



Friday, December 19, 1924.

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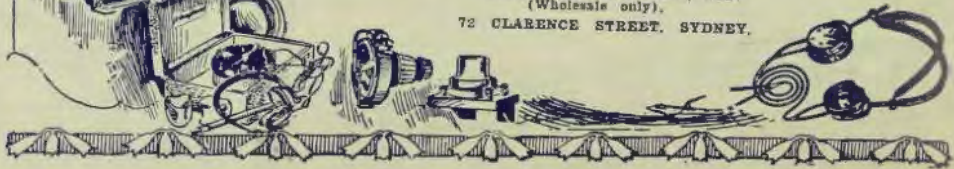
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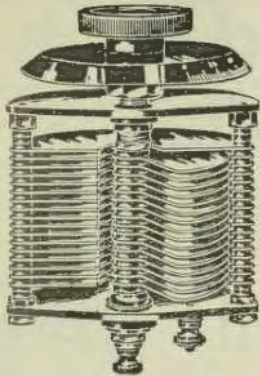
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6 RADIO BARGAINS 6



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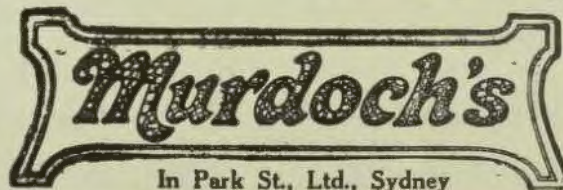
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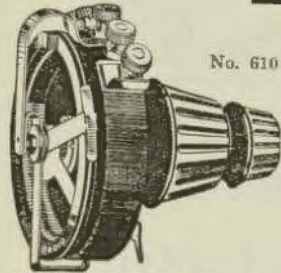
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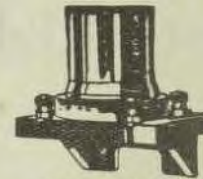
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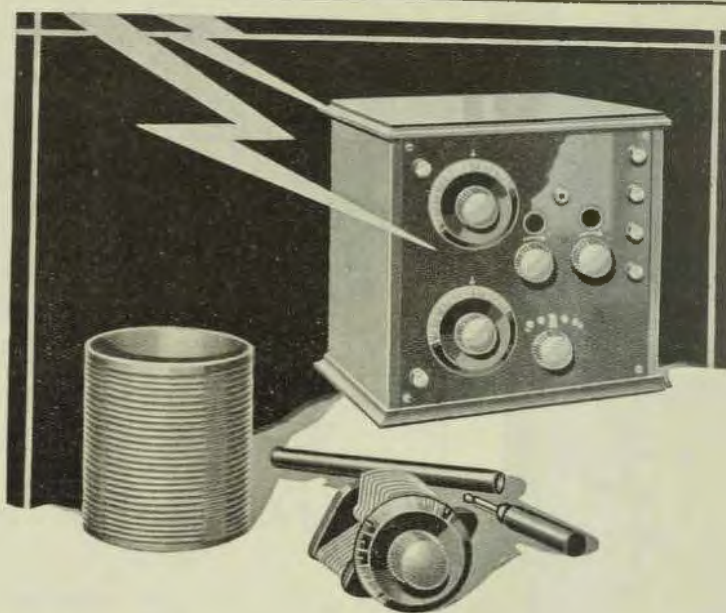
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VOL. 5. No. 8.

FRIDAY, DECEMBER 19, 1924.

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EDITOR: 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

The Genius Behind

THE inmost thoughts of Marconi on that memorable occasion, over 25 years ago, when the letter "S" was successfully transmitted across the Atlantic, have never been revealed. Whether he reflected somewhat bitterly that he had reached the culmination point in a series of experiments, the nature of which had never been regarded seriously by his own countrymen, and that he had had to take himself and his contraptions to a foreign country in order to get a little encouragement, is not known. More than probably, he looked forward to the day when commercial messages could be flashed across that storm-tossed ocean by wireless, and pondered over the question of raising the money to capitalise such a venture. Certain it is that neither Marconi himself nor the operators at Poldhu had the faintest inkling that humanity would benefit to the incredible extent that it has by the wonders of wireless.

In his quiet moments of retrospection, this great scientist no doubt reflects with indescribable feelings that at one time he was almost discouraged by the torrent of bitter opposition and ridicule that was poured upon him by those who regarded him as a hopeless crank. He was subjected to the contumely of newspapers and of scientists, who derided the ambitions of this intruder from Italy, but grimly, and with many a setback, he stuck to his task, and eventually the boomerang rebounded upon those whose searing criticisms constituted the most formidable barrier he had to overcome. Of just such a breed as Marconi was Columbus with his pig-headed notions concerning the shape of the earth, and Stephenson with his tin-pot engine. As a direct result of Marconi's experiments, upon the human race has been conferred a blessing not to be measured in mere monetary terms.

Only those who go down to the sea in ships can understand the sense of security in the knowledge that, no matter on what part of the great ocean lanes they travel, there is on board a sure and speedy means of salvation in time of trouble. Mar-

coni's invention has been the means of saving thousands of precious human lives at sea.

That fact alone would be sufficient; but, due to the lead given by Marconi, scientists have invented the marvel of broadcasting, and to-day, by the use of simple receivers, it is possible to enjoy in our own homes the music of distant artists. To the lame, the halt, and the blind; to the sufferers on sickbeds; to those in the isolation of the bush, is brought a joy that can scarcely be appreciated.

By the linking of Esperanto with Broadcasting undreamt-of possibilities have been opened up, the barrier of languages is being slowly but surely broken down, and there is emerging from chaos a clearer conception of human relationships and a better understanding of our fellow-men. Sooner or later, Broadcasting must become a powerful factor for good in international affairs.

So, at this festive season, let us bestow a fleeting thought and a blessing upon the man who has made all these things possible: the father of Wireless—Marconi.

Commercial and Amateur Activities

A WRITER in a Melbourne daily paper, in commenting upon the Beam System, and upon the distances now being worked by amateur stations, states that commercial wireless companies have been unable to compete with amateurs.

Kipling once wrote "For East is East and West is West, and never the twain shall meet," and when comparing the activities of the Experimenters and Commercial Companies, it should be born in mind that their interest are as widely apart as the poles. They never were and never will be allied, and for anyone to attempt to measure up the progress of experimenters by that of commercial companies, betrays a lamentable lack of proportional sense.

The big wireless concerns are interested mainly from a business point of view; their object is to pursue the study of the development of wireless

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communication to the stage where it can be harnessed to the public service, and naturally the payment of dividends to shareholders. For a commercial company to allot a member of its staff to the non productive work of endeavouring to raise an English or American amateur on low power, would be about as sensible as an Aeroplane Company paying a salary to an aviator to remain up aloft all day long, looping the loop and performing similar stunts.

What does interest the Company referred to by the Melbourne writer, is two-way commercial continuous communication with England, and for it to approach this task backed up by a 250 watt transmitter and a low loss receiver, would be simply ludicrous, and obviously a waste of time, and of share-holders' money.

The big Wireless Companies maintain a staff of research engineers whose functions are not to dabble about with small power sets, but to improve existing commercial apparatus for transmission and reception, and to study entirely new principles of wireless communication with the object of turning them into dividend-paying propositions, which almost invariably bring added facilities for the conduct of national and public affairs. The maintenance of these research departments involves an expenditure of many thousands of pounds, compared to

A Personal Word

Dear Readers,—

This is the season of festivity—the one time of the year when we drop all our little cares and worries, forget the ups and downs of the past twelve months, and join with everybody else in greeting—"A Merry Christmas." It is a quaint old custom, but one around which is wrapped a whole world of meaning, and one that most of us hope will never grow out of date.

I could not let this opportunity pass without thanking you sincerely for the support you have given me in my endeavour to keep the standard of "Wireless Weekly" ever on the up-grade. The kindly criticisms and helpful letters I have received from readers from time to time have, believe me, been deeply appreciated, and the fact that every month brings a greater circulation proves beyond all doubt that the unbiased, straightforward policy which this paper has always tried to stick to meets with general approval.

I have been particularly struck by the friendly tone of the letters which have reached me from readers in various parts of Australia, and my most pleasant moments have been spent in the reading of the contents of many letters which finished up—"With best wishes to your (and OUR) paper," and that's the spirit. I want you to regard this as YOUR paper, and that it is your privilege to offer criticisms or suggestions whenever you consider them necessary. Let me assure you they are always welcomed.

With best wishes for a right Merry Christmas and a Happy New Year.

Cordially yours,

A. W. WATT.

Editor.

which the expenditure of the average experimenter is a mere drop in the bucket. A few of the things we have to thank commercial companies for are — Broadcasting, trans-ocean communication, marine wireless, and last but not least, the investigation of short waves, the use of which has provided the experimenter with a wonderful new field for expansion.

For months, commercial interests have been working day and night perfecting a system whereby a continuous public service could be maintained between Australia, England and Canada. A serious job, this, and one that had to be tackled with apparatus, which although not to be compared in power to that which will eventually be used had to be such as to enable definite conclusions to be arrived at with a view to finalising the establishment of the big stations. Speech was received from England six months ago, and the occasion of the first direct transmission from Australia is fresh in everybody's minds. We are now assured that, due to further investigations and research, the forthcoming services may be expected to operate continuously. However, Steinmetz, Marconi, Tesla and most of the great scientists were originally and essentially experimenters in the true sense of the word and these men would probably be the first to applaud the

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achievements of the Australian experimenters. The patience and persistence of those who have succeeded in girdling the earth cannot be too highly commended and it speaks volumes for the wonderful efficiency and technical knowledge which have been necessary to transmit over 12,000 miles with remarkably low power. The year 1924 has demonstrated once again that we have in Australia the

most efficient experimental stations in the world; a broad statement, but one that the events of the last few weeks amply bear out. The progress thus made must continue and we confidently anticipate that during the coming year, many fresh laurels will be added to those already gathered in by Australian experimenters.

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



Phil Renshaw, Hon. Sec.
Box 3120 GPO Sydney
Phone B2235
AHP/RELL Publicity Officer

CQ de 2HH.—Greetings.

A Merry Xmas and a Bright and Prosperous New Year to all.

Looking back on the past, one cannot but realise what an immense amount of work has been accomplished in the wireless field during the past twelve months. Apart from the commercial developments of short waves, the amateur exploitation of low power short wave transmission is perhaps the most remarkable and outstanding feature of the year. It is quite safe to say that at the present time, Australia is in constant communication with New Zealand and the United States. That this has been accomplished is due to the untiring efforts of those giants of experimental wireless to whom we have long looked for the results which they have at last accomplished.

Although it cannot be said that constant communication has yet been established with England yet much good work has been done, and recent achievements point to the fact that at any early date it will become a matter for no comment that by a simple turn of the switch English Amateurs are brought within telephony range. Seeing that so much good work has been done and such good results have been accomplished, which perhaps twelve months ago may have been regarded as more or less improbably and perhaps impossible, one may naturally ask the question, "What is there left to do in the future?" This however, is an attitude which should not be adopted by any of the genuine experimenters. There is room for much research work and although we cannot all expect to reach

the same level as 2CM, 3BQ, 2DS and others, yet there is a niche for everyone of us to fill, and if we do not do our part, that part will forever remain undone and the loss will not be solely to ourselves but to the cause of wireless generally.

The Institute has had a very busy year, and no division more than the N.S.W. Division.

The beginning of this year witnessed the now historic tests of 2CDM on the Tahiti. This, without doubt laid the foundation for the present inter-communication between Australia and U.S.A.

The acquisition by the N.S.W. Division of standard laboratory instruments which were purchased by our President during his trip to America has marked another milestone on the road to success. The N.S.W. Division of the Institute is now in the unique position of being able to handle scientific investigations into the realms of wireless and possess an equipment which is second to none in Australia, and as there is not the slightest doubt that amongst its members the N.S.W. Division numbers the brains of the Australian Wireless World, the future in this respect is a very bright one for the whole of Australia. During the year we have witnessed the affiliation of the various Radio Clubs in N.S.W., and it is hardly necessary in a retrospect of the past, to dwell upon the advantages accruing from this forward step. At the same time it may be as well to urge upon those Clubs (and they are very few), who have not yet affiliated, that with the enormous strides that wireless is making at the present time, and the almost constant change in the status of the experimental movement, that to be outside the scope of the activities of the Affiliation

scheme is to be quite out in the cold, with regard to the doings of wireless at the present time.

Referring now more to the domestic side of the Institute's activities two very prominent features stand out. The first was the opening of an Headquarters Office at 82, Pitt Street, which took place in April last. The need for the accommodation was very apparent and the work which was transacted in that small room justified in every respect the far sightedness of the executive Officers. More recently we have succeeded in obtaining better accommodation, and in every way a more suitable home in the Royal Society's House and we are now housed at 5 Elizabeth Street, Sydney, for some considerable time to come.

The program of lectures has been a good one and with such a wealth of information and such a host of scientific facts as have been presented to members of this Division it would be invidious to single out any one member for comment.

So much for the past and the present. Now, what of the future? The future holds bright prospects in every way. The New Year will see the establishing on a proper basis of a roster for club lectures in connection with the Affiliated Societies. It will see an increase both in the scope and activities of the Radio Relay League. With the New Year we shall also have the transmission of standard wave lengths from 2CX, the station officially appointed by the N.S.W. Division to carry out this work. It is hoped also that the Institute will be enabled to undertake scientific investigations and work of a more practical nature than has hitherto been possible. Important as have been the activities of the Institute in the past in a theoretical, and, perhaps, a political sense, and much as we shall have to keep the aspects before us in the future there is ample scope for work and co-operation between members of this Division in connection with the stations owned and operated by them. Schemes have already been privately discussed which will lead to co-operation in the operation of stations, and but for the activities of another kind which claim our attention at this season of the year, these schemes would no doubt have been in operation. They will, however, materialise with the advent of the New Year, and many of these schemes will be put into operation and it will be interesting in twelve months' time to see how far the prophecy of progress, unheard of, undreamt of, will be fulfilled. If one with a true prophetic sense forecasted the advance of wireless science in the next twelve months he would be laughed at as a dreamer and a visionary, but before the end of next year we can safely predict that

such a one would be able to laugh in his turn. He laughs best who laughs last.

Owing to the spirit of goodwill permeating the whole of Australia at this season of the year we are pleased to report that this week there is no QRM.

A. H. PERRETT, Publicity Officer.

MR. RENSCHAW'S MESSAGE

(To the Editor)

Sir,—At first thought one might be inclined to think that the many and varied avenues of enjoyment at the holiday season would detract from the interest displayed in radio by the individual.

The radio boom we have had during the past 18 months has now resulted in the science taking a definite place in the everyday activities of most families, more particularly in our big cities. Consequently this Xmas, we will find radio being included in all our comings and goings, yet strangely enough, we will not stop to wonder. Wonders in wireless are expected as a matter of course, and when an outstanding feat is accomplished it is nothing more than a nine days' wonder. However, let all the clubs and experimenters take heart. The radio milestones are being set very rapidly, the latest being two-way amateur communication with England. What will be the next milestone?

At this Christmas and New Year Season let all the members of the Wireless Institute, members of radio clubs, and the individual experimenters, unite to carry on the series of nine days' wonder. These will have a decided influence in the uplifting still higher of humanity.

Yours, etc.

PHIL. RENSCHAW,

Hon. Secretary Wireless Institute of Australia,
N.S.W. Division.

NOTICE TO SYDNEY READERS.

"WIRELESS WEEKLY" has two telephone lines—Redfern 964 and Redfern 930. A telephonist is constantly in attendance at the switchboard, but we have received complaints from advertisers and others that the greatest difficulty has been encountered in raising the numbers. In very few cases can the cause be traced to this office. We would take it as a personal favour if any reader bumping trouble of this nature, when telephoning us, would make a careful note of the time and the particulars, and drop us a line without delay.

COASTAL RADIO SERVICE.
Staff Changes.

Mr. H. B. Wolfe, radiotelegraphist, Perth Radio, has been transferred to Port Moresby Radio as officer in charge.

Mr. L. Luscombe, radiotelegraphist, Port Moresby Radio, has been transferred to Townsville Radio.

Mr. H. I. Moore, radiotelegraphist, Townsville Radio, has been transferred to Sydney Radio on completion of his term of tropical service.

Mr. K. McLennan, Hobart Radio, radiotelegraphist, has been transferred to Cooktown.

Mr. J. S. F. Slattery, radiotelegraphist, has been transferred from Cooktown Radio to Sydney Radio on completion of his term of tropical service.

Mr. A. G. Kempling, radiotelegraphist, Adelaide Radio, has been transferred to Hobart.

Mr. M. B. Todd has been appointed radiotelegraphist at Darwin Radio.

Mr. J. H. Carty, ex the Marine Radio Service, has been appointed radiotelegraphist at Darwin Radio Station.

Mr. F. Barclay, ex the Marine Service, has been

appointed radiotelegraphist at Thursday Island Radio.

Mr. C. A. Sandell, radio mechanic, has been transferred from Esperance Radio to Thursday Island Radio.

Mr. R. C. Austin, radio mechanic, Perth Radio, has been transferred to Esperance.

Mr. C. E. Stanfield has been appointed radio mechanic at Port Moresby Radio.

Mr. E. C. A. Wise, radio mechanic, has been transferred from Port Moresby to Brisbane.

Mr. A. Harrower, radiotelegraphist, Thursday Island Radio, has terminated services with the company.

Mr. H. W. Hedges, radio mechanic, Brisbane Radio, has terminated services with the company.

Mr. G. Walters, Darwin Radio, radiotelegraphist, has been transferred to Hobart Radio on completion of his term of tropical service.

The relief party for Willis Islets left Sydney per the s.s. "Marsina" last month. The party consisted of Mr. F. Exon, radiotelegraphist in charge, Mr. N. Stockton, radiotelegraphist, and Mr. W. H. Nelson, meteorological observer.

The relieved party, Messrs. J. J. Hardy and T. Moore, returned to Australia via Rabaul per the s.s. "Mataram."

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Look danger in the face.
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CONTROL LIGHTNING ARRESTER.

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THERE MUST BE A REASON

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Chester Street
CAMPERDOWN, SYDNEY

Hoping that these few remarks will be of value to all those who have got into the habit of regarding the air as the sole property of the broadcasting companies.

Yours etc.,

P. SPENCER NOLAN (2YI)
152 Bellevue Rd., Double Bay, 5/12/24.

To the Editor, "Wireless Weekly."

Dear Sir,—I should like you to mention to Australian amateurs that there were several New Zealanders who have been trying to work Australia for some time, but with no success except for 2CM, 3BD, and those on very low waves around 80 to 100 meters. The only ones I have heard on about 140 meters are 2IJ and 2ZZ. I have already worked 2IJ, and would like to work more Aussies in the future. How about some of the Aussie stations coming down to about 140 meters (if permitted) and giving New Zealanders a chance to increase their DX records?

Yours, etc.,

F. WHITE,

Op. 2BL.

Wellington College, Wellington, N.Z.

To the Editor, "Wireless Weekly."

Dear Sir,—Thinking I would like to try something different with my tapped coil crystal set, and with the hope that my already fair reception of Farmer's and Broadcasters' would be considerably amplified, I added three dry cells in series, a potentiometer, a carborundum crystal, and steel catswhisker. The result was fine, and Farmer's came through equally as loud as on a single valve, with the steel wire either on point or flat on the side, and on any portion of the carborundum, but Farmer's only, and although I had always been interfered with by Broadcasters' when listening to Farmer's, I then tried to tune in Broadcasters', but the carborundum and steel were showing too much resistance, and, try as I would, not a sound came through. I then cut off the battery entirely, and the result was exactly the same. Also I have tried the same thing out on the crystal set of a friend who lives about one and a half miles from Broadcasters', and who could never get Farmer's, and the result was identical with mine at Kensington. I also might mention that his set simply consisted of 130 turns on a four-inch former, and no condenser or potentiometer or batteries. My only hope is that this

will prove of some service to those of your readers who have suffered the experience of my friend, and give them the satisfaction of being able to listen to both of our broadcasting stations. The only inconvenience involved is that the crystal will have to be changed for Broadcasters' to a soft galena, or have two cups and detectors fitted to panel.

Yours, etc.,

F. H. DAVIES.

271 Anzac Parade, South Kensington.

(To the Editor.)

Sir,—On 28/11/24 at 10.45 p.m. I was listening in to 2YI who I could hear very plain. Before closing down Mr. P. S. Nolan then got on to Mr. Marshall, 2HM at Armidale. This station answered with Morse, which was also very clear. Not being too sure, I rang up Mr. P. S. Nolan on the following night to make sure. When I told Mr. Nolan on the phone the conversation I heard between himself and 2HM he was satisfied my case was bona fide, and thought it was good going for a loose coupler.

The following conversation took place. "Hallo, 2HM, how are you? I haven't given you a call for some time. I'll give you one now."

Then 2YI sent out Morse and was answered by 2HM in same. Both were very clear and 2HM was especially very distinct for such a distance.

I have frequently got 2BM at Leura, but I would like to know if getting 2HM at Armidale is a record. The following is a list of stations logged up to date:—

2FC, 2BL, VIS, 2ME, 2GE, 2JM, 2BM, 2BF, 2YI, 2FF, 2ZM, 2HM, 2JI.

I am using a Loose Coupler, galena crystal, Murdoch 3000 ohms phones, double aerial, 62 feet long, 6 foot span and 30 feet high.

I will be very pleased if you will let me know through the columns of the Wireless Weekly if this constitutes a record for a crystal set.

Yours etc.

V. McLoughlin.

"Papaila", Francis Street, Deewhy.
Dec. 1st, 1924.

FOR SALE: 3 Valve Set, complete with Batteries, Valves (dry cell), and Loud Speaker. Apply 42 Grosvenor Street, Woollahra.

BUY RADIO GIFTS FOR XMAS

CQ, AA, 2CM

(To the Editor.)

Sir,—May I be permitted in your Xmas number to extend to all wireless experimenters, the best of good wishes for Xmas and the New Year?

The past year has been a memorable one in wireless history. We have seen the establishment of regular broadcasting from the capital cities. We have seen amateurs accomplish both way Morse working to England and America. We have heard of remarkable long distance receptions, and we hear nightly dozens of Australians chatting across to New Zealand on a few watts of power.

More especially, I would like to congratulate and give an extra hand shake to the following good fellows:

To Frank Bell, Z4aa, for being the first Australasian to work U.S.A. and England, and other feats too numerous to mention.

To Ivan O'Meara, Z2AC, for being first to work Argentine, and for working U.S. and G's. in double figures.

To Ralph Slade, Z4AG, for like feats, and especially for one night's working wherein he was in touch with U.S.A., England, South America, Australia, and (I think) somewhere else.

To S. Shiel, Z4AK, for similar remarkable DX work.

To Max Hawden, A3BQ, for being the first Australian to work U.S.A. and England.

To Jack Davis, A2DS, for being first N.S.W. Ham to work England, and for working several American amateurs.

To friend Cox, 3BD, for untiring perseverance, which was also rewarded by getting QSO, U.S.A., and G.B.

To Cecil Marsden, 2JM, for winning the "Wireless Weekly" transmission tests.

To Ray Allsop, 2YG, for being first to receive English broadcasting, and also for his reception of KGO on a loop aerial.

To friend Cotterill, 2ZN, for his reception of W.N.P. (S.S. Bowdoin, near North Pole).

To Joe Marks, 2GR, for being the most consistent amateur broadcaster of good music.

To Harry Stowe, 2CX, for his great assistance to hams generally in transmitting standard frequency waves.

To 2YI and 2BK and 2LO for the fine DX work that I know will soon be done by them when their new tubes are in operation.

To our dear old friend Crocker, 2BB, for many things, specially his willingness to assist at anything, and also for his great improvement in DX reception.

To 2BF, 2XA, 2ZG, 2CI, 2RA, 2ED, 2DK, and all other transmitters.

And last, but far from least, to the best secretary and assistant secretary in Australia, Phil Renshaw and Maxwell Cutts, of the Wireless Institute.

Yours faithfully,

C. MACLURCAN.

To the Editor, "Wireless Weekly."

Dear Sir,—

I do not wish to make the columns of your excellent paper an arena in which to carry on purely technical strife, but I should be glad if you would give me this opportunity to reply to Mr. E. Joseph's criticism of my remarks in your issue of the 6th.

I am afraid I am like many other people, after nearly twenty years of study and practice, I am no nearer the solution of what electricity really is. I know its effect. I don't know its cause. Is it a substance? If it is, then it must have weight and volume. What is its specific gravity?

There are many theories concerning its origin, but who can say that any have been proved conclusively?

Mr. Joseph says that my "theories on vibration are diverting." They were meant to be. I endeavour to arouse some interest in the question I have come to realise that the further I delve into the question of electricity the less I really understand, and the more I can learn from the thoughts and ideas of other people.

Mr. Joseph puzzles me. Does he not realise that his explanation of the hum of a transformer is an argument in favour of my vibration theory? He himself admits that the audible noise is due to "vibration" at transmission frequency of the iron core.

I agree entirely with his explanation. The vibration of the iron laminations is certainly caused by molecular disturbance within the iron itself. That is the theory of vibration, and accounts for heat generated. A concentrated electric "charge" and the molecules become so violently agitated that the resultant frictional effect is shown by heat.

I hope Mr. Joseph will not say that in his example the cause was magnetic and not electric, because I cannot dissociate the two phenomena. The

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one gives rise to the other. Wherever there is an electric source of supply there is a magnetic field, and wherever there is a magnetic field there exists potential electricity.

Mr. Joseph asks why the jacks should vibrate about their contact points. Vibration will always seek out the weakest point that which to make its presence felt. Has Mr. Joseph never had a loose connection and heard foreign noises in the ear-pieces traceable to a loose connection?

A double circuit jack has two spring contacts—rather mechanically imperfect connections! Is it not reasonable, therefore, to assume the noise would come from such a point?

Mr. Joseph differentiates between alternating and direct current. I can't. The natural discharge of electricity is in wave formation, c.f. lightning discharge. By mechanical means only do we make it unidirectional. The current generated in a dynamo is "alternating" current. By means of the commutator we group the impulses and make it unidirectional.

The same is done in radio. We rectify by means of crystal or valve and make the resultant current unidirectional. If the current remained constant we could get no transformer action. Rectification does not cut out the variation of the current value. It merely eliminates a portion of one half of its sine wave to allow the opposing half to predominate and so produce an effect. To me the word "direct" when applied to current is a misnomer, and the cause of more misunderstanding than any other term in electricity. "Unidirectional" describes the characteristic better.

Referring to my explanation and that of Mr. Joseph regarding the damping of the grid circuit by placing a finger upon it. I cannot see the difference between his statement and mine. Of course, "the set is thrown out of tune" just as the gong is thrown out of tune when the hand is placed upon it. The human body absorbs the vibrations in both cases. If the human finger were vibrating at the same period as the gong, no "damping" effect would occur. Why use the term "damp" if this is not so?

I am afraid I have already trespassed too much on your space, Mr. Editor. My real object in doing so is not to enter into a controversy with Mr. Joseph, but to try and gain further ideas concerning a subject that has puzzled scientists during the last century. I thank Mr. Joseph for the interest he has shown in the matter.

Yours, etc., FREQUENCY.

Union House, 247 George St., Sydney.

(To the Editor.)

Sir,—Could you or one of your numerous readers inform me the correct call sign and address of the South Australian amateur who was transmitting a concert for the benefit of the listeners on Kangaroo Island last Saturday night, the 29th. The static was pretty bad and I could not distinguish the call letters though the 5 something Adelaide was clear.

Also could you inform me the correct address of:

(a) 5BE

(b) 3XX

Hoping that you will find a space in your valuable journal to publish the above.

Yours etc.

C. W. FRANKEL.

Uhr St., Abbotsford!
1/12/24.

THANK GOODNESS!

AT last we know the locations of WGH, 2XD, and LPZ, whose signals have been mystifying Australian experimenters for some time. The information has been kindly handed along to us by Mr. C. A. Service, of "QST."

WGH and 2XD are one and the same station, owned by the Radio Corporation of America and situated on Long Island, about 40 miles from New York City. They are engaged in sending commercial traffic to S. America, although such transmissions at the present time are more in the nature of tests to determine the practicability of handling traffic on the low waves. ABC is a combination of letters repeated over and over again when there is no traffic, so that the station at the other end may take audibility readings during the different hours of the day and night. LPZ is the Argentine station located near Buenos Aires.

Amateur operator's certificate No. 17 has been granted to Mr. G. Maxwell Cutts, of the Burgin Electric Company, and assistant secretary of the Wireless Institute of Australia, N.S.W. Division. Mr. Cutts has been closely associated with the experimental movement for a very long period, and the Croydon Radio Club, of which he is secretary, is one of the most live amateur organisations in this State.

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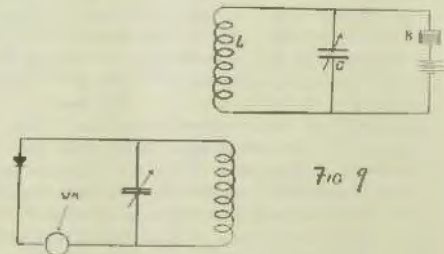
Wave-Meters: Their Use and Construction

(Part 2.)

By H. A. Stowe, M.W.I.A.

FOR those using a transmitter, the type of wave meter in the other article can be modified, and so obtain better results. Owing to the amount of energy radiated from a transmitter, when it is desired to use it in conjunction with the transmitter, less sensitive indicators may be employed in the wave meter. Such types were indicated in Fig. 3 of the last article. When used with the transmitter, fairly large currents may be induced in the wave meter, and so it only remains to connect in its circuit, a current indicating device such as a milliammeter or a small lamp. The ammeter usually employed in this type of instrument is of the thermo type with a special scale. It is called a thermo galvanometer and is calibrated to read the square of the current flowing, so that it may be used for what is known as decrement measurements and other special uses. The thermo type or hot wire type of ammeter must be used, as the current is an alternating one, and so would not read on an ordinary D.C. mill amp meter. The hot wire type of ammeter is quite effective and is cheaper than the thermo type. It should have a maximum scale reading of about 100 to 200 mill-amps. As before mentioned a small $\frac{1}{2}$ volt flash lamp may be used in place of the ammeter. In both these cases the resonance point is indicated by maximum reading on the instrument or maximum glow on the lamp. The calibration of this type of instrument presents a few more difficulties than in the calibration of the previously described instrument. It is usually not possible to conveniently vary the range of the transmitter in order to calibrate our wave meter. Here again also, we must employ another standard wave meter but in this case it need only be of the same type as the one under consideration—that is, without detector or phones. For the calibration of this type of instrument, what is known as the absorption method is used. This involves the use of an oscillator of the valve type and an ordinary regenerative valve receiver will do, provided it will oscillate over the whole range of the wave lengths to be covered. The principle of the test is as fol-

lows: If we connect into the plate circuit of our valve oscillator, some means of detecting variation of plate current, such as a pair of phones or a very sensitive milli-ammeter, then we can note when any change in plate current takes place. Now, if another circuit such as our wave meter which is capable of being set into oscillation, is brought near our oscillator and its wave length varied until it corresponds to the wave lengths of the oscillator, a click will be heard in the phones or a slight jump on the needle of the milli-ammeter will be noticed, thus indicating that both circuits are in resonance. The reason for the variation of plate current in the oscillator is as follows: On the wave meter being brought into resonance while near the oscillator, a certain amount of energy is absorbed from the oscillator at the point where resonance occurs. The loss of this energy from the oscillator causes a slight fall in the plate current. If a milli-ampmeter is used, it will be noticed that the needle



will give a kick towards zero and then a slight increase above normal. This is due to the return of a certain amount of energy from the wave-meter just in the same way as when we stretch a piece of elastic and let it go, or release a spring, it will fly back beyond its normal position. So, when this indication is obtained on the wave meter

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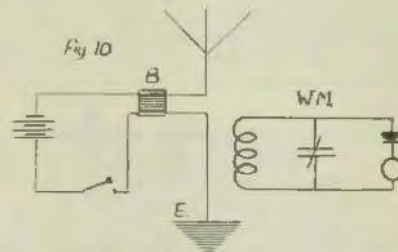
or oscillator, it indicates that the wave lengths of both circuits are in tune.

From this we can now proceed to check our wavemeter by the three wavemeter method as previously described—that is by first measuring the wave length of the oscillator and then comparing the oscillator with the meter under test as per Fig. 8 of the previous article, and so on over the whole range of the wave meter.

This absorption method is by far the most accurate, as no effect is present due to the addition of a buzzer or crystal detector and phones. In using this method the wavemeter should be kept as far as possible away from the oscillator as consistent with resonance indication, for if it is brought close up, two clicks will be noticed and on drawing them further apart slowly it will be noticed that these two clicks will become closer together until finally, by careful adjustment of the coupling between the two instruments, they will merge into one. Calibration, by this method, is exceedingly interesting but is considerably more difficult to carry out.

A word may now be said regarding the more simple and practical uses of the wavemeter. There are perhaps two main uses which are of particular interest to the average experimenter—the testing of coils and the measurement of the natural wavelength of the aerial. They will be dealt with in that order. Makers of honeycomb coils usually indicate that each of their coils with a certain condenser will cover a certain range. We know then, which coil to select for a given range. But when we make other types of tuning coils it would often be of considerable advantage if we knew the range of its tuning properties or suppose we have a coil with a number of tappings, we may want to know the range of each tap. These measurements can all be carried out with our wavemeter in either of its forms. But in our case we will use the meter with the crystal detector and phones. Having selected the condenser we intend using with the coils, the first coil is selected and the condenser connected to it as per Fig. 9, where L is the coil and C the condenser, a small buzzer B and battery are connected as shown. The wavemeter is then brought into the relation shown with the coil under test, and the buzzer put into operation. First set condenser C to zero and then vary the

wavemeter condenser until the maximum buzz is heard in the phones. If the maximum buzz is broad and not sharply defined, the wavemeter should be moved further away from the coil. When this indication of resonance is obtained the wavelength is read from the wavemeter, and the result is the minimum wave length of the combination. The condenser C is now set to maximum and the resonance again obtained on the wavemeter. This result will be the maximum wave length of the combination and the two readings will thus indicate the range of the coil with that particular



condenser. This procedure is followed with any coil to be tested, whether tapped or not. In the same way, the coil and condenser may form part of a receiving set and readings may be taken at regular settings of condenser C between zero and maximum and so obtain a calibrated receiving set. The error due to the addition of the buzzer will not make a great deal of difference, although it will slightly increase the wave length to the extent of about one or two per cent. The next step is the measurement of the natural wave length of the aerial. To do this it will be necessary to excite the aerial in some way. A convenient method is to connect our buzzer as shown in Fig. 10, where A is the aerial and B the buzzer. It will be noticed that the buzzer is not connected in series nor could it be, but the aerial and earth are connected across the contacts of the buzzer, the tiny discharge at that point being sufficient to excite the aerial for our test. Our wavemeter may be applied in two ways. We may carry the meter out under the aerial, turning it round and over until we get the right coupling with the aerial. This will be indicated by a faint hum or buzz in the phones. Now vary the wavemeter condenser until the

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maximum buzz is heard, which indicates resonance, and the result will be the natural wave length of the aerial. Perhaps a more certain and easier way would be to bring the meter so that the earth lead passes across the wavemeter coil as shown. Then proceed as usual to get the resonance indication on the wavemeter. There are several other uses for the wavemeter, but only one other will be mentioned and that is the calibration of the transmitter. This is best done with the wavemeter as per Fig. 3 with the milli ammeter, although it may be done with the one just mentioned. All that is necessary is to place it near the transmitter—say to either the earth or aerial lead, and then vary either the transmitter wave length or the wavemeter until maximum reading is obtained. In the case of valve transmitters using the crystal detector and phone type of wavemeter, modulated signals

must be sent out from the transmitter, for the C.W. signals will not affect the wavemeter. Perhaps the best type of meter for this work is the one using the small flash lamp, as the wavemeter can be set to the desired wave length and the transmitter adjusted until maximum glow is obtained on the lamp. It can then be left in a convenient position and the lamp will indicate at a glance whether the wave lengths has changed during the operation of the set. This is particularly useful when using C.W. Finally, let me repeat that a wavemeter can be a very useful article and so should be well made and looked after, as once confidence is lost in it, it will take a lot to restore it, and unless special provisions are to hand, it cannot be readily rechecked, although it is as well to have it checked against some standard occasionally.

RADIO ENTERS THE HOME

By Malcolm Perry.

WHAT a world of meaning there is in this word "enters." In the title of this article it conveys to you the feeling that the home has been blessed by the entry of Radio. And after all are not all blessings judged by their applicability to home life? Trains, trams, aeroplanes and motor cars are all very useful in our daily life, but their supreme advantages are that one can travel many miles and yet only be a few hours from home. If you have ever travelled very much in the country, you will have learned the to enquire the number of hours driving and not the number of miles to the next town. And so, in judging radio we must entirely judge it so far as home life is concerned. We are just approaching the festival of Christmas and what greater joy could you bring into your home than a radio set?

Some people have attempted to judge radio music by demonstrations that they have heard on ships where it is not possible to give a demonstration. Others have judged it by the unmusical results given by amateur-made sets. Would you judge all motor cars by a home-made one? You did not enjoy the first glass of whisky that you

drank so why give radio the same chance that you gave your first glass of whisky. A lot has been said about radio music being like a second rate gramophone, yet why, all over the world, do first-rate artists refuse to be broadcasted or ask for very high fees? The reason is very plain; they think that people will not pay high fees to see and hear them sing when they can sit down in the comfort of their homes and hear the items for a few pence per week. Yes, I said a few pence per week, for the initial cost of a radio set cannot be taken into consideration. Does a business man when he buys a typewriter think he is spending £40? No, he works out that as the life of the typewriter is so many years, then the typewriter is only costing a few shillings per month. And this is what I want to bring before the general public. In installing a radio set in your home you are not buying a toy that you will rapidly tire of. You cannot, because you never heard the same item twice, as on a gramophone.

A radio set is more necessary to a home than a piano. It trains the children to appreciate good music—they become very critical. Why? Because by hearing such a variety of music they are able to

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make comparisons and therefore eventually become judges of good music. We all love music for what it makes us remember and what it makes us forget. Leave out the musical side and take the educational side of wireless. If your boy has a mechanical turn of mind, radio will develop it. Your children will not be able to argue and hold their own in the world unless they are conversant with all the lectures given by radio. We grown up men when children had not steam trains and carts for toys. The present generation have electric trains and motor cars. Is it not a question of keeping up with the times?

The only possible method of judging anything is by comparison. We only know a pretty girl because we have seen an ugly one. Compare what has been done in England—I purposely omit comparisons with America because English people are our own flesh and blood. The daily papers the other day announced that just on a million people in England had actually paid the broadcasting license fee, and this is after a period of two years of broadcasting. This represents approximately 2% of the entire population and it must be remembered that only one license is necessary for each home. If you are going to judge radio don't judge it by any of the demonstrations that you have heard. When you buy a set see that it has a trade mark on it. A manufacturer will not put a name on his goods unless he is certain they are satisfactory. If you are building a set yourself, do not think it is only a matter of buying the component parts and assembling them in order to get musical results. It is a highly scientific job selecting parts and balancing them together, and this applies especially to valves and transformers. Don't go in for volume of sound, otherwise you may offend your neighbours. They may be musical people. There is a definite limit to which you can amplify the human voice. If you make it louder, then naturally you create a voice that no one has ever heard before. How many times have you been to a concert and heard a singer who articulated so badly that you could not follow the words of the song? This is generally the reason why you don't understand everything through the loud speaker. Finally, don't use regeneration in your set. Buy a regenerative set by all means; you can easily cut out regeneration by short circuiting your reaction coil. And remember this, that a good aerial with three valves will give you better music than a bad aerial with four valves.

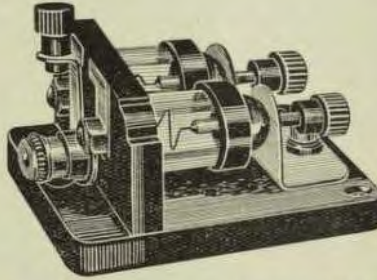
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- N.S.W. (all on 'phone).—2AY, 2BB, 2BF, 2CS, 2DE, 2GR, 2GQ, 2HM, 2LO, 2RI, 2UW, 2YG.
- Vic.—3AR, 3EF, 3OT.
- S.A.—5AB, 5AC, 5BN, 5BG, 5BQ, 5DN.
- N.Z.—4YA.
- U.S.A.—KGO.

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A Loose Coupler With Valve Amplifier

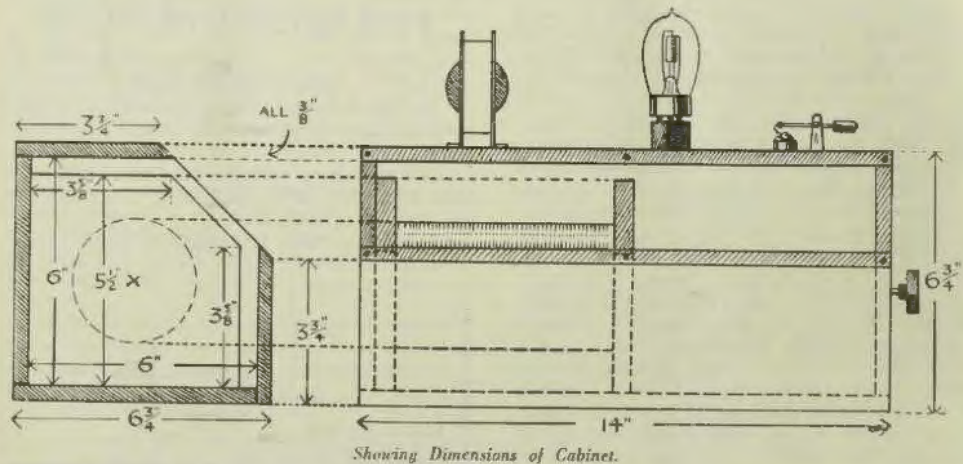
(By "Insulator.")

MUCH time have I spent on the high tensionless receiver, but still I am not satisfied with the result. Dr. Larbalestier brought me his three-valve unidyne to test. Certainly his effort was better than mine, but, oh, boy! give me the old B battery just yet. Later on I will have another try, but for the present let's forget it.

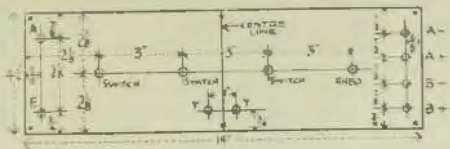
This week, too, I have been playing about with a crystal set which operates a loud speaker straight out—won't deafen you, of course, but gives such strong signal strength on the phones that the loud speaker was tired and the results were pleasing, indeed. As it is getting near Christmas, I thought of a nice set for the old folks, one which will operate two sets of headphones nice and comfortably, and won't oscillate. Here it is—a loose coupler with one stage of audio. Navy type tuning is employed. Taps and unit tappings are brought to contact studs on the panel. The tappings from the secondary coil are brought alongside the primary studs, and the rheostat is arranged next to these studs. Transformer, crystal detector, and valve

socket are mounted on the top of the cabinet which encloses the receiver. All these may be seen in the photo. The result is a compact little set, which is easily tuned and gives good results. Here's an inventory of the materials used:—

- 1 Panel, 14 x 4 1/4 x 1/8.
- 3 Switch arms.
- 27 Contact studs.
- 1 Rheostat, 30 or 35 ohms, if dull emitter valve is used, or 6 ohms for bright emitter.
- 8 Terminals.
- 1 Set loose coupler woodwork.
- 2 L.C. formers.
- 3 Slider rods.
- 1 Crystal detector complete.
- 1 Valve socket.
- 1 Transformer.
- 1 Knob.
- Wood for cabinet.
- 8 oz. No. 24 or 26 d.c.c. wire.
- 2 Yards Bell flex.
- Sundry screws, etc.

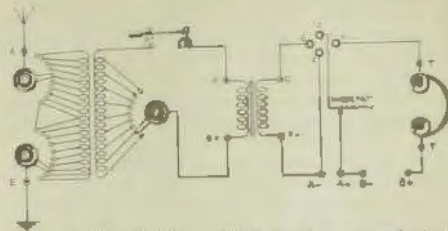


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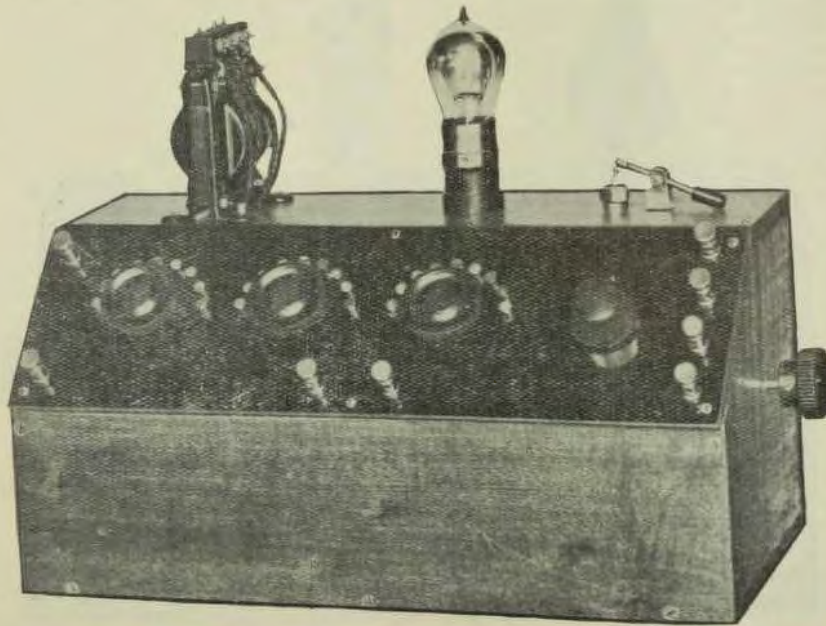
First of all wind the formers. Pick up the 4 1/4 inch former and pierce a pinhole 1/8 inch from one end. Through this thread the wire and secure the end tightly. Wind on evenly 100 turns, taking tappings every ten turns until nine taps are taken, and then every single turn until the end. This will leave you a primary having 9 taps of 10 and 9 taps of 1, these taps being taken on the outside.

The smaller (3 1/4) former has now to be wound. Pierce a pin hole as before, and thread the wire through and wind on 135 turns of wire, taking a tapping every 15 turns. Take these tap-



pings in this fashion. Wind on 15 turns and pierce a pin hole in the former. Double about 15 inches of wire and push through pin hole to the inside of the former. Repeat this operation until the necessary number of turns are wound on. Secure the end of the wire as before.

The wood work now claims your attention. First of all clamp the solid primary end and the two secondary ends and the slider rod support together and drill holes for the slider rods. This is quite



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a simple matter but care should be taken to see that the correct height is obtained. The slider rod support will be a guide to you. Next, through the centre of the secondary ends, drill a $3/16$ hole for the rod which projects through the case for altering the coupling. That done, drill a $1/2$ inch hole this time $1/4$ of an inch above the centre. This is to allow the tappings to be brought through to the contact studs. Assemble all this now, bringing the tappings in a bunch through the hole just drilled. Bind all tappings together in bunches, ten in one bunch, units another, and secondary another (see illustration).

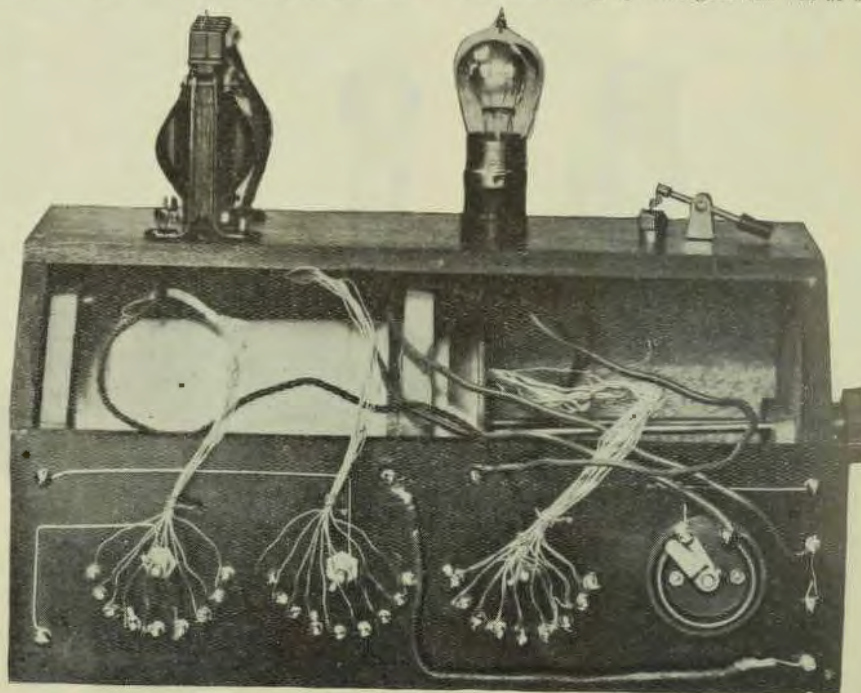
The panel has now to be drilled as shown in one of the drawings. Nine holes of $1/8$ in. in diameter have to be drilled for the nine studs for each switch. Mark out the distances with a pair of compasses or dividers allowing $3/8$ in. between centres of contact studs. A $3/8$ in. hole is required for each switch arm and in many cases for the rheo-

stat depending of course on the brand of rheostat you employ. Holes of $3/64$ in. in diameter will suffice for the terminals and also for the screws to mount the panel to the cabinet.

Assemble all the studs, switches, terminals, and rheostat on the panel and leave aside while you construct a cabinet. From the dimensions given a nice little cabinet can be made. Shellac and elbow grease will add to the appearance considerably. On the top of the cabinet mount the transformer, valve socket and crystal detector as shown. Provide holes to allow the connections of the transformer to come through to the various components.

Now then build your cabinet around the loose coupler, but before screwing the top down wire everything up. The bell flex will serve this purpose well and if the wiring diagram is followed the job will be found quite simple indeed.

The finished set will be of good appearance, and on hooking up some good fun will be obtained.



View Showing the Wiring.

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LIFE ON A WIRELESS STATION

By KWAT.

WHEN does the day commence on a wireless station, or when starts the week? They never start, they are here! To-morrow is to-day, yesterday is to-morrow, and to-day is yesterday, put them as you like. To-day, yesterday, and last week were all started about fourteen years ago as far as wireless is concerned in Australia—Sundays, Highdays and Holidays being omitted.

Wireless stations are run on the twenty-four hours a day, seven days a week, three hundred and sixty five days a year, with an extra for leap year, basis, ad infinitum. The particular operator sits, sometimes reading, sometimes smoking, sometimes just sitting, and sometimes going "for the lick of his life." Watching, or listening, like an alert spider; making an entry in his log, moving a condenser, adjusting a valve, testing an "A" battery, or having an argument, heated or otherwise over the land-line, or "tuning up" some unsophisticated junior over the ether, but withal, ever on the alert for the historic, nerve biting, awe-inspiring S.O.S.

S.O.S. may well be adopted as an emblem for coast stations, the letters signifying "Safety of Shipping," for the chief aim of wireless when employed in coast stations is for the safety of shipping. The routine of a station is simple and the pass word is efficiency. The log is the operator's diary in which must be entered a comprehensive account of all he hears. On an operator handing over to his relief, then at the hour and minute of handing over is entered details, such as, what traffic may be on hand for various ships, details of any marine casualties, perhaps the state of weather at sea, and all that is necessary to give the relieving man a comprehensive knowledge of what is doing in the ether so that control of the situation may be taken over without a hitch.

The Coast Station operator holds control of the conditions of working at sea and it is for him to state if necessary which ships have priority in working, and which are to QRT. His gear must be at all times in thorough working order and should an S.O.S. occur he must know what to do

about it, for there are times when it is just as necessary for a coast station to QRT as it is for the most loquacious Dutchman to close down. The necessary details of all marine casualties have to be immediately telephoned to the Director of Navigation, and also to Lloyd's agent, their telephone numbers and addresses being always conspicuously on the notice board. When this is done he must endeavour to get ships in the vicinity of the casualty to attend to the rescue work.

Watch-keeping in a coast station (not referring to those devoting a considerable portion of their time to land line extension work) runs in a routine having its dull and bright, busy and slack moments. Six thirty to nine a.m. is generally slack, and devoted to compiling shipping reports, entering up T.R. books (ships' movements) and preparing for the day. About 8.45 a.m. the daily weather reports begin to trickle in; these, interspersed with agents' advices, which have to be promptly telephoned, keep things moving until about noon, when business begins to slacken down. In the afternoon, should a mail boat be in the vicinity, the time is fairly fully occupied conveying the usual fraternal greetings to and fro. Messages conveying the said news of deaths or the blighting of lives intermingle with those of just plain business, or of the romantic, being all handled obviously, the contents being just of the moment, and all passed with the same methodical precision. And so the coast operator station carries on his share of the business of a nation. The night watches are generally fairly quiet, although some stations are kept very busy. The hours from about 11 p.m. until 4 a.m. are reserved for working long distance shipping; this is necessarily very slow work, and at times requires that one or more ships may be required to relay the message before it reaches its destination.

Occasionally the stillness of the night is stirred (contrary to regulations) with "Did you get my letter?" and some distant station replying, "Yes, writing next week giving you the 'oil'." For in wireless, as in all walks in life, "the oil" appears to be what we are all looking for. The work may

be arduous, and at times nerve wracking, but it is never dull. Some claim that the horizon of a wireless operator's life is bounded by a desire for sleep. Well, when one's night is made hideous by the necessary call of Big Ben, and the day, when you are trying to make up a few arrears, is made more hideous by a raucous voiced Bottle O, thousands of small dogs, bakers' curts and postmen's whistles—well, there is some excuse.

Do bears like radio music? According to the caretaker of the lodge on the icy rim of Crater Lake, Oregon, they do when the broadcasting station announcer's work is short and snappy.

From his isolated snowbound position almost a mile and a half above sea-level, John Malsy, caretaker of the lodge, has written to KGO, the Pacific Coast General Electric Station. "Two wild bears came to the lodge for food," his letter reads, "and I have named them 'Hans' and 'Fritz.' Tonight, after locking up my ham and bacon, I let them into my living quarters, and switched on the loud speaker. They didn't like 'HM,' your an-

nouncer, and became nervous when he spoke. But when the Arion Trio came on they sat down and were as quiet as mice.

"Hans," however, being a bear with a streak of curiosity predominant in his complex, became interested in Malsy's loud speaker. What followed is vividly told by the caretaker: 'He seemed determined to look into that thing. I had to shut it off. Then I had a hard time getting both of them out of the house. Outside the lodge they hung around the rest of the evening. And every time the Arion Trio came on, there they were, both of them, with their noses pressed against the window-panes listening for all they were worth.'

Mr. Malsey sent his thanks to the KGO studio and technical staff, and to the artists who took part, "from the fellow who greases the generators to the Arion Trio," for the evening of entertainment given "Hans" and "Fritz" and himself.

"Sorry, waiter, but I've only got just enough to pay the bill and nothing left for a tip."

"Let me have another look at that bill, will you?" — Boston Beanpot.

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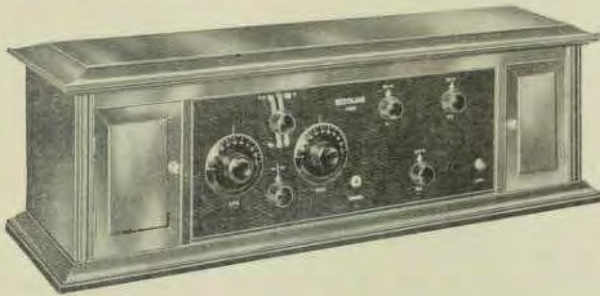
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A LOW LOSS COIL FORMER

(By W. A. Stewart.)

NOW that the efficiency of the shorter wavelengths has been conclusively proven, the problem of receiving efficiently on wavelengths below 100 metres is one that is prominent in the minds of the users of many receiving sets. There is no need to resort to freak circuits—any standard circuit can be used, providing that the losses in it are as low as possible, and for this reason, due to the enormous frequency on these wavelengths, what is known as "low loss" inductances and condensers are necessary for efficient reception. Now, with regard to the inductances in a short wave receiver, it has been found that the less the resistance of the coil the sharper it will tune, and for this reason it is desirable to wind the coil with 18 or 16 wire, the radio frequency of which is fairly low. Bell wire of a similar gauge is also efficient, as there is plenty of insulation between turns. It has also been found that an insulator near an inductance causes losses, and causes the tuning to become broad, so the less insulation there is near a coil the sharper it will tune. The distributed capacity of the coil must also be low. It will then be seen that a coil must be built to comply with the following requirements.

1. It must be of low resistance.
2. It must be practically self supporting, and yet quite rigid.
3. It must have a low distributed capacity.
4. It must cover the right wavelength.

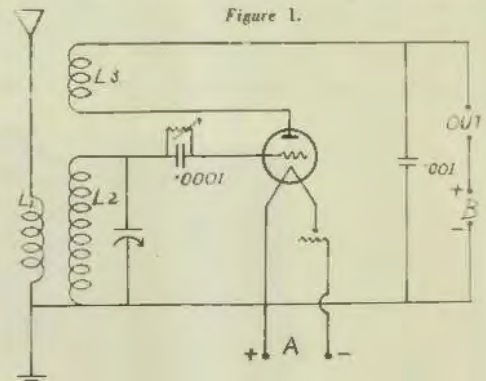
To accomplish the first, wind the coil with heavy wire, as stated before. The second requirement will be discussed later, and if double cotton covered wire or bell wire is used the distributed capacity will be fairly low. With regard to the wavelength range, this is accomplished by using only the right number of turns. The coils themselves are a form of basket coil, and are wound on a wooden former, which will be described.

Obtain a flat piece of wood $6\frac{1}{2}$ inches square and from half to one inch thick. Find the centre of this piece of wood, and with a pair of dividers draw a number of circles of the following sizes:—

Two inches, three inches, four inches, five inches, and six inches in diameter. When this has been done, draw a line through the centre, and by means of a protractor describe an angle of 33 degrees on this line at the centre of the circuit; keep on describing these angles all the way round the circle, and it will be found that eleven lines radiate from the centre of the circles. Extend the arms of these angles until they cut the circumference of all the circles, and at the point where they intercept, centre punch a small hole.

Then, with a quarter-inch drill, drill holes at each of these points, and care should be taken to

Figure 1.



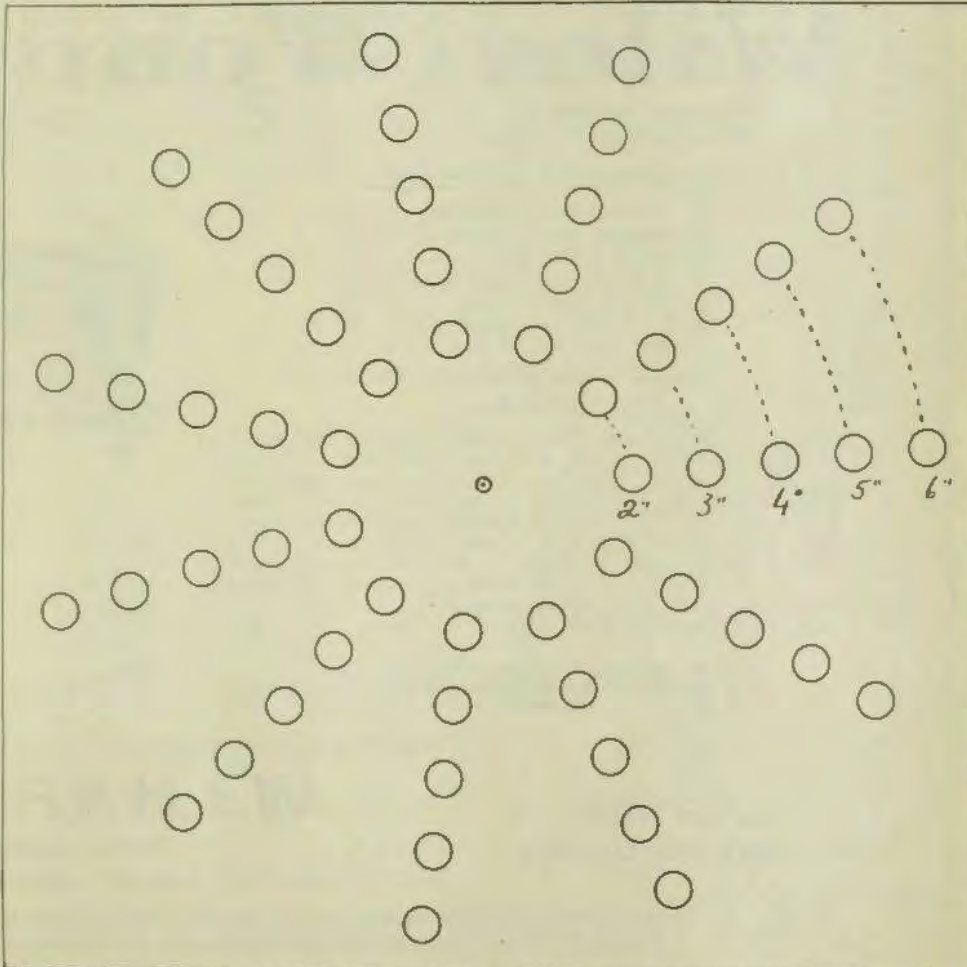
see that the holes do not go right through the board and that they are drilled straight. There are 55 holes in all. Next get some round pieces of wood a quarter of an inch thick (skewers will serve the purpose quite satisfactorily), and cut eleven pieces off, each four inches long. Now, to wind a coil, place these pieces of wood in the holes of the circumference of one of the circles—for example, the three-inch one. Take some 18 d.c.c. wire, and starting at any peg wind the wire in and out the pegs until the required number of turns has been put on, finishing up by tying a piece of strong thread round the coil at each intersection

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of the wire so as to hold it in place. Remove the pegs and you will have an efficient coil, of low resistance, neat design, and one that is also practically self-supporting. On no account use shellac or other insulating compounds to keep the coil in place, as these tend to increase the resistance and

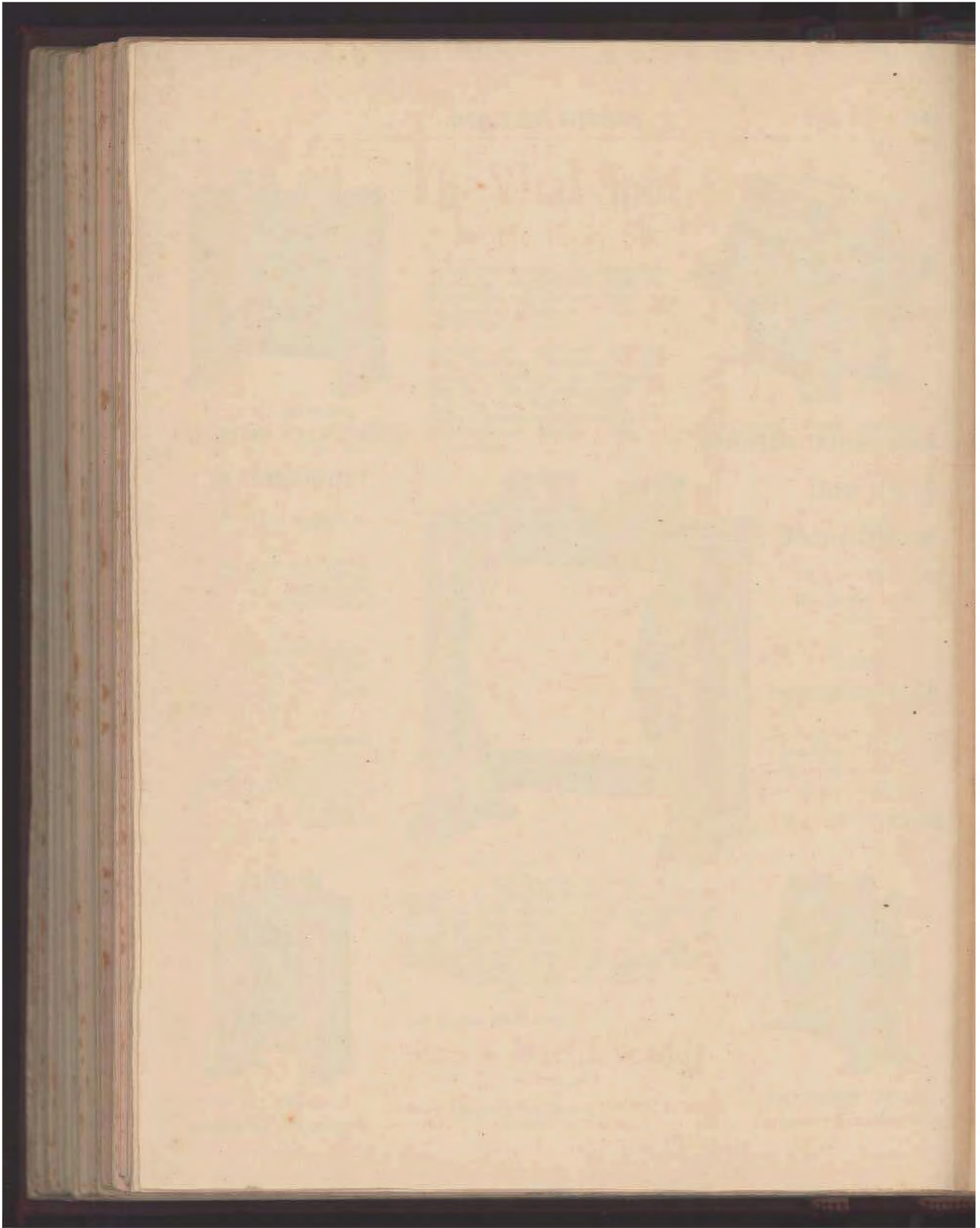
the distributed capacity. This type of inductance is very effective on short waves, and will give good results in any circuit calling for a low loss coil. It will be seen that any reasonably sized coil may be wound on this former, so that experiments can

(Continued on Page 34)



Here is the actual size of the drilled wooden block required for winding low loss coils. The dotted lines are inserted to illustrate the different circles. Place a sheet of white paper and a carbon underneath, and you can easily mark out a templet.

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Muntz's 3000 ohms	7 7 5	ohms	1 37 6
N. & K. 3000 ohms	1 7 0	Roaring, 4000 ohms	2 4 0
W. J. Special, 4000 ohms	1 7 0	Edvinton, 4000 ohms	2 10 0
Everetts Special, 4000 ohms	1 7 0	Trimm's Professional	2 5 0
ohms	1 7 0	Nitang, 5000 ohms	2 5 0
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Chantone	2 10 0	Magister, Type M4	5 10 0
Magister "Janet"	2 15 0	Amplion, Type 15	5 0 0
Amplion 20	1 0 0	Magister "112"	10 10 0
Amplion 40	2 0 0	Magister "121"	10 10 0
Amplion 40	2 12 6		

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(Continued from page 31)

be carried out with a view to finding the most efficient size required for any definite wavelength. What is probably one of the most efficient and simple circuits is the three-coil regenerative, with an untuned primary this is no harder to handle than the ordinary single circuit receiver (P1), and is infinitely more selective. This circuit has been shown innumerable times, but is published again in Fig. 1. For receiving amateurs on short waves the aerial circuit is composed of six turns wound as described on the three-inch circle. The secondary should be 20 turns on the four-inch circle and the tickler 18 turns on the three-inch circle. The secondary circuit is tuned with a .0005 variable condenser of what is known as the "low loss" variety, and the coil itself is secured by means of two lengths of thick wire six inches long to the back of the condenser, so that it is suspended in

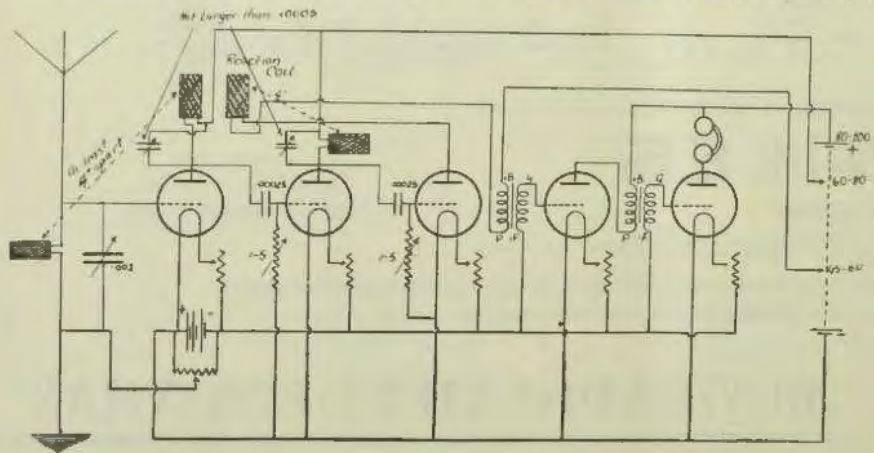
the air above the condenser. The aerial and tickler coils are securely fastened to two wooden rods by means of thread; two supports are fastened to the back of the set, and the rods holding the coils are passed through two holes drilled in the panel and are supported by two more holes in the rear support. These holes and the support should be so arranged that the coils can be coupled to the secondary. The aerial coil should be on the left-hand end and the tickler on the right. Only the best gear should be used throughout, and special care should be paid to the valve socket. Where American sockets are used they must be of porcelain or moulded bakelite. A .00025 grid condenser is necessary for decent rectification, and can be shunted by a variable grid leak of a good make. A small .001 fixed condenser shunted across the phones and the negative side of B battery will ensure better results.

The Tuned Anode Receiver

(By "Wireless Weekly.")

QUITE a number of our readers have written to us and shown their appreciation of the tuned plate article which appeared in "Wireless Weekly" of November 21st. Some, however, have asked whether the slider coil method is better than honeycomb coils for tuning. Others have asked for the combination of H.C. coils to be used for 2BL and 2FC. Another asks would reaction improve range

and selectivity. The honeycomb coil tuning is undoubtedly better than the straight-out coil with its dead-end losses, but, of course, is considerably more costly, and whether the extra cost compensates for its added efficiency is open to question. For the benefit of our readers we again publish the circuit diagram of 2HF (tuned plate), with reaction, detector, and two audio frequency amplifiers, but using



H.C. coils for tuning. We would like to point out that the duo anode balanced condenser can be purchased from any of the radio dealers advertising in "Wireless Weekly." With this condenser the two tuned plates can be tuned together by turning the one dial. Care should be taken, however, that the two tuned plate coils are balanced, which means that unless you have a wavemeter or some other suitable instrument you will have to rely on the maker's guarantee that they are the same. The better make of coils are usually very reliable.

Following are the combinations required for--

Station	1st		2nd		Reaction
	Primary	Tuned Plate	Tuned Plate	Reaction	
2BL	25	75	75	50	
2FC	100	200	200	150	
3LO	150	250	250	200	

SOME NOTES ON FADING.

FADING has probably not been experienced by some of our readers, but, as country readers are constantly complaining of this strange phenomenon, we feel sure that they will read this article with interest.

You are listening to a station, say, 200 miles away, when all at once the music or speech fades away. You fly to your controls, but nothing you can do has much effect, when suddenly, without warning, the music bursts out again, with perhaps increased volume. More than one reader, we feel sure, has conscientiously overhauled his set, resoldered his joints, tightened and tuned and scratched a bewildered head, and then, after having satisfied himself that his receiver is O.K., has complained that the fault is at the broadcast station's end. As a rule, the transmissions from the broadcast stations do not vary, except perhaps when 2FC is switched in to a theatre or local hall, where the operator who attends the amplifiers at the theatre or hall may lower or raise the power of the amplifier according to the position of the artist. As will be readily understood, the artist entertaining an audience at a hall cannot face the microphone the whole time.

Light and shade are, of course, also desirable in various musical items rendered, whether they are from the studio or theatre, but otherwise radiation and modulation are maintained almost constant.

The cause of the various volumes of sound received at the receiving end other than what is stated above, therefore, lies between the transmitting station and the receiving station. Wireless waves travel through the ether, which is the medium for the transmission of all magnetic waves, and which is perfectly non-conductive to electricity, but floating about in the ether are minute particles which combine and form matter, air, water, earth, etc.

Now, if matter is conductive to electricity, it impedes the progress of electro-magnetic waves travelling through the ether, which holds matter, and if the air which is suspended in the all-pervading ether is conductive, it must also impede wireless waves. These minute particles of matter which are constantly combining form clouds which, according to their density, weaken the volume of sound received by reflecting the radio waves. We do not mean by this that the clouds are visible, because on a perfectly clear night fading still prevails. You are probably saying by this time—"How are we to get over this difficulty?" Our only advice is to have a receiver with plenty of reserve power, which can be opened out full when fading occurs and reduced when this strange phenomenon is not taking place, viz., two stages of tuned plate detector with regeneration. If loud speaker strength is required, this, of course, must be followed by two stages of audio frequency amplification.

Quite a number of radio engineers will tell you that regeneration is not necessary where two stages of tuned plate are employed as H.F. amplifiers. Experience will show you, however, that by making use of regeneration in quite a number of cases, you can overcome fading. Ordinarily when fading is not being experienced the two stages of H.F. are probably quite sufficient to bring in your distant station, but as soon as the fading commences, the volume is far from being enough to operate a loud speaker satisfactorily. With the extra refinement of regeneration, you will notice that in most cases you will be able to obtain almost constant volume by increasing or decreasing the regenerative coupling (viz., coil closer to or farther away from first tuned plate coil). In passing, we would like to point out that this regenerative coil may be placed either on primary coil, first or second tuned plate. The circuit diagram on page 34 shows it on first tuned plate. The only disadvantage of having regeneration on the prim-

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ary coil is that long leads are required to go from the plate of the detector tube right back to the left-hand coil (viz., primary coil), though, ourselves, we have found this the most efficient as long as great care is taken in wiring. See Vol. 5, No. 4, "Wireless Weekly." The following extract is taken from a letter received from a country reader living at Narrandera: "Since taking your advice and adding regeneration to my single tuned plate circuit, I can absolutely overcome fading."

Just What Is Regeneration?

Ordinary regeneration is obtained by connecting the output plate circuit of a valve to the input circuit of that valve or any other valve preceding it. If this feed back energy is increased too much, the valve becomes a generator and hissing will occur in the phones. The sensitiveness of your receiver is greatly increased up to this point of self-generation, but as soon as this point is reached the music or speech will become very distorted. With careful handling and a little experience you will find you are able to obtain that point just short of that where self-generation occurs, with the result that you can reduce fading almost to a minimum. With a view to collecting data and of rendering assistance, we want to point out that we shall at all times be pleased to hear from our country readers with reference to fading. When writing, the following items should be included:—Name of place; whether fading is very prevalent or not; how many valves used; if set has any reserve power when there is no fading.

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A FAMOUS English broadcasting receiver, which is now being placed on the Australian market by Amalgamated Wireless (A/sia) Limited, is the Marconiphone, manufactured by the Marconi Company of England.

The sets displayed by Amalgamated Wireless (A/sia) Ltd. comprise the V2 and V3 models, together with the Voice Amplifying Unit.

The Marconiphone is one of the most widely used broadcast receivers in England, and has attained some phenomenal ranges.

It incorporates the very latest technical features in radio development, while the construction and cabinet work are in keeping with the high standard maintained in the Marconi Company's products.

These sets are noted for their extreme volume, quality of tone and range, and introduce many features which are distinctly unique in wireless receivers. A highly efficient system of double tuning is employed by means of "tuning-spades," which ensures the greatest possible freedom from outside interference. The circuit employed is the reflex type with a modified system of reaction.

The Marconiphone is exceptionally simple of adjustment, the necessary controls having been reduced to the minimum consistent with fine tuning, stability of adjustment, and the highest efficiency. It is thus possible for those who possess no technical knowledge whatever to work the instrument with perfect confidence.

By means of the interchangeable range blocks and regenerator units broadcasting from Australian stations may be received on wavelengths from 250 to 1750 metres.

A system of non-interchangeable and non-reversible plugs and sockets prevents the possibility of connections being made incorrectly.

The two-valve set can be used with headphones, or when near a broadcasting station it is sufficiently powerful to operate a loud speaker; should the distance from the broadcasting station be considerable, loud speaker volume can be had by the addition of the Marconiphone two-stage Voice Amplifier.

The sets are being demonstrated daily at the showrooms of Amalgamated Wireless (A/sia) Limited, and their novel features appeal to all who see and hear them.



Marconiphone V2.

BUY RADIO GIFTS FOR XMAS

THE RECEIVER AT 2CM

HERE it is! The famous receiver used by Mr. Charles Maclurcan in receiving signals from British and American amateurs. The photograph below shows the back view of the panel, and the mounting of the various parts is clearly illustrated. Note the mounting of the inductances, which are wound on the low loss principle.

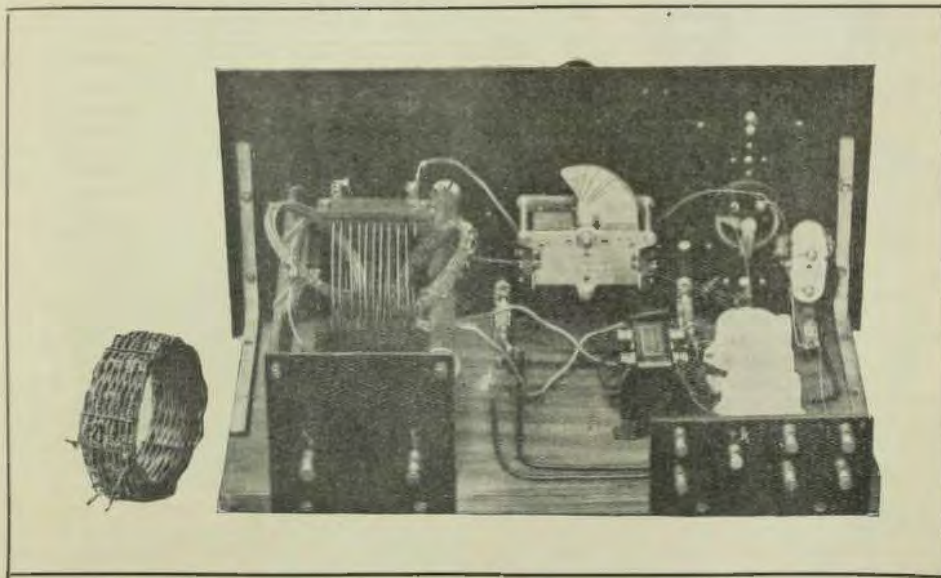
Primary Coil, 6 turns of No. 16 D.C.C. wire, $3\frac{1}{2}$ in. diameter.

Secondary Coil, 10 turns of No. 16 bare copper wire wound in the form of a helix. Diameter, $4\frac{1}{4}$ in. Space between turns, $\frac{1}{4}$ in. Ticker, 12 turns, No. 18 D.C.C. wire, $3\frac{1}{2}$ in. in diameter.

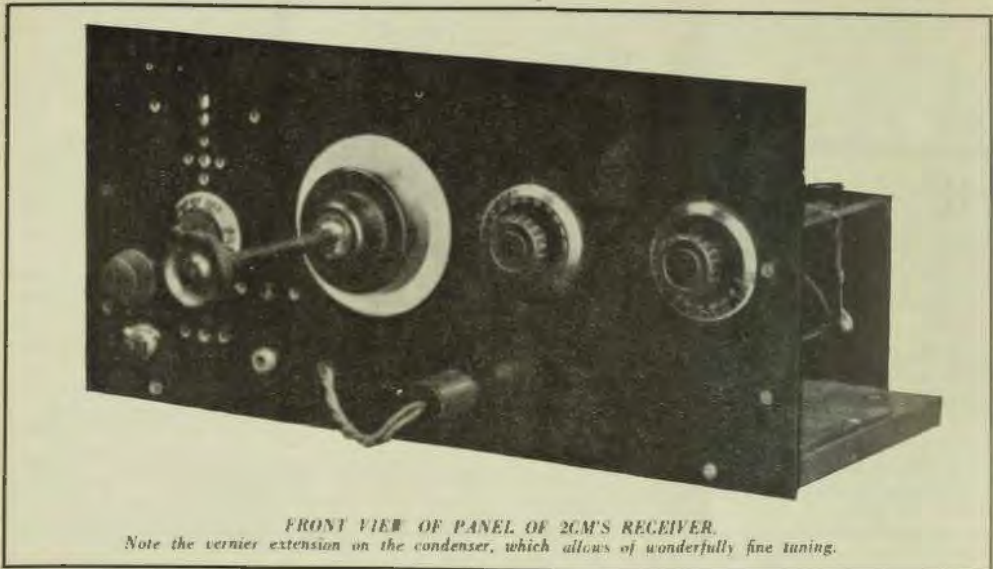
The variable condenser is a Cardwell .0002, and Phillips D4 valve is used as detector and a Phillips D5 as A.F. The sockets are Crossley porcelain, and the transformer an Emmco.

The secondary formerly consisted of 22 turns No. 16 D.C.C., $4\frac{1}{4}$ in. diameter (the coil is shown on the left of the photograph), but was replaced by the present arrangement to enable 2CM to get his receiver down to very low wavelengths.

The white patch at the right-hand side of the panel represents the two valve sockets, which, unfortunately, are somewhat indistinct.



BUY RADIO GIFTS FOR XMAS



FRONT VIEW OF PANEL OF 2CM'S RECEIVER.
Note the vernier extension on the condenser, which allows of wonderfully fine tuning.

INTERSTATE NOTES

WESTERN AUSTRALIA

THE annual meeting of the West Perth Leeder-ville Radio Society, held last week, was a very successful one. A three valve set gave out some powerful volume on the loud speaker, and many wives and lady friends of members appreciated the entertainment. The Society has been in existence for one year and the report was very favorable. A grand radio river picnic is now being organised for about January next.

Arrangements are being made by the Wireless Development Association, whereby a big radio exhibition will be held during the third week of December, in St. George's Hall, Hay Street, Perth, and it is anticipated that members of the W.D.P.A., which includes the majority of local wireless dealers, will take up all the available stall space with their exhibits. The platform is being allotted to the Wireless Institute and affiliated clubs for the exhibition of receiving sets, and the Association will donate prizes for the best exhibits in this section.

The noted educationalist, Professor Adams, is

delivering a series of lectures from the Memorial Hall, Perth, and 6WF has made arrangements to broadcast the whole of the series—several have already been radiated. The lectures are highly interesting, and here, in the principle of the thing, we have an instance of what a utility thing wireless is, the eminent lecturer, in the ordinary course of speaking, would only be heard by the relative few, but with the aid of broadcasting thousands are able to enjoy and learn from his lectures.

A poor radio fan is bothered by a very loud howl in his set. Our esteemed authority, the Boston Post, advises him under date of July 3, 1924, to use a "1-3 meg. MIXED GRID LEAK." It would be interesting to know just what ingredients the writer had in mind. Perhaps it was his view that a combination of cyanide, Paris green and corrosive sublimate would be calculated to cause the howl to lie down and die. But who can guarantee that such a material and worldly fate would successfully annihilate an undesirable noise in a radio set? Anyway, to come to the point, I suppose that "Wireless Weekly" readers have read that wireless is taking the place of the time-

(Continued on page 41)

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Full Stocks of American, Signal, U.S. Tool, & Tunup Variable Condensers

AND **NOW** We offer you the beautifully made "UTILITY" British made Condensers. These are guaranteed mechanically and electrically perfect. They are fitted with Genuine Radion Dial.

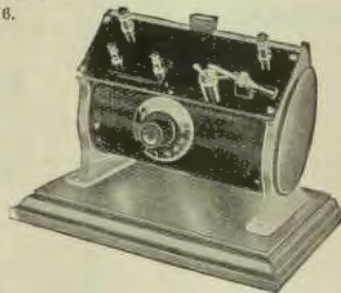
Verniers Without Vernier
Size .001, 50 plate . . . 19/6 Size .001, 49 plate . . . 16/-
Size .0005, 26 plate . . . 17/- Size .0005, 25 plate . . . 14/-

..DO NOT FAIL TO INSPECT THESE BEFORE PURCHASING..

We also have the "UTILITY" Set of Parts ready to assemble and complete with knob: 49 plate 8/6; 25 plate 6/6; 15 plate 5/6.

The Crystal Set (shown at right) is our latest Reflex Rotocoupler. It has vulcanite rotor with dial setting for secondary tuning. For selectivity and volume there is no Crystal Set to equal it. It is finished in the usual Reflex manner.

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To the left we have a beautiful Eismann 3 Valve Set, supplied complete, as illustrated, with all accessories, £36.

A Complete Set of Parts to make this Set (including Maple Cabinet, but not including valves, batteries or phones, . . . £16



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37/6

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Western Electric Headphones are typical of wonderful Western Electric workmanship, which stands behind over half the world's telephones.

You get comfort, you get scientific construction. The magnetic material stands up to all conditions. Special moisture-proof cords are used. In fact, you need only examine and "listen in" with Western Electric Headphones to recognise why Western Electric is a name to trust in Radio.

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



Make it a Radio Xmas!

(Continued from Page 38)

honoured capstans and French briars in a Melbourne store. Well, it struck me that Perth goes one better, for don't you think that Messrs. Kruger and Cook, chemists of W.A., would be in a position to dispense that "mixed grid leak?" They have quite recently opened a wireless branch.

I had always thought wireless regrettable—one of those inventions, like barbed wire, which, after being thought frightfully clever and useful for a while, would ultimately be discarded in loathing except for use in horrid emergencies such as war. And then one day I was a visitor in a little country house, and an uneasiness about catching the only train back to town came over me. It was the sort of house where you used to depend for the correct time on the wind blowing the right way from the distant minister or on the gardener having brought his watch, but my hostess said confidently, "I'll see that you start in time; I'll tune in and get the time signal." The above is from the pen of Edith Shackleton, writing "Wireless and the Woman at Home" in "Radio," England. The writer had a similar experience recently when about 200 miles from Perth. I caught my train, thanks to my host's radio, which told us in the voice of the city, my ultimate destination, the correct time from GWF.

VICTORIA

Wireless Institute Reforms.

Although the Wireless Institute over here, labels itself "of Australia" in the grandiloquent way beloved by youth, it still remains in practical affairs merely Melbourne or even suburban in its administration. The latest craze is to divide members up into four grades, namely (A) students, (B) associate members, (C) fellows (experimenters), and (D) associates (men of mark in allied directions). This looks and listens well (if we may temporarily descend into the language popular among some members). But the proposal is made that students should have no vote, and as we are all more or less students until the Institute has examined us, it looks rather as if some of the "heads" seek to be "permanent heads," and would like to merely pour out the pure milk of their wisdom for us to lap it up and purr gratefully as we wipe our catwhisker afterwards. Since the Council consists of two delegates from each section and each delegate has only one vote irrespective of the number of members in the section he represents and

these proposals come out all cut and dried from the Executive meeting, it is easy to foretell that easy-going sections concerned mainly with the practical side of wireless will prove complaisant and allow the constitution to be mangled in this way without serious consideration. It is this way that history is made and incidentally that a few men ride into prominence on the wave of a big popular movement without actually achieving the movement as a whole. The way the Institute has handled the big problems in wireless lately confronting the Australian public certainly does not entitle it to launch out into any grandiose scheme of issuing memberships by examination and otherwise posing as the central authority on wireless in Australia. It would be better to learn to walk before attempting to fly.

PAPEETE IN THE FASHION

IN Papeete, on the Island of Tahiti, in the South Seas, far removed from the world of affairs, George Bambridge, an old resident, again linked himself with civilisation through a radio receiver of his own construction.

In a letter received by KGO, A. C. Jewett, also of Papeete, tells how "Bambridge made himself a radio set with the object of picking up the Morse. He made his own batteries and wound his own coils. Most of his switchboard is mounted on the back of an old gramophone record. Some of his gadgets are mounted on pine sticks whittled out by hand and held in place by rubber bands."

Suddenly one night, while listening for Morse code, there came floating out of the air the sweet tones of a violin. Bambridge was astonished. He immediately improved his set and now hears KGO programmes regularly, very much to his delight.

"Hawaiian dance music recently played by your station," according to Jewett, "came through Bambridge's set splendidly. A Tahitian maid danced the Hula to it, and natives passing in the street thought it was a gramophone playing." Tahiti is 17 miles south of the equator and about 4300 miles from KGO.

The Leading Wireless Paper

Wireless Weekly

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CROYDON RADIO CLUB.

The usual meeting of the Croydon Radio Club was held on Saturday, December 6, at the club-rooms, "Rockleigh," Lang Street, Croydon, at 7.30 p.m. The greater part of the meeting was devoted to completing the club's transmitter, which is expected to be on the air very shortly. The meeting closed at 10 p.m.

All intending members are invited to communicate with the hon. secretary, Mr. G. M. Cutts, "Carwell," Highbury Street, Croydon.

WIRELESS SOCIETY OF NEWCASTLE.

On Wednesday, December 3, at the Wireless Society of Newcastle's rooms, King Street, Newcastle, Mr. G. Seeward gave a very instructive lecture to a large attendance of members on "Reflex Circuits," which was afterwards enthusiastically discussed by all present.

These lectures, which are arranged by the technical committee of the society, are very popular with the members, who fully appreciate the efforts of the technical committee to give them the benefit of their knowledge, which has been obtained by actual experiments under local conditions, and which is far more interesting and instructive than that which can be obtained in the ordinary text book.

One new member was admitted.

Any persons interested in the activities of the club can obtain any information on application to the secretary, Mr. S. Childs, 55 Ridge Street, Merewether.

THE LEICHHARDT AND DISTRICT RADIO SOCIETY

There was an excellent attendance of members of the Leichhardt and District Radio Society at the 27th monthly business meeting, held at the Club-room, 176 Johnston Street, Annandale, on Tuesday, December 9th.

Much important business was dealt with, and members were reminded that Mr. F. Thompson would deliver the final lecture of Syllabus No. 2 under the heading of "Valves" at the following meeting.

The Society is the happy possessor of a very active social committee, and this section of its members has arranged a launch excursion for the evening of Saturday, December 20th. If the dance conducted recently offers any indication of the success of social events to follow, the launch excursion will undoubtedly be worth while.

Always desirous of keeping pace with developments of the science of wireless, it is the intention of the Society to secure an experimental transmitting license to supplement the receiving license held by it for some time, and the necessary steps are being taken immediately.

Next Tuesday evening the Society will hold its 113th general meeting, and this being the final assembly of members for the year, it will take the form of a social evening, after which the Society will go into recess until January 6th, when the 27th monthly business meeting will be held.

Inquiries regarding the activities of the Society should be addressed to the Hon. Secretary, Mr. W. J. Zech, 145 Booth Street, Annandale, who takes this opportunity of wishing, on behalf of the Leichhardt and District Radio Society, the Compliments of the Season to all members of kindred bodies, and to experimenters in general.

NORTHBRIDGE RADIO CLUB

The usual weekly meeting was held in the club-room, at the corner of Strathallen Avenue and Sailor Bay Road, Northbridge, on Wednesday, 10th December.

During the evening, Mr. Beard gave a very interesting talk upon coils and tuning. A further phrase of coil inductance was then proceeded with, after which it was decided to construct a set of efficient coils to conform with the result obtained by the experiments with coils and tuning to date. These coils would be used for the working of the Club's set when constructed.

The idea of constructing a Club receiving set, a step at a time, and proving by experiment the efficiency of each component part before being installed, should result in a most efficient wireless receiver.

Intense interest has been shown in the Club's activities, and the Hon. Secretary, Mr. Cameron, of Clanwilliam Street, Chatswood, would be pleased to reply to all enquiries, as new members are welcome.

Q. F. C. THE CUP THAT CHEERS!

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Crystal Detector Parts on Card	2/9	Primary Tubes, Wound	3/6
S.P. D.T. Knife Switch	2/9	2200 Pico Head Phones	25/-
D.P. D.T. Knife Switch	5/-	4000 British Mel. Head Phones	25/-
Valve Bockets, "B" Type	2/6	4000 Brande's Superior Head Phones	40/-
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 IT WILL INCREASE THE VOLUME TREMENDOUSLY—AND THE RANGE UP TO 100 MILES.
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gives the very best results with any metallic springy contact when the point is flat or blunt, and, once secured, adjustment is permanent. Buy a piece to-night at your Wireless dealers, but be sure the container is stamped

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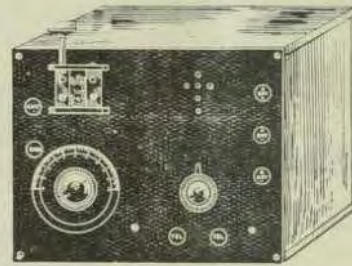
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All advertising and other
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All copy must be written
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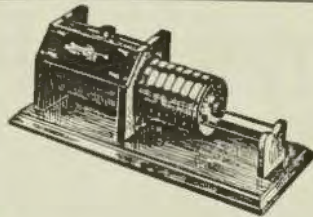
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KGO as Educator

TWENTY THOUSAND California school teachers scattered over the valleys and mountains of the State are now to be aided by radio broadcasting. Theirs is the job every morning of getting over 600,000 children to be punctual in attendance at school.

Beginning Monday morning, November 3, at 9 o'clock, their job became easier, when a series of weekly programmes furnished by the State Board of Education, and broadcast by KGO, the General Electric Pacific Coast Station, commenced. These are expected to be so interesting that children will want to be at school in time to hear them.

Will C. Wood, State Superintendent of Public Instruction, was the first speaker before the KGO microphone and opened the series. Professor J. C. Bolton, history department head, University of California, also spoke. His subject was, "The Vikings of the Pacific"—tales of the old pirates who put in at California bays and inlets to bury their treasure and repair their ships. Pupils in the Oakland Public Schools furnished the music, under the direction of Glen Woods, for the initial broadcast.

Schools throughout the State are reporting great enthusiasm for the new venture, according to Grace C. Stanley, Commissioner of Elementary Schools, State Department of Education, who has charge of the work. It is not known at the present time how many pupils actually listened-in on the first programme, but schools in isolated districts, who will be so greatly benefited, are expected to be in the lead of those tuned-in on the broadcast.

It is planned to feature California history and geography in the lessons by radio. Professors of the various universities and colleges of the State and other eminent educators and story-tellers, will contribute. No lesson will be more than twenty minutes long, and will begin with music and end with music. The story-telling method of teaching will be used. That is, interesting stories will be told about the geographical and historical features of the State, aimed to entertain pupil listeners as well as educate them. Fresh personalities will be thus brought constantly into the minds of the thousands of school children, each with a fascinating story about some river, mountain, or character of California history. The problem of the country school teacher will in this manner not only be

lessened, but teachers are enthusiastically reporting their belief that they themselves will receive benefit and instruction from speakers over the air.

This is said to be the first time that a State-wide plan to use radio in public schools has ever been attempted. The idea is said to have originated in a conference last summer on rural education held in San Francisco, when requests from delegates that some attempt to reach the schools in the rural sections of the State by radio was made. A committee consisting of Will C. Wood, State Superintendent of Public Instruction, and Archibald Anderson, President of the San Francisco State Teachers' College, was appointed to take up the question. After carefully studying the problem the committee decided to work with the General Electric Station KGO.

MILLIONS of people in the Orient may soon be sweeping the air for American radio programmes as a result of recent tests between KGO, the Pacific Coast General Electric Station, and officials of the Japanese Ministry of Communications.

Confirming radiograms received a month ago, detailed reports by letter were received lately by A. A. Isbell, manager of the Pacific Division of the Radio Corporation of America, from the Hon. Eitaro Yokoyama, Japanese Minister of Communications, covering reception of the international test broadcast from KGO, August 30. After carefully checking the Japanese report with the KGO control room records, officials of the General Electric Company said that no doubt exists but that Japanese listeners heard KGO's full two-hour broadcast.

Using a super-heterodyne receiver, operators of the Hiraiso Experimental Station of the Electro-Technical Laboratory, according to the report, successfully picked up the KGO international programme and held it throughout. The Hiraiso station is situated about 500 miles north-east of Tokyo, and commands the Pacific Ocean.

This is said to be the first time in history that a complete programme from an American radio-telephone station has been heard in Japan. Officials of the Japanese Ministry of Communications who received the broadcast are enthusiastic in their requests for more broadcasts from KGO, and that the DX radio fan will soon put in his appearance in the Orient is to be expected as a natural development.

(Continued on page 54)

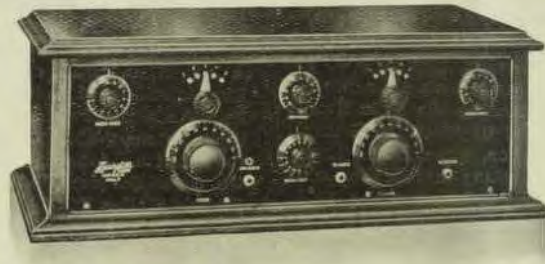
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SPECIAL REVISED XMAS PRICES!



HARRINGTONS "IMPERIA"
RADIO RECEIVING SETS

MODEL A.—1 Valve Regenerative Type	£20 0 0
MODEL B.—2 Valve Regenerative Type	£27 10 0
MODEL C.—3 Valve Regenerative Type	£35 10 0
MODEL D.—4 Valve Tuned Radio Frequency Type (Illustrated above)	£45 10 0
MODEL E.—5 Valve Tuned Impedance Type	£59 10 0
"Super Six."—6 Valve Tuned Radio Frequency Type	£65 0 0
The above Prices do not include Accessories.	
"Super Six de Luxe."—6 Valve Radio Frequency (with Radio Table, Loud Speaker, and all Accessories)	£125 0 0

Imperia Sets are constructed throughout of the Famous Gilfillan Parts, the recognised Quality Radio Products of America.

We will instal any of our Valve Sets in your own home for you to try out without expense, inconvenience, or obligation to buy, and our Expert will personally instruct you in the correct use of the Set.

Confidence in the fact that Quality Radio sells itself warrants our making you this astounding offer.

Country Clients write for Special Arrangements.

Harringtons TM

Established 35 Years.

THE PREMIER HOUSE FOR ALL PHOTO & RADIO REQUIREMENTS,
386 GEORGE STREET, SYDNEY.

Also at Katoomba, Melbourne, Brisbane, Adelaide, Auckland (N.Z.),
Wellington (N.Z.).

Friday, December 19, 1924.

WIRELESS WEEKLY

Page Fifty-three

IN THE NICK OF TIME FOR CHRISTMAS!

Per S.S. Sierra

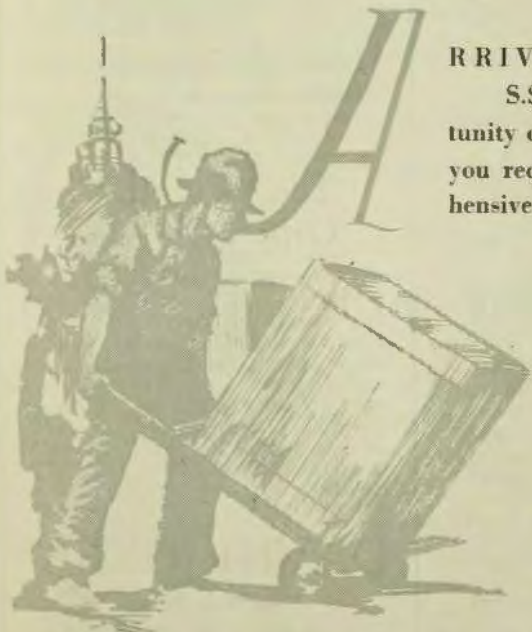
LARGE RADIO STOCKS

FOR

ER Cullen

Late
A.I.F.

"You have my word for it"



ARRIVED! Large stocks per
S.S. Sierra. Take this oppor-
tunity of securing the accessories
you require whilst such compre-
hensive stocks offer.

Radio and . . .
Electrical Store
96 BATHURST ST.

Telephone
City 869 and 2596

BUY RADIO FOR XMAS

The following is the Hon. E. Yokoyama's report of the August 30 broadcast in brief: "Punctually at 6 p.m., Japan time, the radiophone from KGO began to be heard loudly and distinctly, and continued for two hours until 8 p.m. The hearers were so surprised at the unexpected loudness of the phone that they could not believe their ears. The speech, easy American English, and music were the clearest ever heard in this country. As all the hearers, unfortunately, have little musical ears and are not accustomed to English speeches, sorry we cannot exactly cite what pieces of music were transmitted and what sort of speech was spoken."

STATIONS HEARD.

Mr. P. Spencer Nolan (2YI), Bellevue Hill, has done some very good reception work, using a low loss receiver as recently described in "Wireless Weekly." The receiver employs a UV 201A as detector, and a Cardwell low loss tuning condenser. With a stage of audio, the following American stations have been heard during the last three weeks:—

- 1SF, 1PL, 1CMG, 1ALJ., 1CMP, 1KC.
- 2RK, 2KF, 2AG.
- 3CHG, 3CHF, 3JO.
- 4HO, 4SB, 4OA, 4DU, 4CL, 4FZ.
- 5MI, 5UX, 5RH.
- 6CGW, 6AWT, 6ASE, 6BJJ, 6OF, 6AHP, 6AKG,
- 6UC, 6AMF, 6ARB, 6CTO, 6BM, 6LI, 6CEI, 6AO,
- 6GG, 6RN.
- 7FZ, 7FQ, 7LS.
- 8ZG, 8HN.
- 9ZG, 9CJC, 9EKY, 9ADP.
- Canadian: 1AR.

(To the Editor)

Sir,—Noticing the column in your paper about the hearing of long distance signals on a crystal receiver, I thought I would tell you that Melbourne (VIM) has been heard on my set. I was using an inverted L type aerial, 170 ft. long, with four "earths." My set is a home-made loose coupler, and I am using "Peerless" phones.

I personally did not hear the station, but a friend of mine who has had experience in receiving and transmitting heard it. It read, "VIM calling O.K. VIS."

If wanted I can furnish proof of this, freak or no freak.

A. M. WESTBROOK.

"Sunnymeade," Muttama Rd.,
Artarmon, 25/11/24.

For Christmas Enjoyment

WIRELESS



"Comet" Crystal Set

Price, complete, 63/-

The ideal gift for children

The "Comet" Crystal Set is complete—assembled ready for installation. It comprises, crystal set in oak cabinet, headphones, insulators and 100 feet aerial wire. It has a receiving range of approximately 25 miles. Obtainable only at David Jones'. Price Complete 63/-

The "COMET" One Valve Set

Complete for £8/12/6

The "Comet" One Valve Set is specially suited for using several pairs of phones, at greater strength than is obtainable for the Crystal Set. It is supplied complete with valve, dry cell, 42V Ever ready B Battery, 1 pair phones, aerial wire, insulators and 4 coils. An English type, made specially by David Jones'—Nothing more to buy! Price, Complete £8 12 6

DAVID JONES'

For Radio Service

252 YORK STREET, SYDNEY

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

The most satisfying and profitable Radio Batteries you can sell

Advertised all over the world.



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

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

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

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

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

Write for an illustrated, descriptive circular.

NATIONAL CARBON COMPANY, Inc.
30 EAST 42nd STREET, NEW YORK, N. Y., U. S. A.



No More Wireless Widows

The New Discovery

The Family "Crystaudio"

8 people listen in with one headphone



For CRYSTAL or VALVE
Price - - 30/- Post Free

Manufacturers:

Cole & Cureton 293-295 Edgecliffe Road
WOOLLAHRA

Xmastraordinary Special

	s.	d.
RADIOTRON 201a VALVES	25	0
BRANDES MATCHED TONE PHONES	26	0
JEFFERSON 41 TRANSFORMERS	25	0
JEFFERSON STAR TRANSFORMER	20	0
WHAT YOU SAVE	21	6

The material for a complete single valve receiver costs you only £2/17/6—
What a gift?

PRICE'S RADIO DEN

220 Oxford Street, Woollahra. Waverley 451.

170a New South Head Road, Double Bay.

Radio Service Station open from 6 a.m. to 8 p.m. Daily; 6 a.m. to 10 a.m. Sunday.

Make It a Radio Xmas SMITH'S

Let us help you build your own. It is a simple matter if you have the proper instruction.

Let us advise you:

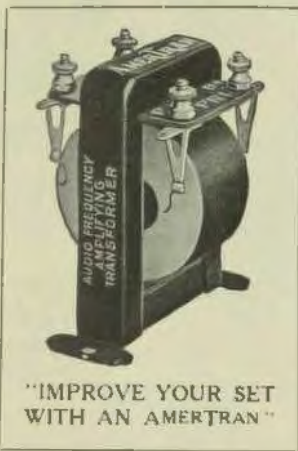
Base Boards	2/6	Crystal Detectors, Mounted	3/3
Loose Coupler Ends, Set of 4	2/6	Valve Sockets, R Type	2/6
Contact Stops, N.P., per doz.	1/-	Valve Sockets, Radiotron Type	4/0
Contact Studs, N.P., per doz.	1/-	Winding Wires, all sizes in stock.	
Runner Rods, nickelled	1/2	Aerial Wire, Copperweld	100ft. 4/-
Sliding Contacts, brass	1/6	Primary Tubes, Wound	3/6
Sliding Contacts, N.P. and Rod	2/6	Secondary Tubes, Wound and Tapped ..	6/-

SMITH'S RADIO STORE

3 VICTORIA ARCADE

OPP. HOTEL AUSTRALIA.

An Audio Frequency Amplifier is No Better than the Transformer it Employs



"IMPROVE YOUR SET WITH AN AMERTRAN"

You are sure of the best results only by using the best Transformer

"AMERTRAN"

Twenty-three years' experience is built into the AmerTran—experience running back to the pioneer days when the makers of these wonderful transformers were building the large transmitting transformers for the Marconi Company's first commercial Trans-Atlantic wireless communication.

The external appearance of a transformer tells practically nothing as to its worth. The purchaser has got to buy something behind that—the manufacturers' reputation for technical skill in design and his ability to execute that design with absolute uniformity in quantity production.

Made in two types. AmerTran A.F.O. ratio 5 to 1 AmerTran ratio 3½ to 1.

RAY-O-VAC RADIO BATTERIES

French Ray-O-Vac Batteries are constructed of dependable materials by experts for use with any make of valve.

Each battery consists of a number of cells assembled and connected in series by soldered connecting leads. The exclusive design and construction features of Ray-O-Vac Batteries make them highly desirable and most satisfactory for radio use. The cells are carefully manufactured from special formulae developed for radio requirements.

Between periods of use the battery will "re-energize" and build up its voltage ready for another period of service.

LEFAX RADIO HANDBOOK

The Lefax Radio Handbook is written in every day language, by men who know radio—both in theory and in practice. They have studied it for years. They are working at it every day. There are probably no other men so favorably situated to know all that has been developed in this fast moving science. They have the best-equipped radio laboratory in the world at their command to settle all doubtful points. That is why the Lefax Handbook is so complete and so accurate.

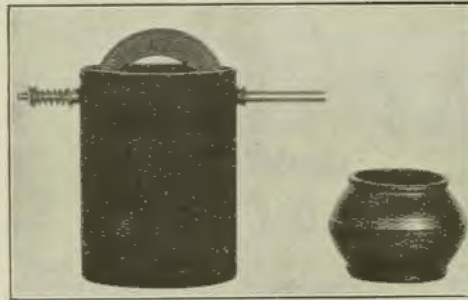
No one interested in Wireless should be without this wonderful Radio Handbook.

Australian Distributors:

WELBY RADIO CO., 13 ROYAL ARCADE, SYDNEY.

Grodan Radio Goods

SATISFACTION AND RESULTS



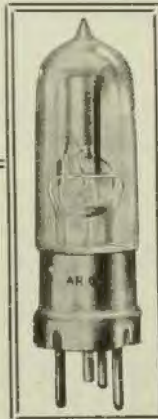
All the stations on
GRODAN SPIDER WEB FORMERS
Easy to wind up to 350 turns of 26 gauge d.c.c. wire. More efficient than honeycomb coils
Less than half the price
1/3 each

INSTALL A GRODAN VARIO-COUPLER
and obviate that plugging-in nuisance.
Obtainable in two sizes—wound and unwound
Stocked by all the principal dealers
7/- and 8/- unassembled.
15/6 and 16/6 complete



Wholesale from

GROSE and DANIELL
185a GEORGE STREET WEST
Opp. POST OFFICE
SYDNEY Telephone MW 1508



Valves of Quality

Ediswan—a name synonymous with the highest degree of Efficiency in Electric Lamp Manufacture, is your guarantee of Service and Satisfaction.

Little need be said about the Ediswan Wireless Valves. Their performance speaks for itself. We know there are no better Valves made.

TYPE A.B.

A splendid valve of the bright emitter type, specially recommended to the amateur. May be used either as a detector or amplifier (H.F. or L.F.), and operates on low plate voltage.

Filament Volts	4
Filament Amps	0.75
General	30—60
Plate (Detector)	30—40
Volts (H.F.)	40
Amplifier L.F.	80
Impedance in ohms	36,000
Amplification Constant	6.0
Emission Milliamps, Approx.	
Total	4

Cap — 4 Pin Standard, Full Proof
Price, 17/6 each.

TYPE A.B., .00.

Embodying the latest improvements in the dull emitter type. It works at a filament voltage of 2.5, and the current consumption is only of the order of .06 of an ampere (0.15 watts). Thus the valve may be operated off ordinary dry cells.

Filament Volts	2.5—3
Filament Amps	0.6
General	20—100
Plate (Detector)	20—30
Volts (H.F.)	30
Amplifier L.F.	50—100
Grid Bias Volts, Negative	1—3
Impedance in ohms	37,000
Amplification Constant	19.5
Emission Milliamps, Approx.	
Total	5

Cap — 4 Pin Standard
Price, 30/- each.

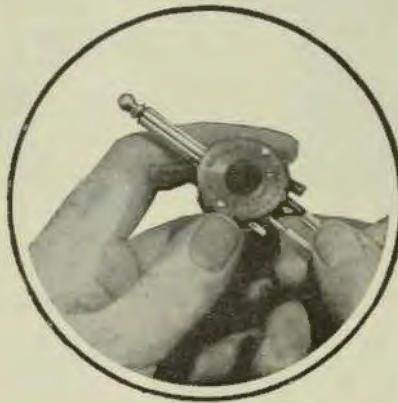
The Edison Swan Electric Co., Ltd.

Adelaide, Brisbane
Melbourne
and
Sydney

THE WESTON RADIO PLUG IS INSTANTLY OPERATED BY A PRESSURE OF THE FINGERS

To Fasten

To fasten, push the phone leads into the openings of the plug as shown. Positive contact is instantly obtained — nothing to unscrew or put together.



To Release

To release, hold the plug as shown. Push in the projecting metal tongues and pull at the same time on the leads. Requires only a pressure of the fingers.

RADIO WESTON PLUGS

ABOVE all else the Weston Plug is simple. There is nothing that needs to be taken apart. No tools are required. Changing from Loud Speaker to Phones, calls for only a pressure of the fingers and an instant of time. Contact is absolutely positive.

THE same care is exercised in the manufacture of these plugs, as in Weston Precision Instruments. Each plug is tested electrically and mechanically before it leaves the factory. Being instantly transferable, one Weston Plug can be used in place of two ordinary plugs.

Sales Representatives:

WARBURTON, FRANKI, LTD.

307-11 Kent Street, Sydney.

380-382 Bourke Street, Melbourne.



SOLD BY ALL RADIO DEALERS.

30s. each



D.V.3
Filament, 3 volts
.06 amp.
Both Types Fit Standard American
Socket.

D.V.2
Filament 5 volts
.25 amp.
Socket.

... MADE BY ...

De Forest

THE MAN WHO INVENTED BROADCASTING
DE FOREST VALVES

TYPE D.V.2—Takes 5 Volts at 4 Amp. on Filament 30/- each
Plate Voltages, Detector . . 18-22½ Volts
Plate Voltages, Amplifier . . 60-150 Volts

TYPE D.V.3—Takes 3 Volts at .06 of an Amp. on Filament 30/- each
Plate Voltage, 16-22½ Volts, Detector
Plate Voltage, 60-120 Volts, used as an Amplifier.

Both Types Fit Standard American Socket.

(Wholesale Only)

INTERNATIONAL RADIO CO. LTD.

200 Castlereagh Street Sydney, N.S.W. Phone: MA 1387

Also at 91-93 Courtney Place, Wellington, N.Z.

BUY

Radio Gifts

For
Xmas

Wetless Duo Lateral Coils

MOUNTED
AND
UNMOUNTED.

Obtainable
from all
Wireless
Suppliers.



These Coils are
attractive in appear-
ance, and are so con-
structed as to ensure
lowest losses, com-
patible with compact-
ness.

SOLE AGENTS

TRUE TO WAVELENGTH

Fox & MacGillycuddy Limited

DAILY TELEGRAPH BUILDINGS, KING STREET, SYDNEY.
Phone City 3062.

"RADION" within 11° of the North Pole



The biting cold of the frozen north, many degrees below zero, holds no terrors for Radion.

Frozen in the ice for weeks within 11° of the North Pole, the "Zenith" Radio set taken by Dr. MacMillan on his recent expedition provided the famous explorer and his men with the only news obtainable of the outside world.

This set, carefully selected for its adaptability to any climate and condition, was equipped with both Radion panels and parts. Radion once again proved its matchless qualities under the most vigorous test any radio equipment was ever put to.

Radion will prove equally supreme in any climate. It is made expressly for wireless work and far excels any other material in the four main radio essentials, namely:

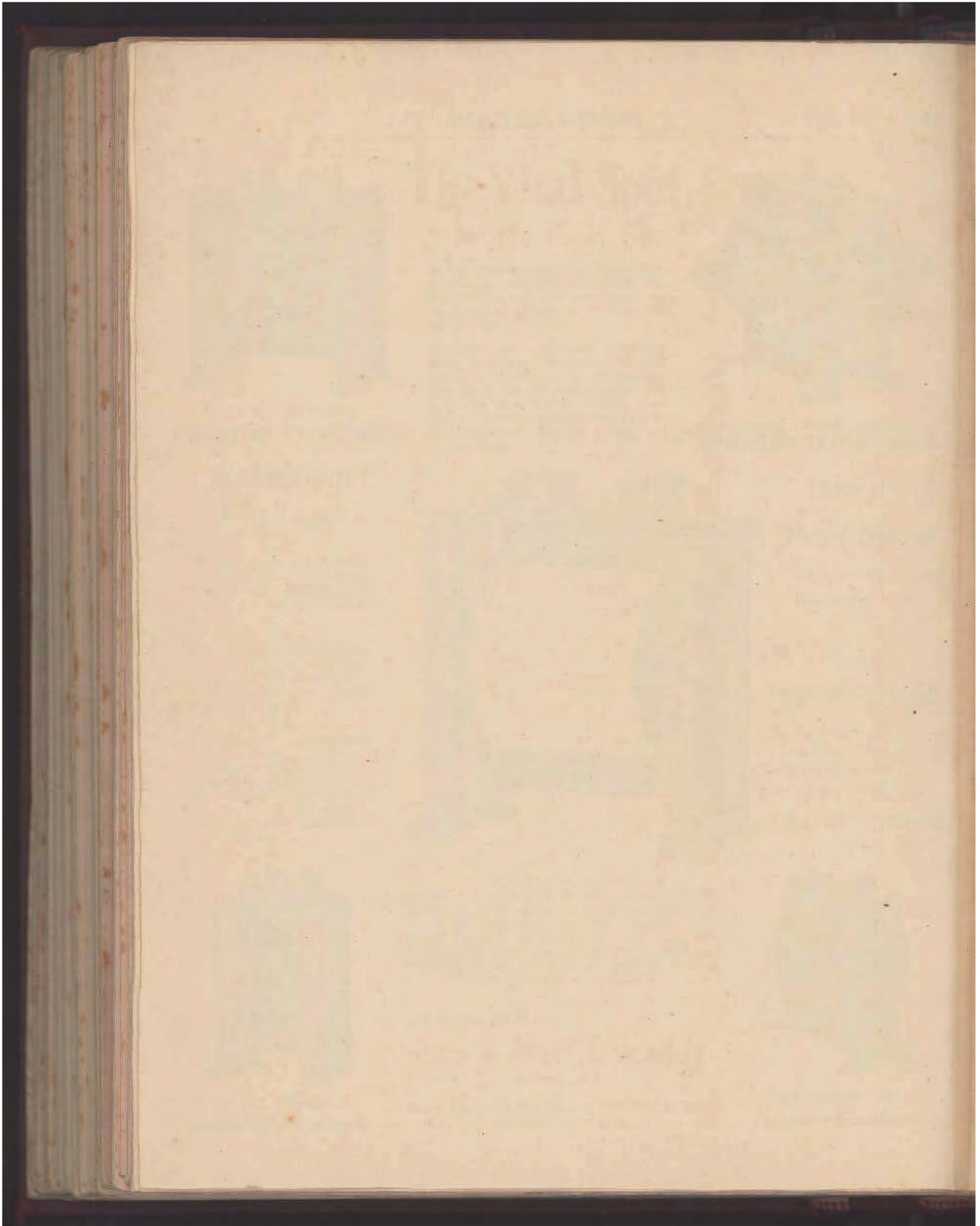
1. Low Angle Phase Difference
2. Low Dielectric Constant
3. High Resistivity
4. Low Absorption of Moisture

These characteristics result in a clear, satisfactory reception unobtainable by the use of any inferior material. Do not jeopardize all the time and effort you put into the making of your set by using inefficient insulating material. Look for the name Radion on every panel, dial, socket, knob, etc., so that you will be sure you are getting the very best that science has devised.



International Radio Co., Ltd.,
91-92 Courtenay Pl., Wellington, N. Z.
200 Castlereagh St., Sydney, N.S. W.

C45



Page Sixty-Two WIRELESS WEEKLY Friday, December 16, 1933

Special Xmas Offering!

Buy Your Radio Supplies NOW and avoid disappointment

CRYSTAL SETS AND ACCESSORIES



A1 Quartz Condenser
770-42 Plate, 1001 10/-
770-54 Plate, 1005 12/-
770-11 Plate, 1000, 11/-
770-42 Plate, Variable Cond. with knob 30/-
770-54 Plate, Variable Cond. with knob 35/-



Special Price: 15/-
This set may be purchased separately complete for 15/-



Circular Dial, 1A

The Dial may be purchased separately complete for 15/-



Honeycomb Coils

Size	Mils.	Usual
20	4.5	0.9
25	5.5	1.1
30	6.5	1.3
35	7.5	1.5
40	8.5	1.7
45	9.5	1.9
50	10.5	2.1
55	11.5	2.3
60	12.5	2.5
65	13.5	2.7
70	14.5	2.9
75	15.5	3.1
80	16.5	3.3
85	17.5	3.5
90	18.5	3.7
95	19.5	3.9
100	20.5	4.1
105	21.5	4.3
110	22.5	4.5
115	23.5	4.7
120	24.5	4.9
125	25.5	5.1
130	26.5	5.3
135	27.5	5.5
140	28.5	5.7
145	29.5	5.9
150	30.5	6.1



N.H.M. GALERA
1/4 No. 1, 1/-



Crystal Radio Complete, 1A
Crystal Radio, 1A
Crystal Radio, 1B

Make a point of getting all your supplies from



COLVILLE-MOORE

WIRELESS SUPPLIES LIMITED.

10 ROWE STREET (HOTEL AUSTRALIA) SYDNEY

Page Sixty-Three WIRELESS WEEKLY Friday, December 15, 1933

Special Xmas Offering!

BUY Your Radio Supplies NOW and avoid disappointment

VALVE SETS AND ACCESSORIES

THE LITTLE GIANT — COL-MO SINGLE VALVE SET

Complete with coils for tuning to both Broadcasters and Fanmats **£4-10**

ACCESSORIES

Phones	1 5 0
Audion Valve	1 10 0
5 Battery	0 5 0
5 Battery	0 5 0
ER 7 6	



Before you decide upon your Xmas presents **SEE OUR LITTLE GIANT**. This set is manufactured with first-class material, in highly polished mahogany cabinet, and assembled up to the usual standard of Col-Mo's quality. Call or write for further particulars. We have an unusually large selection of the best phones and valves from which the experimenter may choose with the knowledge that he is receiving the best value for his money.

Muller's 4000 ohms	25/-	Holland 1000 Ohm	17/6
Pen Phone, 2000 ohms	20/-	Radio 100 Amp. Radio Frequency	17/6
Musical Phone, 2000 ohms	21/6	Radio 100 Amp. Radio Frequency	17/6
Waco's 4000 ohms wood frame	30/6	Phillips 100 Amp.	18/6
Col-Mo Phone, 4000 ohms	32/6	Phillips 100 Amp. standard American Socket	19/6
Times Reproduction and Trimm. Pre-Seasonal, 2000 and 4000 ohms 30/6	45/-	Phillips 25 Amp.	18/6
Simplex Phone, 4000 ohms	42/6	Phillips 100 Double Grid Dual Diode	21/6
Working Phone, 1000 ohms	41/-	500 Ohm Diode	17/6
Radio's Phone, C. 4000 ohms	42/-	500 Ohm Diode	17/6
Radio's 4000 ohms adj.	41/6	500 Ohm Diode	17/6
Brooks' Adj. 4000 ohms	41/6	500 Ohm Diode	17/6
Brooks' Adj. 4000 ohms	41/6	500 Ohm Diode	17/6
Brooks' Adj. 4000 ohms	41/6	500 Ohm Diode	17/6

All other Muller's, De Forest and Marconi valves in stock of usual city prices.



COLVILLE-MOORE

WIRELESS SUPPLIES LIMITED.

10 ROWE STREET (HOTEL AUSTRALIA) SYDNEY

Special Shipment of Valves

ALL LOW IN PRICE

By a special consignment just received, we are now able to supply almost any valve selling on the market. All valves fully guaranteed and tested.

BV1	42/6	D.V.	18/6
DV1	27/6	Radiotron, UV200,	
C.299 Cunningham, 30/-		201A	30/-
BTH. B5	30/-	DV2, DV3	30/-
D1	18/6	Marconi R.	19/-
D11	18/6	Cossor P1.	20/-
DIV.	18/6	Cossor P11.	20/-

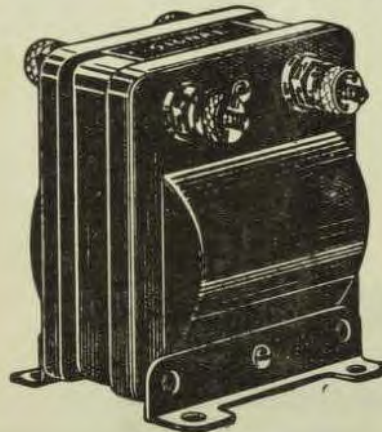
PITT, VICKERY LTD.

335-337 PITT STREET, SYDNEY.

Telephone: City 6053, 8073.

The "SIGNAL" AUDIO FREQUENCY TRANSFORMER

Give it for Christmas!



Here is a Transformer, made in Australia, but equal to the best imported. Being Australian, there are no freight and import charges. 60 per cent. is thus saved. That's why it

COSTS 21/- ONLY

AT ANY RADIO STORE

The SIGNAL Transformer is strong, sensitive, reliable. It is GUARANTEED by both manufacturers and distributors.

It gives you the programmes in their full volume without distortion or howl.

7 to 1, 5 to 1, 3 1/2 to 1 ratios.

See it at your dealer's today—!

United Distributors Ltd.

(WHOLESALE ONLY)

72 CLARENCE STREET,
SYDNEY.

592 BOURKE STREET,
MELBOURNE.

And at Adelaide, Perth, Brisbane, Hobart and Wellington



Tuning In

In thousands of homes people are tuning in on their radio sets.

Scarcely a sound; a slight turn, a faint noise; another adjustment, and then clearer and clearer comes music from the air.

Is your nightly "tuning-in" as simple as this?

If you want simple, quick and more selective tuning use,

A.W.A. Honeycomb Coils

No. of Turns.	Wavelength with 001 Condenser.	Price, Mounted.	Price, Unmounted.
20	50-200	6/9	2/-
25	100-275	7/-	2/2
35	150-325	7/6	2/2
50	190-375	7/9	2/4
75	240-325	8/-	2/6
100	340-1340	8/3	2/9
150	500-1980	8/6	3/-
200	650-2675	9/-	3/6
250	725-3575	9/9	3/9
300	1050-4200	10/6	4/3
400	1600-6050	11/8	5/-
500	2000-7500	13/8	7/-
600	3000-9000	15/6	9/-
750	4000-11000	18/9	12/-
1000	4500-16000	1/-/-	14/-
1250	6310-18240	1/4/-	16/-
1500	7625-22210	1/8/-	18/-

A.W.A. Honeycomb Coils are mounted on Igranic Honeycomb coil plugs with a black celluloid diamond strip, and then the shoulders are specially bound with black waxed thread, which holds the coil rigidly in position.

A.W.A. Coils offer very low radio-frequency resistance and self capacity is at a minimum. They may be used as tuning, loading, coupling, or wavemeter inductances, ensuring the highest degree of efficiency for your Set.

Made in sizes to suit your requirements, each A.W.A. Honeycomb Coil is attractively boxed, and the wavelength table printed on the carton. Also supplied unmounted.

At all Radio Stores

Amalgamated Wireless
(Australasia) Ltd.

97 Clarence Street
SYDNEY

Collins Street
MELBOURNE



Friday, December 19, 1924.

WIRELESS WEEKLY



Shrouded Transformers
Ratio 6 to 1 28/6

**All British
GUARANTEED
POWERQUIP
Transformers**



Manchester Transformers
Ratio 6 to 1 25/6

Upwards of
80,000 have
been sold in
Great
Britain



Powerquip Standard Transformers
Ratio 6 to 1 19/6

These Trans-
formers have been
used with great
success in J. Scott
Taggart's ST 100
circuit.

*Have you tried
them?*



Maxvol Transformers 25/6
Ratio 7 to 1

TRADE ENQUIRIES.

**Keith Stokes Pty.
27 King Street
Sydney**



Bucks Transformers 17/6
Ratio, 4 to 1

Published by A. W. Watt, "Keira," Alfred Street, North Sydney, for the proprietors and printers, Publicity Press Ltd., 12-16 Regent Street, Sydney.