. It is consistently good."

A cutting from the "Star," Christchurch, N.Z.: "Wireless Weekly is already well-known to New Zealanders. It contains frequent items concerning New Zealand amateurs, in fact quite often published information concerning ourselves which we do not learn from our own papers."

From a subscriber at Newcastle: "My copy of January 2nd, must have gone holiday making; please send me another, because I cannot afford to be without one single copy of Wireless Weekly."

The Headmaster of a Boys' High School writes: "The school's set has been entirely built from the description in Wireless Weekly, which we receive regularly."

An Advertiser: "As soon as our new lines are ready we intend to avail ourselves of the great possibilities through advertising in your journal."

WHERE THERE'S WIRELESS, THERE'S WIRELESS WEEKLY.

CHANGE OF MANAGEMENT.

FOLLOWING a recent alteration of the staff arrangements by New System Telephones Pty., Ltd., one of the largest wholesale wireless concerns in Australia, Mr. L. N. Austin has been appointed General Manager, with headquarters at the head office, 25/27 Queen's Bridge Street, Melbourne. Mr. J. I. Carroll still remains manager of the Sydney branch at 280 Castlereagh Street.

New Systems Telephones Pty., Ltd.. handle the T.M.C. telephones and loud speakers, in addition to Cossor Valves, all well known to wireless enthusiasts in Australia. Besides these, the firm specialises in handsomely finished British made complete receivers which represent the last word in appearance and efficiency.

HIGH-GRADE WAVEMETER.

MANUFACTURED IN AUSTRALIA.

THE A.W.A. wavemeter is a crystal buzzer, having a tuning range of 200-2500 metres, manufactured by Amalgamated Wireless (A/sia.) limited at their radio-electric works, Sydney. The instrument is supplied with three inductance coils to efficiently cover this wave range. This wavemeter may be employed:—

1. To place two or more circuits of radio frequency in resonance.

2. To measure the closed or open oscillation circuits of a radio transmitter.

3. To determine the percentage of coupling between the closed and open circuits of a transmitter;

4. To determine the decrement of damping;

5. To calibrate a receiving set.

6. To determine the wavelength of a distant transmitting station;

7. To determine the purity of the wave emitted from the antenna.

When the wavemeter is used as a source of high-frequency oscillations, the calibrated circuit, consisting of an inductance and variable capacity, is excited by means of a high-frequency buzzer. A two-way switch provides a ready means for changing from exciting circuit to crystal-phones method of observing resonance. A 1.5 volt. lamp connected in series with the calibrated circuit indicates by its incandescence, when the wavemeter is in resonance with a transmitting circuit. The wavemeter reading at this adjustment will give the wavelength of the transmitter. Connection is made to the interchangeable inductances by means of a length of leather-covered flex. The coils plug-in to a heavy ebonite standard, mounted on a nickelled brass stand, so that they can be conveniently coupled to the circuits it is desired to measure.

The coils are of a special low loss type, and have low self capacity. The variable air condenser is a high-grade instrument of ample dimensions making fine adjustments possible. It is fitted with an ebonite extension handle to facilitate tuning. Tuning is sharp with this instrument, and maximum resonance is clearly defined, making accurate measurements possible.

In a letter to us quite recently, Albert W. Pearce, principal keeper of the Cape Brett Lighthouse, in the far north of New Zealand, says:—"I have been receiving very good music from 2BL and 2FC on my set and during last week I had 2FC quite clearly on my loud speaker with only two valves. Everything was plain and clear, fully five feet away from the set. Broadcasting is a wonderful pleasure to us here in our isolated life on a lighthouse and really we don't seem to be shut out from what is going on after all.

LEVIATHAN TO BROADCAST CONCERTS WHILE CROSSING ATLANTIC.

One of the latest innovations on the giant liner "Leviathan," is the broadcasting of weather reports and music from the ship's band, so that it can be heard on land even though the ship be more than a thousand miles out at sea. Even though the ship should be out on the Atlantic it is highly probable that many wireless amateurs will be able to hear the Leviathan concerts in Paris.

Mr. P. Boulton, of Albury, reports good loud speaker reception almost nightly of the new station recently opened at Hobart. Station 5BL, Adelaide, and 6WF, Western Australia, come in very well. On nights when conditions are favourable, the whole of the following stations have been worked on the loud speaker with from fair to good strength during the same evening. 2BL and 2FC, Sydney; 3AR and 3LO, Melbourne; 5BL, Adelaide; 6WF, Perth; 7AR (call now changed), Hobart. 6WF, Perth, can be brought in without interference from 2FC and 5BL, Adelaide, and 7AR, Hobart, at the same time as and without interferences from 2BL.

Why is he smiling?

For one thing he's listening to a good programme—and for another he's just decided to fall in line with his other radio friends by having Wireless Weekly put in his letter box every week.

You can do the same by simply filling in the form below and mailing it to us together with a remittance.

SUBSCRIPTION FORM

To the Editor,

Wireless Weekly,
12/16 Regent St., Sydney.

Please forward me for ..... months "Wireless Weekly" for which I enclose ..... plus exchange of country cheque.

..... 192....

Signed .....Address .....

Annual Subscription, 13/-, post free.

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