

# WIRELESS WEEKLY

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FRIDAY, MARCH 6, 1925.



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## Wireless Weekly

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Phones: Redfern 964 and 930.

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

Editor: A. W. Watt.—The Editor will be glad to consider Technical and Topical Articles of interest to Australian Experimenters. All Manuscripts and Illustrations are sent at the author's risk, and although the greatest care will be taken to return unsuitable matter (if accompanied by stamps), the Editor cannot accept responsibility for its safe return.

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VOL. 5 No. 19

MARCH 6, 1925

### Editorial.

#### WHO OWNS THE ETHER?

**W**ELL, well, well! The old argument has been unearthed from its dim hiding place once again; with a horrid rattling of bones, the same old skeleton has been dragged from the closet and thrust before us with the same old clanking of dry bones. In a letter published last week 2JR made some frank comments upon experimenters.

In the old days when phone was considered the thing by amateurs, the bird who intruded his Morse signals upon the air was anathema; to put it mildly, he was de trop. To-day the phone transmitter is in much the same position as the Morse sender of twelve months ago.

With the advent of short waves, and the achievements of 2CM, 2DS and 3BQ, the aim of quite a large number of amateurs has been to boost up the power and get down to the region around 85 metres. Now in this direction it should be borne in mind that those amateurs who operate transmitters down there, do so on sufferance only. Under normal conditions, no one is permitted to delve below 120 metres unless by special authority of the Chief Manager. In granting this permission it is not stipulated that the applicant confine himself to Morse sending. Why should it? There has not been a regulation framed yet warning phone transmitters off any band of wavelengths

allotted to amateurs, and until there is, any experimenter, provided he is in possession of the necessary authority, is entitled to use his set either for phone or Morse.

Now, the suggestion that the region of 85 metres is exclusive to Morse senders is entirely wrong, and judging by the use that is made at present of this band, the sooner we get a few phone experimenters on it, the better. The quoting of regulations framed in U.S.A. or any other country outside Australia affecting this particular matter has no bearing whatever.

There is no reason to doubt that, on short waves, as much if not more constructive work can be done on phone experiments as on C.W.; in fact, the field is so saturated by Morse pounders, many of them very indifferent, that it seems high time somebody intruded on the general QSR with some long distance stuff on phone. There is a great big field here and we would like to see it exploited a little more than it is just now. No one can be excused for pumping gramophone records promiscuously on any wavelength and in fact, a lot of phone work is mere dull repetition, but there should be—in fact, there IS—no bar to any experimenter genuinely experimenting phone on short waves, Morse senders notwithstanding.

Co-operation is a term we hear quite frequently and it is something that we would certainly like to see practised a great deal more than it is. It is, however, quite useless for one individual, or for a section of transmitters, to arbitrarily attempt to lay down a line of demarcation for the man who is primarily interested in phone transmission and at the same time prate about co-operation. It is not only the worst possible taste to endeavour to belittle the phone experimenter, but it is dead against those principles of harmony and goodwill that it should be the object of every genuine experimenter to foster. And it does not tend to encourage or assist the experimental movement when one of its members, despite his professional capabilities and his aptitude for sending Morse, deliberately insults the intelligence of those who unintentionally intrude upon his own selfish pleasures. One may as well throw stones at 2BL who is rendering a public service, because he has a harmonic on a low wavelength.

There is altogether too much of this backbiting. The professional perhaps, by virtue of his position, may be forgiven a little indulgent criticism of amateurs, but when a professional apparently glad to take advantage in his spare time of the privileges of experimental status, levels cheap criticism at those who have secured those privileges for him, then he loses the respect of others and demonstrates that the experimental movement is perhaps a little crowded

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## The Leaning Tower of Pisa.

2GM is not the only one who can lay claim to a good imitation to the leaning tower of Pisa. Travelling around from one part to another one sees many bold attempts at copying this historic monument, but the stability of the erections cannot be said to be as safe as the original.

At a meeting held at the Institute Headquarters in the lunch hour this week, a remark was made that the subject of mast and aerial erection was hackneyed. The retort courteous was, that it was more than hackneyed. Nevertheless a few remarks may not be out of place.

Experimenters, amateurs and broadcast listeners should remember that a mast which has been erected in a dangerous manner is a menace not only to themselves and their families, but to neighbours and the public generally. The theory of mast erection is not very complicated, but it should not be overlooked that certain principles must be adhered to, if safety is to be maintained. In the first place sufficient and efficient stays must be provided. One sees many masts erected with stays about half way up, and when the aerial is attached to the top the constant strain produces a bend in the mast which gives a respectable imitation of an aged man bowed down with the weight of years. While stays are certainly necessary in the centre of tall masts, and also at other intervals, a set of stays should be placed as near the top as possible so as to take the strain of the direct pull of the aerial, and thus take the bending strain off the mast.

Timber used in the construction of masts should be well seasoned, and even good timber has a habit of warping if a continual strain is placed upon it in one direction. Another point which should be observed is that stays should be of sufficient strength. A piece of 22 gauge galvanised wire just twisted around the wood, and tied to a fence is not sufficient. 14 gauge wire should be the very smallest employed, and never tie to the top of a fence, the posts of which may be ant eaten or rotten. If you must use the fence see that the

post is in thoroughly good order and fasten the stay to as near the bottom of the fence as possible.

If your mast tries to assume the appearance of the leaning tower of Pisa, remove the strain of your aerial until you have time to straighten it up. Separate your guys as far apart at the ground as possible. Do not make them too steep. It increases the strain enormously on the guy and the mast, and decreases the safety proportionately. Think of the safety of others, even though you may be prepared to take the risk yourself.

## Courtesy on the Ether.

A good deal has been said at various times with regard to the matter of answering calls made by those comparatively near. This is a matter that can bear repetition. Unfortunately it seems that the majority of transmitters will only attempt to work with those who are far afield. This is, besides being very discourteous, quite a wrong idea of the DUTIES of the experimenter. Australia is a free country, but this does not mean that every one can do exactly as he likes. Others have their rights and privileges and the only way to secure harmony and peace in the experimental ranks is by a spirit of hearty co-operation. It is most refreshing to hear two nearby stations hard at work. One possibly relaying a message to the other which the latter may have received just as effectively as the former. It shows a spirit of co-operation. It shows a willingness to work with the other fellow. It indicates the appreciation of his merit rather than a selfish idea that you alone are the only worth while transmitter.

It would be well for every transmitter to take these remarks to heart, and see how far he has been at fault in this respect. It is not intended that DX work should be entirely ignored, but rather that it should be used in conjunction with local work for the furtherance of the experimental cause.

## Delegates' Council Meeting.

The next meeting of the Delegates' Council will be held at Institute Headquarters, on Friday, March 13th, at 7.30 p.m. Notices have been sent to all delegates and it is hoped that they will all

be present. Much important business is on hand and the meeting will start punctually to time, so that the various items may receive full attention.  
Q.R.M.

It is reported that 2CX went home from the Waverley banquet with his pockets full, but there is no doubt that he arrived home with empty pockets. 2JT sat next to him in the tram. It is an open question as to who ate the cakes.

2GM is coming out in a new light. He is now lecturing to B.C.L. on the drawbacks of allowing their valves to howl.

2DE was working recently when those who were listening lost him. A report from the direction of the "village" and a sizzling smell induced the belief that he had got across his transformer. If this is so, the damage must have been repaired quickly, as he was not swathed in bandages when he was last seen.

2GM wants to know if anybody has seen a Ford kicking around?

A. H. PERRETT,  
Publicity Officer.

February 28, 1925.

## Round the Clubs

*The asterisk denotes clubs affiliated with the Wireless Institute of Australia (N.S.W. Division).*

### THE LEICHHARDT AND DISTRICT RADIO SOCIETY \*

The 120th general meeting of members of the Leichhardt and District Radio Society was held at the club-room, 176 Johnston St., Annandale, on Tuesday, February 24th.

The attendance was very satisfactory, and those present were entertained by Mr. F. Thompson, who delivered a very interesting and instructive lecture on Transmitters. Mr. Thompson, who is the licensed owner and operator of station 2HF, is in a position to have an excellent knowledge of this particular subject, and in the course of his lecture he explained, in a very lucid manner, the details of the construction and operation of the various types of transmitters, both past and present. That members were keenly interested in all that Mr. Thompson had to say was evidenced by the numerous questions which he was called upon to reply to at the conclusion of his lecture, and after these had been disposed of a hearty vote of thanks was carried by acclamation.

Next Tuesday evening the Society will conduct its 29th monthly business meeting, when applications for membership will be dealt with, and other formal business disposed of. At the conclusion of

the business on hand Mr. S. P. Williams will deliver the 4th lecture of Syllabus No. 3, the subject to be "Short Wave Circuits." Mr. Williams has had considerable experience in the use of short-wave receivers, and in these days of short-wave transmissions, his remarks should prove of unusual interest to all.

At the following meeting, to be held on March 17th, a "Sale and Exchange Evening" will be conducted, and should, like its predecessors, prove very successful.

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

### STRATHFIELD RADIO CLUB. \*

Report of Ordinary Meeting, held 23/2/25, and Committee Meeting, 25/2/25.

The ordinary weekly meeting of the above club was held at the club rooms on Monday evening, 23rd February.

Mr. Rourke, Vice President, occupied the chair in the unavoidable absence of the President, and there was a very good roll up of members.

Mr. W. A. Stewart, of Waverley Club, and well known to readers of Wireless Weekly, lectured on "Low Loss Receiving Circuits," and "Elimination of Distortion in Receiving Circuits," both very interesting subjects.

The popular 3 coil, Modified Hartley and Reinartz Circuits were dealt with and their operating characteristics carefully explained, and the value of resistance coupling for audio amplification as a factor in reducing distortion was also well treated. Hints on methods of winding coils and the lay-out and connecting up of component parts of receiving apparatus completed a very interesting and well delivered lecture.

At its conclusion Mr. Stewart answered a number of questions, and a hearty vote of thanks, carried by acclamation, concluded the proceedings.

It was noticed that Mr. Stewart was not at all inclined to be dogmatic regarding the theories underlying the use of so-called "low loss" coils and condensers, which, after all, was hardly to be expected in view of the fact that these theories have received a few nasty set backs of late.

From purely theoretical considerations the use of thick wires for audio frequency currents on short wavelengths has nothing to recommend it, and experiments conducted by members of this club go to prove conclusively that no noticeable prac-

tical benefits are gained thereby. One of our members has read G2OD and G2NM consistently on coils wound on spider web formers with 28 gauge wire, and recently American amateurs have been copied at usual strength, using a single wire aerial 29 gauge, and coils wound with the same wire, which was also cotton covered and impregnated with armature varnish.

As regards condensers, Mr. Stewart informs us that any well made variable condenser with air dielectric is a low loss condenser, which statement we quite agree with.

The committee of this club met on Wednesday evening, 25th February, and in view of the noticeable improvement in attendance of members at meetings, and the healthy interest being exhibited by them in the work of the club, it was decided to revive the old idea of an experimental committee to meet weekly to conduct experiments and arrange practical demonstrations, to be given before ordinary meetings. The big idea of course is to give club members the service which they are entitled to expect, and the particular experimental work carried out by this committee will be dictated by the requirements of club members on ordinary meeting night.

The procedure adopted will be on these lines: At ordinary meetings when convenient technical discussions will be held as part of the evening's programme. Any technicalities which cannot be thrashed out on the spot will be referred to the Technical Committee for necessary attention. If necessary, experiments will be conducted and the particular matter practically explained at the next ordinary meeting, or if highly technical points are raised the opinions of competent authorities will be obtained and placed before members.

The financial conditions of the club is now very sound, and further additions to the club's apparatus will be made from time to time as funds permit.

Our membership is increasing at a very satisfactory rate, two more new members being enrolled at last meeting. A few more would be welcome. Correspondence on the subject addressed to the Hon. Secretary, Mr. K. Campbell, 44 Bayard St., Mortlake, will receive prompt attention.

#### ILLAWARRA RADIO CLUB \*

Members! QRK? 2UI.

At long last station 2UI has commenced punching perforations in the "all-surrounding." In other words, the I.R.C. is unofficially on the air. When we say "unofficially," we mean that we have op-

ened up on a preliminary experimental testing period of decide best lay out and to get things properly balanced prior to the club's transmitter being permanently installed and officially opened in its new quarters in a few weeks' time. At present we are working on a coupled Hartley circuit, employing only one 5 watter with chemically rectified A.C. on the plate. For this test straight C. W. only is being used and we are operating on a wavelength of about 80 metres. This station is to be heard any night before 8 p.m. and after 10 p.m., for like all well-behaved transmitters these days, we are observing the "silent period." Members are requested to check up on these transmissions and let the Secretary have their reports as to quality of C.W., strength, hum, etc. We might mention that no filtering arrangement is being used at time of writing so the hum will no doubt be fairly strong.

Talking of transmitters, it is a remarkable fact that while the eastern, western and northern suburbs all have their groups of transmitting amateurs, the balmy atmosphere of the Illawarra suburb has so far practically escaped the attentions of transmitters, with one exception. The exception is 2OI (Mr. A. T. Whitaker, Banksia), and he has played practically a lone hand in this district. Despite the fact that 2OI's transmissions have been more or less spasmodic, that is to say, he has been on the air only periodically, his stuff has on each occasion certainly got very far afield. He has covered some good distances on low power, both on C.W. and phone, including a good deal of two-way work, and he has a great deal of successful work to his credit, as is amply evidenced by an inspection of his wall-paper (beg pardon, 2OI!), we mean QSL cards, of which he has a creditable collection.

In spite of all the abuse and criticism which has been hurled at the head of the inoffensive but much-maligned amateur transmitter on the part of misguided and ignorant B.C.L., the fact cannot be gainsaid (as has been oft reiterated) that it is due to the work and experiments of amateurs that the said B.C.L. are enjoying broadcasting in this country to-day; some day they will no doubt realise this and be a little more tolerant.

The good work must go on, and we hope it won't be bad news to local B.C.L. when we mention that the Illawarra suburbs within the next few months is to have its own little gang of key-thumpers, and more power to 'em. Yes, the local ether will ring with the activities of at least half a dozen transmitters before the winter is out. Three

(Continued on page 30, column 1)

# Waverley Radio Club

## SIXTH ANNIVERSARY.

THAT Mr. C. Maclurcan has in mind a scheme for an annual clubs' competition; that negotiations with the authorities are on foot for shorter wave-length bands for amateurs; and that 2CX's standard wavelength transmission—which is officially the Wireless Institute's—will continue on a larger scale, were a few of the items learnt by those present at the Waverley Radio Club's 6th anniversary celebrations on February 24, at the Club-rooms, when the new transmitter (2BV) was officially opened.

It was one of the most representative gatherings yet held in New South Wales, no less than 13 transmitters being present. Amongst these were 2CM (Mr. C. Maclurcan), 2CX (Mr. H. A. Stowe), 2DS (Mr. Jack Davis), and 2WW (Mr. A. W. Watt, of Wireless Weekly). Other transmitters present were: 2JT, 2CJ, 2BK, 2ZN, 2HS, 2LY, 2SX, 2ZC, and 2BY.

Mr. F. Geddes, in proposing the toast of The Waverley Radio Club had certainly had some difficulty since its beginning, and the many troubles due to a great extent to the "social element" which at last was overcome. Responding on behalf of the Club, the Chairman, Mr. Alan Burrows, said that the Waverley Radio Club had certainly some difficulties to overcome, but it seemed now that it was out of the wood. He expressed the opinion that this was the biggest meeting of transmitters ever held in N.S.W. and he hoped that the opportunity would be taken to emphasise the importance of an Australian Radio Relay League.

The health of the Foundation Members was proposed by Mr. R. Howell, who mentioned the assistance given the members by Mr. F. Geddes, and Mr. C. Maclurcan. Mr. Howell also said: "There has been a special comer in hell for fishermen. Now, however, it has been enlarged and renovated for the benefit of wireless men—they have outclassed the fishermen." Mr. E. Bowman responded on behalf of himself and Mr. A. Burrows, the only two foundation members left in the club. He read an extract from the club's early journal as an example of the efforts to keep things going which had to be made in those days.

Mr. H. A. Stowe (2CX) proposed The local Transmitters, speaking of the need for some organisation amongst the transmitters. He also mentioned the standard signals which were sent from his station, stressing the need for effective wavelength calibration.

In responding, Mr. C. Maclurcan urged transmitters to concentrate more on local or at least, nearer "ether lousters" instead of spending so much time sending "CQ America." It was considered quite an achievement nowadays to raise a New Zealander—simply because everyone was after American or British stations. The impending inter-club competitors, said Mr. Maclurcan, would soon be well on its way.

Other toasts were: Mr. Geddes, Kindred Clubs, The Visitors, The Ladies who Helped, and the N. S.W. Division of the Wireless Institute of Australia and the Delegates' Council of Affiliated Societies. In responding to this last toast, which was proposed by Mr. Gordon Thomson, Mr. Stowe deplored the antagonism existing in some quarters with regard to the authorities. "Experimental wireless," said Mr. Stowe, "possesses no stancher friends than Mr. Malone and Mr. Crawford."

Every transmitter present had something to say which in every instance was interesting. Rev. D. J. B. King, Messrs. D. Graham, W. Anderson, W. Stewart, W. Horrell, Turner, Makin, Carter and Zech also spoke.

### HERE'S ONE.

Quite recently our correspondence assumed such proportions that we had to call in the services of a temporary typist. In our reply to a correspondent we dictated the following: "Strongly advise you to use a variable condenser of .001 capacity."

Here's how the reply came through: "Strongly advise you to use a variable condenser of 66 feet capacity."

### WHY MARCONI SUCCEEDED.

Dr. Howe, professor of electrical engineering at the University of Glasgow, delivering a lecture on world-wide radio telegraphy, at Newcastle (Eng.) recently, discussed the mysterious bending of electromagnetic waves round the curvature of the earth. The reason why Marconi accomplished this great thing when Sir Oliver Lodge failed, said Dr. Howe, was because Sir Oliver knew so much theoretically that he thought it impossible, whereas Marconi, who knew no theory, experimented and succeeded.

Telephone B 5925

**CHARLES D. MACLURCAN**

Consulting Radio Engineer

Pratten Building,  
26 Jamieson Street,  
SYDNEY

## Shingling 3LO's Wave Band

**A**FTER scarcely six months on 1720 metres, the greatest broadcasting station in Australia has suddenly climbed down the golden stairs and petitioned the P.M.G. to be allowed to transmit in future on 400 metres. Exactly why this decision has been made, only the proprietors themselves know. It can hardly be merely because reception will be better on the lower wavelength, because it won't. That is to say, of two outputs equally good on either wavelength, it is really much easier to tune in on the higher one. But it is quite probable that the technique of modulation and other pre-transmission operations has been found to be more effectively controlled by a lower wavelength and in fact tests made in England and America long before 3LO began operations were held to prove the superiority of the medium wavelength now to be adopted. Exactly why 3LO started off on 1720 metres and so suddenly came down to less than a quarter of that, is one of those irritating problems whose solution is more diverting than its practical consequence. The change will not involve momentous consequences to owners of those receiving sets that make use of plug-in coils. For the expenditure of less than 15/- all should be well, but there are always those who wonder why the vacillations of a company to which they are already forced to pay a fair proportion of 35/- a year should result in a further enforced expense. It certainly does seem that the P.M.G. sometimes in a mild sort of way forgets to represent the public in his dealings with the broadcasters, or otherwise he might have in this instance stipulated that 3LO should certainly buy up all the old 1720 metre coils that must be scrapped in consequence of their change of wave-front. Of course the tall talk about interference between 3LO and 3AR on the wave bend between 480 and 400 metres is mainly vaporing. If there IS interference, it will according to present experience, be due more to the vagaries of 3AR, whose present performances suggest transmissions through methylated spirits, rather than through ether. But there are at any rate several safeguards and consequential alterations that can be made on sets to receive this new wavelength. In the first place crystal sets will have to scrap their present big single-slide tuners or ruthlessly cut them at about the fiftieth turn and so get rid of the idle turns. Then to get discriminating tuning, it would be better to rewind the coil on a former much smaller than the usual 3½in.—even 2½in. is not too small. If you use a 2 coil tuner you will need two new coils of 35 and

50 turns, but preferably you will substitute a three coil tuner and set it up with 35, 35, and 50. In buying these coils, make a preference of pancake or spider web coils wound with fairly thick wire, or better still, wind them yourself. The flat coils give better coupling with such few turns. Finally, don't fail to be amused when you read words of wisdom about interference being less on lower wavelengths within a few metres of each other. This style of wisdom consists of dividing three hundred million by the two wavelengths concerned and inviting you to contemplate the difference between the resulting quotients which of course is much greater than that between the original divisors and therefore, according to the eminent arithmetician who performs the feat for you, it proves that interference must be less. It proves nothing of the sort. Only experience can prove such things, and since tuning must be much sharper on lower wavelengths, there is going to be such a feast of joeys and disturbances, not to mention statics true and false as will for a time make 3LO's new quarters in the ether a good place to keep away from. The mention of statics, too, conjures up the fair but false assurances of some gifted authorities who insist that the lower wavelength will minimise static. Hope tells a flattering tale, but here again experience denies it. Static is no respecter of wavelengths, but seems to depend considerably on length and number of wires in the aerial. All we do is to accept static, as we accept 3Lo's new wavelength, as a veritable boon from those beyond the gods.

### INDIA AND WIRELESS.

The Indian Government is reported to be considering an application from an Indian company for a license to erect a beam station for commercial service to England.

The promoters expect the service to open in eight months' time with 30 per cent. reduction on present cable charges.

### CHANGE OF ADDRESS.

Please note that 2HF, F. Thompson, has removed from 38 Donnelly St., Balmain, to 119 Curtis Rd., Balmain.

**EBONITE TURNERS TO THE TRADE.**  
Radio Components. Fountain Pen Makers and Repair Specialists. (30 years' experience in England). Bullimore, 129 Bathurst St., Sydney.



## WITH OUR READERS

(To the Editor)

### LIGHTNING ARRESTERS.

Sir,—It does not seem to be generally known that an aerial, especially one of fairly large capacity, induces heavy charges of static electricity during thundery weather, sparks up to half an inch in length being sometimes discharged to earth. Needless to say, a severe shock may be received from approaching various parts of the set, although the aerial is not actually "struck". A small spark gap arrester would of course remedy this.—Yours etc.,

M.M.

Canterbury, Vic.

(To the Editor)

Dear Sir,—Being a regular reader of your paper I have followed a wordy duel between two of your correspondents, H. E. Taplin and "Ion," anent lightning arresters, which in view of the large space taken up and the small result of the debate, is disappointing.

It reminds one of the fable of the two caterpillars; one on each side of a silver elm leaf, the one arguing the leaf was white and the other arguing the leaf was green. Result: both were so busy hurling compliments to each other they starved to death.

Your correspondents have now left the basis of the argument and in order to make an effort to save them from the sad end of the caterpillars, may I "stickybeak" and review their letters — for both are right and wrong which ever way one looks at it.

Firstly in his article appearing in your issue of October 13th, 1924, Mr. Taplin states "lightning—where a wire has been bent back at a sharp angle—will continue straight on and across an air space rather than follow the low resistance path offered by the wire."

Here I take Mr. Taplin refers to the inductive "kick" caused by the bend back (or coil) in the path, hence the universal use of choke coils with spark gap lightning arresters distinct from surge arresters.

In launching his attack "Ion" ridicules the statement that lightning will not double back, but states that it is naturally the twistiest thing imaginable and "that the path from aerial to earth via the set is itself a good protection", also "the

jarring of static in the phones is a proof of efficiency." He also remarks that there is no evidence of a house having been struck through having an aerial installed. This statement gets him nowhere and from here on and in his subsequent letters he twists nearly as much as his ally, the lightning, or to use another simile "flounders like a fish out of water." Mr. "Ion," when a house or aerial is STRUCK the evidence is destroyed.

A "lightning conductor" or "lightning arrester" does not attract lightning nor will it stop lightning, but it does form an easy path to earth for the layer of highly electrified air to discharge its superfluous "ions" (with apologies) with a minimum of damage to the apparatus. Perhaps both Mr. Taplin and "Ion" will also come to earth or they might prefer to settle their arguments at the Stadium. "I'm sure most amateurs would be interested spectators. Personally, I would not use a set while a near-by electrical storm is raging, apart from the discomfort of the noise in the "phones"—even with one of Mr. Taplin's lightning arresters installed. Yours etc.,

A. W. W. STEWART, M.I.E.E.

A Consulting Engineer.

### THAT VICTORIAN DIVISION.

(To the Editor)

Sir,—Somehow I like "Student" although he says I am silly and ignorant. There must be a link between us. For one thing he sticks up manfully enough (though forgetting to sign his name) for the officials now lying prostrate after my violent onslaught. He likes them better even than his own brother B.C.L's. and the Presidential shoes that of late so vigorously kicked him out of all voting-power and office-holding power in the Institute he does not wish to see or to lick on any other feet. Better the President you know, of course, than the President you don't know! Also he has a supreme contempt for all the Sections, his own included. Out of them all there can come no other President, Vices and other committees than those that at present adorn their respective offices. It is a poor Institute that can only sport one potential President, the only other alternative in "Student's" very humble opinion being "An Untrammelled Member." Of course "Student" here goes to extremes. There are plenty of nice kind Presidents in every Section to be had for the asking.

(Continued from page 9)

What about himself for instance? It is well known that a President has to give no reasons, only opinions and that is just what "Student" is fitted for. He doesn't explain why he likes the grading Scheme. He does not qualify the bludgeoning tactics that foisted it on the Sections. He expresses no regrets that some of our smartest young men and steadiest old supporters have withdrawn from the Institute suffering under a sense of slight and injustice. He even suggests that it would be as well for all the B.C.L.'s except perhaps himself to form a separate club and work for their own good. He gives the show away too plainly here, for of course that is what the heads of the Institute desire. They want to be an Institute of purely Experimental Transmitters and DX and short wave receivers, but of course a few B.C.L.'s come in handy when £S.D. is required and men of the type of "Student" who remain in the Institute for years without getting beyond the elementary stage afford them some slight justification for their contempt for the "mere B.C.L."—Yours sincerely,

AN UNTRAMMELLED MEMBER.

(To the Editor)

Dear Sir,—As a constant reader of your valuable paper, I would like to say a few words about the conduct of the amateurs. I thought that they had mutually agreed to close down while broadcasting was on, but evidently they have forgotten their agreement already. It is seldom that I can hear a programme without interruptions. One amateur is constantly transmitting Morse that completely blots out the broadcast programme. Listening to Morse, and the buzzing of generators is apt to become monotonous, especially when one can't understand Morse, but when it blots out an interesting programme, this is not only annoying but positively maddening and it is made more so because it could easily be rectified if the amateurs thought more of others and less about themselves. Sometimes I am forced to listen to jazz records interspersed with squeals and scratches which emanate either from the gramophone or the badly modulated transmitter. I paid an extortionate license fee to listen to musical talent, and not to weird sounds from would-be broadcasters. I think the amateurs should be forced to close down while real broadcasting is on, so as to give the ordinary radio fan a chance to hear something. Wishing your paper the success which it deserves.—Yours, etc.,

G. VINCENT.

(To the Editor)

Dear Sir,—Just a few comments on the "jumble of words" of your correspondent, C.B., in issue 13/2/25. In regard to his remarks re the General License Fee of 10/-, like thousands of others I am with him heart and soul, but after that, commend me if his ideas are not the absolute IT for one-eyed selfishness. He admits that wireless was a boon to him when he was "isolated" with sickness, yet a bit later on says that it is the 75 per cent.—we presume he means the man inside his 33 miles limit—that should be catered for. Is not the man in the country isolated more or less at all times, and the fact that he has to pay from £25 to £55 to buy an efficient B.C.L. set, and all through the summer has to listen to little else than heartbreaking crashes of static on an average of four nights a week makes him something out of the "average man" class in "C.B.'s" opinion. Too true he is, and if C.B. with his suggestion of dodging the law and breaking it, ever gets caught using his inside aerial without a license—well, here's one that will sleep more peacefully on the night that it is well and truly "stung" by the local P.M.—Yours etc.,

"COUNTRYMAN."

14/2/25.

(To the Editor)

Sir,—May I crave a little space in your up-to-the-minute journal? On page 23, column 2 of last week's, you mention that 3LO's wavelength is coming down to below 600 metres, and it will be a boon to all. No doubt it will be a boon to all. But what about the local manufacturers and radio workers? I believe there is also a scheme on foot to bring 2FC's wavelength down, and the new Queensland station is to work below 600 metres. What is going to become of the local manufacturers and men employed in the business? As soon as the wavelengths are down the market here will be flooded with neotroynes, and I have it on good authority that a 5-valve neotroynone can be landed here for something like £16 without accessories. Can the local manufacturers turn them out for this? I don't think so. I am writing only in the interests of the fitters and workers engaged in the manufacturing business. It seems to be a scheme of the big firms to make bigger profits and create unemployment.

Yours, etc.,

RADIO WORKER AND EXPERIMENTER.

(To the Editor)

Sir,—It is of interest that, apropos of my recently published article dealing with "Low Loss

(Continued on Page 26)

# An Improved Short Wave Receiver

By W. A. STEWART.

**D**URING the last few months I have constructed quite a number of short wave sets, but I can say that I have not built one that was really satisfactory. After quite a lot of delving in "Q.S.T." and a little experimenting, I built a set which is, in my opinion, the best to date. The average receiver of the standard three coil type has its limitations, namely, it is rather hard to control, will not work efficiently over a large band of waves, and is apt to be noisy. What I wanted was a receiver that—

Would cover all the wave bands from 20 to 250 metres;

Have few controls;

Have easy control over the oscillations;

Be quiet in operation.

What I got was oscillations which are readily controlled over the entire band of wavelengths from 20 metres to 250, or to any wavelength desired, depending on the size of coil used, quietness of operation, and only two controls. The circuit is quite a simple one, being a modification of the Hartley transmitting circuit, and employing capacity regeneration. The aerial is loosely coupled and untuned, the secondary coil having one tap. Both coils are interchangeable. The set has but two controls, and if C.W. sigs are being received this can be cut down to one con-

trol. It will be seen that the aerial coupling is fixed. The circuit is shown in Fig. 1, and no trouble should be experienced in hooking it up. Two valves are shown in the diagram, but, of course, one or three may be used if it is so desired. On my own set a variable grid condenser is used, but a .00025 fixed one will function quite O.K. I have found that a grid leak can be dispensed with, but that, of course, is a matter for experiment. With regard to the construction of the set itself, here is a list of the parts necessary:—

1 panel (bakelite or hard rubber), 15 x 6 x  $\frac{1}{2}$  inch.

1 baseboard, 15 x 9 x  $\frac{1}{2}$  inch.

2 .00025 variable condensers. (These should be preferably of the low loss type; but, of course, any good condenser can be used. A 13 or 11 plate is about the size.)

1 Bradleystat.

1 30-ohm rheostat.

2 standard sockets of good make (either porcelain or good bakelite).

1 audio transformer of good make.

1 fixed condenser, .00025.

1 piece of bakelite, 6 x 3 x  $\frac{1}{2}$  inch.

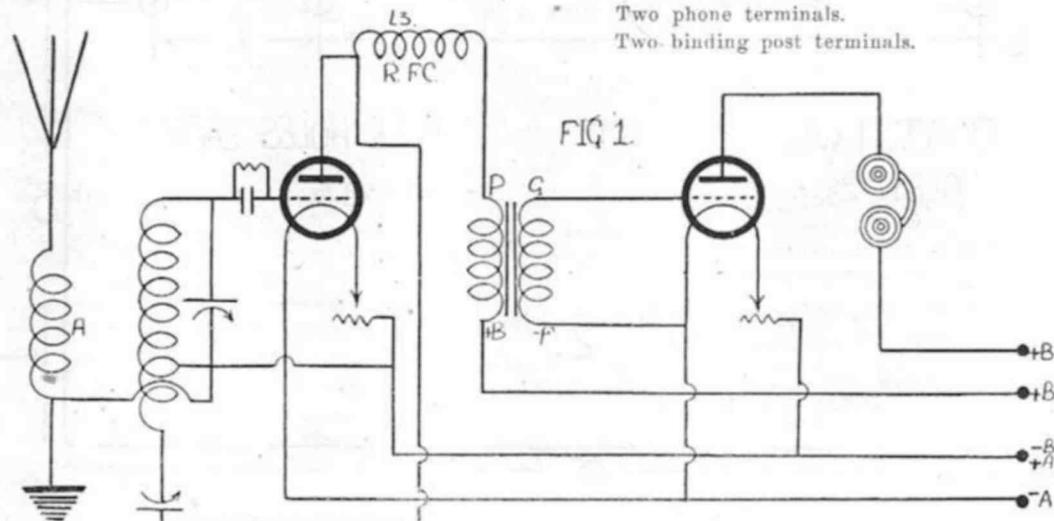
1 dozen mountings for spiderweb coils.

1 lb. 14 or 16 cot enamel wire.

$\frac{1}{2}$  lb. 22 d.c.c. wire.

Two phone terminals.

Two binding post terminals.



The Circuit. Curved arrow represents moving plates of condensers.

The panel layout is simplicity itself, and can be readily followed from the photograph, likewise the arrangement of the gear on the baseboard. There is one point, however, which needs some explanation, and that is the interchangeable feature of the coils. Take the piece of bakelite 6 x 3, and mark it off as shown in Fig. 2. In each of the holes along the top edge mount one of the spiderweb plugs as shown. You will find that the slot in the base of them will not fit over the bakelite, so for this reason it will be necessary to file half of each one way, so that there is metal only on one side of the panel. In mounting the first two plugs disregard the screws supplied, reamer out the holes, and mount them with the two binding posts; these are to be the aerial and earth terminals. When the plugs are in place, this panel is screwed to the back of the baseboard, as shown. Each of the coils is provided with similar plugs, and it will be seen that when they are plugged in they are at least 3 inches from anything else. It will be seen that the variable grid condenser is mounted next to this strip, but if a fixed condenser is used it can be secured directly to the grid terminal on the valve socket. Another thing of importance is the radio frequency choke (L3).

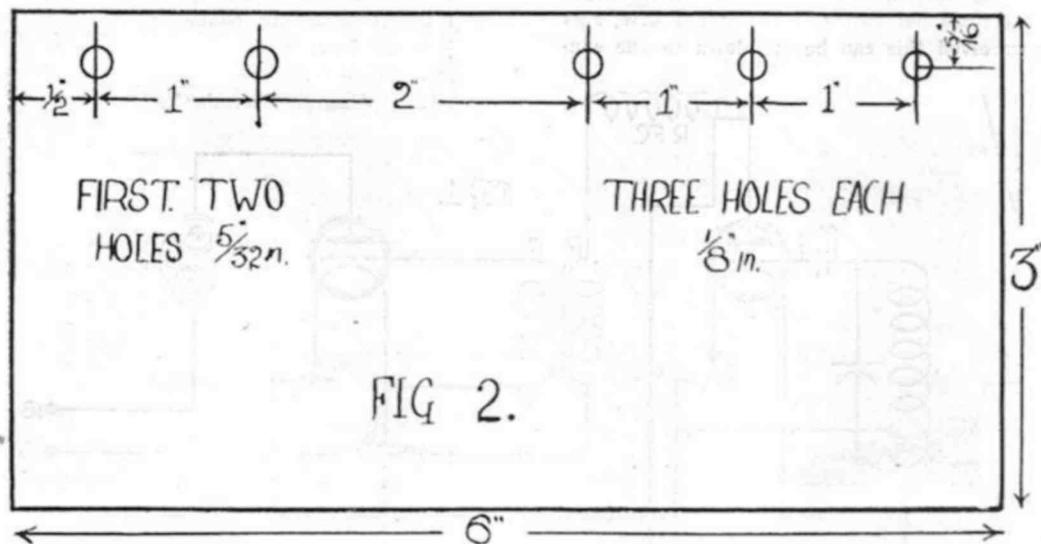
Some experimenters seem to think that chokes are things to steer clear of, but really they are nothing to be frightened of. The choke in this circuit was made by winding 75 turns of 22 d.c.c. wire round

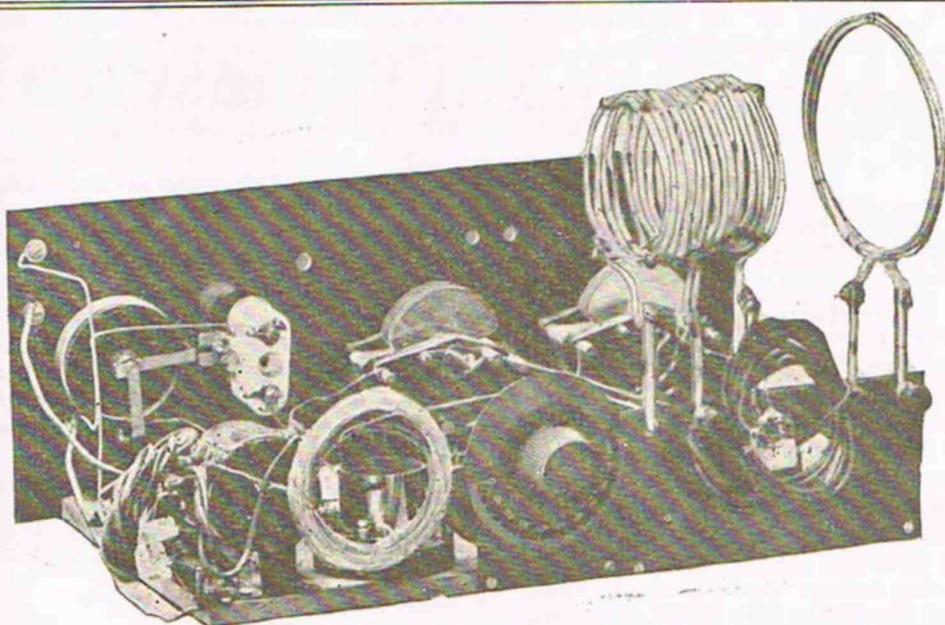
an ordinary drinking glass; it is then removed and tied with string, and, although nothing wonderful so far as appearance goes, it is all that is required and works admirably. This choke is provided to stop the radio frequency energy from getting back to the audio frequency circuit. It is connected as shown, between the plate of the valve and the terminal on the audio transformer marked P.

The aerial coil is composed of three turns of wire wound on a 4-inch former, carefully removed, and tied with string. It is fitted with plugs so as to be readily interchangeable. The secondary is wound on the basketweave fashion, as has been described many times. The instructions are, however, repeated. Describe on a piece of fairly thick wood a 4-inch circle, and round the circumference equally space 11 quarter-inch round dowels each about 5 inches long. Starting on any peg, the wire is wound in and out until the required number have been put on. I am at present experimenting with other types of coils, one of which is shown in the receiver. However, for simplicity and neatness the type just described is excellent. (A former for these coils was described some time ago.)

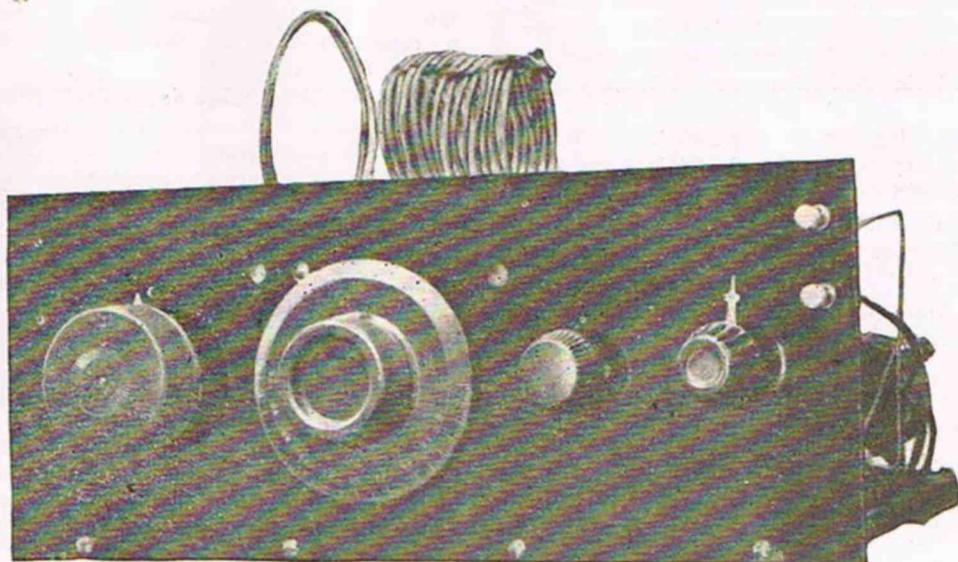
The reason for specifying "cot enamel" wire is this: D.C.C. wire has a habit of absorbing moisture, but if we use plain enamel wire the turns would be too close together; therefore, a combination of cotton and enamel gives improved insulation and spacing

(Continued on Page 14.)





The back view of the panel, showing the placing of the various parts. The coils are as follow:—Left, radio frequency; centre, secondary coil; right, aerial coil. The condenser dial shown is that of the variable grid condenser. Battery leads are bunched together.



Front panel view. The knob on the left is a univernier attached to the tuning condenser. The large knob and dial is the regeneration condenser.

at the same time. The enamel also prevents corrosion. The sizes of coils recommended are:—

#### Aerial, 3 Turns.

Secondary 7 turns tapped at 5, giving a 2 turn tickler. This coil has a wave range from 20 to 80 metres approximately, with an 11 plate condenser.

#### Aerial, 3 Turns.

Secondary 14 turns tapped at 10, giving a 4 turn tickler, covers from 70 to 130 metres approximately.

#### Aerial, 3 Turns.

Secondary 32 turns tapped at 24 giving, an 8 turn tickler, covers from 130 to 250 metres.

Other coils can be constructed for other waves, and particulars of these will be given in a further article. If the gear is laid out as shown, the wiring is simple and easy to follow. I have used 201A valves throughout, and have found that both detector and amplifier operate at their best on 45 volts on the plate. It will be noticed that the only terminals are the aerial and earth and the two phones. Instead of having battery terminals, simply solder pieces of flex to the various parts of the circuit and take them direct to the batteries themselves.

In operation the set is quite simple. The rheostats are turned up until the set oscillates; next set the condenser in the plate circuit until the set oscillates readily, and then carefully tune with the tuning condenser. If the station is sending phone, adjust the tuning condenser until you get his carrier loudest, and make final adjustments with the other condenser and the Bradleystat. The set is extremely quiet in operation, and the oscillations are particularly gradual and easy to control. Little trouble will be experienced in making this set work efficiently, but if anyone strikes any real trouble I will be pleased to answer any inquiries.

As a final word, solder all connections, and make all leads in the radio frequency circuit as direct as possible.

[*Editor's Note.—Nothing in the above article is intended as permission or encouragement to infringe any patents.*]

### LONG-DISTANCE SIGNALLING—AN INGENIOUS THEORY.

Apropos of the recent amateur transmission between England and New Zealand on low-powered short wavelengths, an interesting explanation has been advanced as to why the Antipodes are more favourably situated as regards reception from this country than other localities not so far distant. It is generally accepted that radiated ether waves are constrained to travel within a spherical shell ex-

tending from the upper surface of the earth to the lower limits of the so-called Heaviside layer. If it were not so, the signal energy would not follow the curvature of the earth, but would pass straight outwards and be lost in inter-stellar space.

Now, take the case of other disturbances originating in England and travelling southwards. In their travel they spread out laterally within the shell previously referred to. This process continues until at the Equator, where the available area is greatest, the dispersion reaches its maximum, and signal intensity is least. As the waves move still further southwards, owing to the curvature of the earth the available area diminishes, and the waves tend to crowd together, until at length they converge at a point on the earth's surface diametrically opposite to that at which they started, i.e., at the Antipodes. The amplitude of the signal energy here reaches a second maximum, limited, of course, by absorption losses en route, but sufficiently pronounced to give distinctly favourable reception.

### JAPANESE LAND STATION COMMUNICATES WITH AMERICA DIRECT WITH 1½ k.w. MARCONI VALVE TRANSMITTER.

**A**N interesting account of long distance wireless communication from the Chosi (Japan) wireless station, by means of a Marconi MC 1 type 1½ k.w. valve transmitter, is contained in a recent edition of the Japanese newspaper, "Asahi Shimbun."

The officer-in-charge of the Chosi Station seems to have been determined to get the utmost efficiency out of his set. Having communicated at night with the American steamer, "President Jefferson" over a distance of 3500 miles, and with the "President Wilson" in daylight at a distance of 2000 miles from Chosi he set enthusiastically to work to break these records and succeeded in communication with San Francisco (KFS) a distance of 4500 miles. The two stations exchanged greetings and the American station in replying used a 15 k.w. arc transmitter.

Although this achievement may be regarded as exceptional it is a great tribute to the efficiency of the Marconi valve transmitter, and a set similar to the one installed at the Chosi Station attracted great attention at an exhibition recently held in Tokio.

The Mc-I type of continuous wave valve transmitter was primarily designed for ship installations as an addition to the spark transmitting apparatus and was constructed to communicate between ships up to distances of 1500 miles.

# Aerials, Earths and Counterpoises

By "WIRELESS WEEKLY."

**S**UCH a lot depends upon an efficient aerial earth system, that the hints contained in this article should prove of practical assistance. If your aerial doesn't measure up to the standard shown here, we strongly suggest an early alteration.

Quite recently "Wireless Weekly's" transmitter was used on a good aerial and tuned counterpoise, where it showed a radiation of 1.7 amps. The same set was used on another aerial (which was considered a good one), but the maximum radiation here was only 1.4 amps. After making good a few faulty aerial connections, replacing insulators and tuning the counterpoise, the radiation was brought up again to 1.7 amps with only 12 watts input. It was these results which led us to write this article for the benefit of our readers.

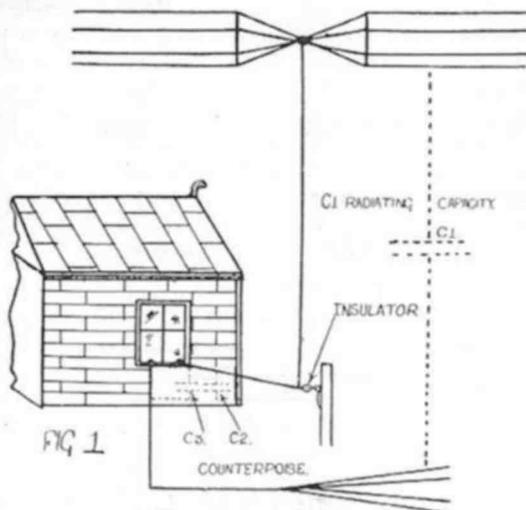
## The Wire Used for Aerials.

Since the high frequency currents used in the aerial flow only on the "skin" or surface of the conductor which carries them, it is better to use several thin wires insulated from one another rather than one thick one. The chief thing is to avoid using wire made of a magnetic material such as iron. A bare iron wire will, owing to its permeability, which causes the "skin effect" to be much more marked, present an apparently enormous resistance to the passage of high frequency currents, unless it is overlaid with a film of non-magnetic substance such as zinc. A well-galvanised iron or steel wire will do very well for an aerial, provided that the galvanising is not rusted off. Standard copper wire is very satisfactory, but owing to corroding effect the whole requires to be thoroughly cleaned or renewed once a year.

For this reason the stranded copper enamelled wire will be found the most satisfactory and, in the long run, the cheapest. It must be remembered, however, that this enamel must be carefully scraped away before any junction is made in the wire, for its insulation resistance is very high, indeed, in spite of the minute thickness of the enamel coating. After the junction has been made, the bared portion of the wire should be repainted with a suitable enamel or preserving paint. The importance of making all joints in the wire with the greatest possible care cannot be too much emphasised. Although a badly-made aerial may send nearly as well as will a well-made one, on account of the transmitting energy

being sufficient to "jump" any small break in the continuity of the conductor, yet when it comes to receiving, the minute currents will be unable to flow through any high resistance junction, and great loss of efficiency will ensue.

It is very much the best arrangement of aerial and feeders are made continuous throughout, the aerial wires being taken round a thimble and used to form the feeders. This arrangement is much the strongest and by far the most efficient, but is only practicable with the L shaped aerial. It is a troublesome job to make an aerial, therefore whenever a new aerial has to be put up it should be made as carefully and as strongly as possible, special attention being paid to the measurements of the wire. If these precautions are taken, the aerial when once up will remain up for a very long time without giv-

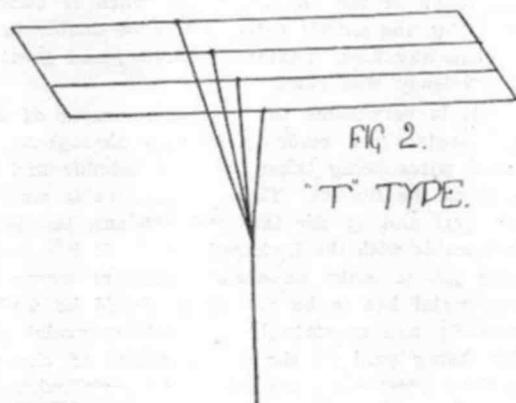


ing the slightest trouble. The wire should never be soldered at any place which is going to be in a state of tension, for the temper is spoiled by the application of heat, and the wire thereby rendered brittle. All sharp points, roughness, burrs, kinks, and sharp bends must be absolutely avoided, because they assist in the leakage of energy in the form of brushing.

## Insulation of an Aerial.

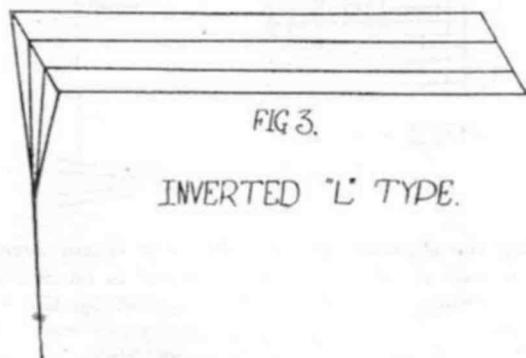
The insulation of an aerial is a very important matter. Defective insulation will account not only

for a considerable loss in efficiency when transmitting, but also for a very large loss in receiving. Ebonite, rubber, and all forms of vulcanised fibre are most unsatisfactory as insulators. The materials which have been found to endure the strain most satisfactorily are pure porcelain or glass, so that we strongly advise you to use either of those.



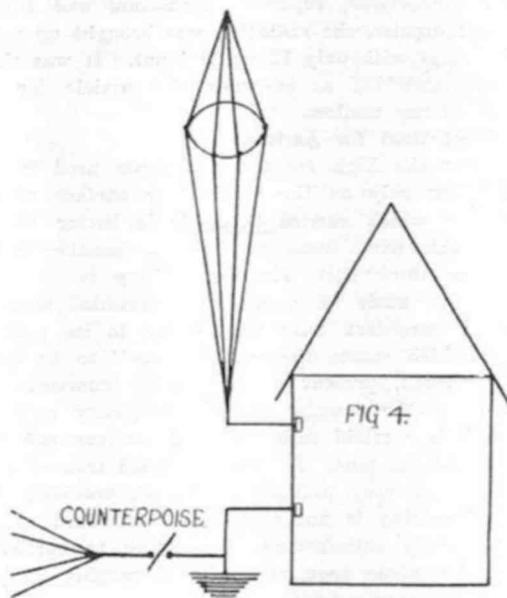
#### Capacity of Earth.

The first thing to remember in considering the insulation of any circuit destined to carry a high frequency current is that any and every sort of insulation does not insulate. That is to say, a piece of insulating material whose resistance to direct voltages may be millions of megohms, may be perfectly capable of transmitting the whole aerial current of a transmitter. Let us consider the case of the actual aerial. Fig. 1 represents a T aerial fed by a feeder which passes through small insulators situated at the bottom of the window. Here the



feeder is shown passing close to the house. When C2 is at all large it will carry a good proportion of the aerial current, which will accordingly not be available to charge up the radiating capacity shown dotted as C1. Remember that if several condensers are joined in parallel, current divides between them

according to their relative sizes. The most will, therefore, flow through the biggest condenser. C3 shows the capacity caused by the two feeders; one plate is the feeder aerial and the other the counterpoise lead. We learn from the above that the insulation of any circuit, therefore, which is intended to carry high frequency currents necessitates not only good dielectric strength, but also a very small capacity to neighbouring conductors. In the case before our notice here, the conductor we wish to insulate is the aerial wire itself, and the other conductors from which we wish to insulate it will consist of wire stays, the house itself and the feeder going to counterpoise. All these things may be taken as being more or less connected to earth, which forms one plate of the open oscillator, the wire itself forming the other plate. It follows, therefore, that the



clearance of the aerial from earthed objects must be as great as possible to avoid having large capacities to earth at points where it is not required. To prevent C3, keep the two insulators which lead in counterpoise and aerial as far apart as window will permit. To prevent C2, run feeder straight out from house, and not parallel with the wall. It must also be borne in mind that the capacity of an aerial will not remain constant unless the aerial be kept at a uniform height.

#### A Word About Radiation.

A large reading on the aerial ammeter on small power input is totally misleading. In nine cases out of ten where very large radiation is obtained with

small input, the aerial feeder is carelessly run, and causes a very large capacity to earth. If all stray capacities are, however, strictly avoided, the radiation is then the best guide to efficiency.

#### Design of Aerials.

The design of an aerial is based on the following considerations:—The aerial has two duties to perform, one to radiate energy and the other to receive it. While the same aerial may perform both duties, its action in the two cases differ, and generally the requirements for efficient radiation of energy do not correspond exactly with those for efficient reception. The design of the aerial will, therefore, depend upon whether it is to be used for transmitting and receiving, or for receiving only. An efficient aerial for transmitting is rather expensive to build, while for receiving purposes almost any kind of aerial, so long as connections are well-made and it is well-insulated, will prove fairly satisfactory. In other words, a good transmitting aerial will generally make an excellent receiving aerial, but the aerial which may give good results for receiving may be poor or well-nigh impossible for transmitting.

The T type gives the best all-round radiation, in our estimation. The inverted L type is marked directional for both transmitting and receiving. For instance, with a similar aerial to this 2FC is being received very well at Fiji, where other types of aerials failed.

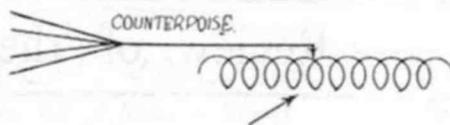
#### Number of Wires Used.

We are constantly receiving questions from our readers asking how many wires should be used in a receiving or transmitting aerial. This is a very difficult question to answer unless we know what wavelength it is desired to transmit or receive on. The reason why a number of wires are used for the roof of an aerial is to get a larger area, and so a larger capacity than would otherwise be the case. The calculation of the capacity of a wire of given length suspended at a given height above the earth is a rather complicated one. It would seem at first sight that if we doubled the number of overhead wires we should double the capacity, but this is not the case. Two wires hoisted up parallel to and at a considerable distance from each other will have a joint capacity of nearly twice that of a single wire, but as the wires approach each other the joint capacity becomes less, so that when the wires are within a foot of each other very little extra capacity is obtained by the use of the second wire. We see, therefore, that as a rule a few wires spaced fairly far apart are better than many wires near together, so far as the total capacity is concerned.

The multiplication of wires in an aerial, whether in the roof or feeder, has, however, another effect. Putting many wires in parallel with each other decreases the joint or total inductance of the aerial, and also its resistance to radio frequency currents. Fig. 4 shows a very good arrangement of aerial for short wave reception or transmission. Here



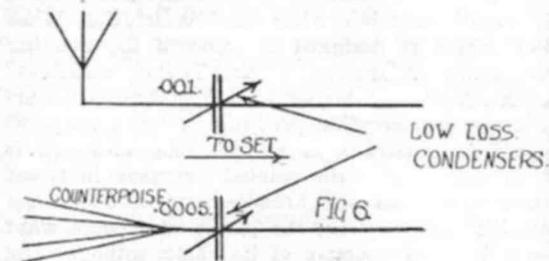
FIG 5



Counterpoise, 25 turns of 20 D.C.C. wire wound on a 3-inch former. Insulation should be bared to make good connection with slider.

the capacity from aerial to earth is at its minimum. **The Earth Connection.**

A good earth plays the most prominent part in making a station efficient for sending or receiving. Most people have conscientiously soldered their earth connection to the water surface, and are of the opinion that it cannot be improved. It is impossible to say whether or not you have a good earth until you have compared it with the counterpoise. The counterpoise will usually considerably reduce the resistance of the aerial earth system. At one particu-



lar station there is a 3 ohms difference between aerial and earth, and aerial and counterpoise.

#### Design and Construction of the Counterpoise.

The exact shape is not very important. A good plan, however, is to build the counterpoise exactly the same as the aerial, with the same number of wires. It should be placed as nearly under the antenna as possible at a height of about 10 feet, and should extend a few feet at either end. The best

quality insulators must, of course, be used as in the case of the aerial. If your main aerial is an L type, your counterpoise should be the same; likewise if a T type is used for main aerial, a T type should be used for counterpoise. To obtain the maximum efficiency with this counterpoise you will need to tune it, with the aid of a small loading coil. The following is a very good method of tuning your counterpoise without the aid of a wavemeter. Listen-in to some station working using main aerial and earth connection. Detune him until he is just audible in the phones. Now, without altering condenser dial,

disconnect main aerial and join up counterpoise. Next alter position of loading coil until the station is again just audible. For all practical purposes your counterpoise is now tuned to the same natural frequency as your aerial. Fig. 5 shows the method of tuning the counterpoise with a loading coil.

Fig. 6 shows a very excellent arrangement of aerial counterpoise system for transmitting or receiving on very short waves and using the average sized aerial. For the next two or three weeks we shall be featuring articles on transmitters, showing full constructional details.

## Review of the World of Wireless

AT the annual general meeting of the members of the Association for Developing Wireless in Australia, New Zealand and Fiji, recently held in Sydney, the President, Mr. George A. Taylor, who has just returned from a world tour, presented his report. The report stated that in Great Britain the number of broadcast listeners who have taken out licenses has reached one million, while in America it is estimated that there are at least three million homes using receivers, while in that country the sales of radio apparatus reached last year one hundred million pounds which was eight times greater than that of the previous year.

In Australia, however, the report points out that there are only 36,719 listening-in licenses, which is not satisfactory. No doubt the demand will rapidly develop when the Association takes action which is designed to improve the existing broadcasting conditions. Mr. Taylor considers that in the light of his experience in America, Europe and Asia, the main principle of "no monopoly" adopted in Australia is a wise one, although it can be overdone. He pointed out that in Great Britain where all the broadcasting is under the control of one concern, the public must take what is sent to it irrespective of its value, although the programmes to date have been widely appreciated. In Europe the chief difficulty in connection with broadcasting, Mr. Taylor says, is that there is no unanimity regarding the allocation of wavelengths, for instance Rome, Stockholm, and Lyons use the 470 metre wave, Amsterdam, Hague, and Helverson the 1,050 wave, while Geneva and Haeren use 1,100 metres which results in considerable interference, promising eventually to develop into a national nuisance.

The First World's peace greeting from the First World's Peace Congress was transmitted by

radio to Mr. Taylor by the President of the League of Nations, and this was successfully transmitted by seventeen British and Foreign stations on the evening of the closing of the Congress.

During the radio congress, at Geneva, the position of wireless in world development, the allocation of definite wavelengths to transmitting centres with special waves for experimental work such as the transmission of coloured photography, was widely discussed and it was pointed out that there was a necessity for a world congress to be formed of representatives of great Associations such as the Australian Association to meet in order to discuss the latest developments and possibilities of wireless and collaborate with regard to them so that overlapping of experiments and saving of time in wireless developments might be the result. With regard to the question of patent rights, Mr. Taylor stated in his report that the development of radio has not been keeping in step with its possibilities, as it is being handicapped the world over by having to carry claims for patent rights made by interested parties, which claims, in some instances when fought in the court, were found to be groundless. In other cases where threats have been made to take action on alleged interference of patent rights, the parties stated to have interfered with the alleged patent rights have simply gone ahead and no action has been taken. This gives an air of uncertainty which should be settled without delay in the best interests of radio developments and it has been one of the greatest handicaps that hamper the British Government in forwarding the scheme of the establishing of Imperial stations. Great Britain is no longer hesitating, but is developing powerful stations, the first now being erected at Rugby where an area of 900 acres is being covered with colossal steel

masts over 800ft. high supporting the aerials. Rugby will be the most powerful station in the world.

Referring to the Beam system, the report of Mr. Taylor states that there is no denying that it has been found efficient around the English Coast, but the question of its efficiency over long distances has yet to be proved which is why the British Government, notwithstanding remarks to the contrary made in a statement to the Australian press, is only permitting this station to be erected in England by the Marconi Company as an experiment at the latter company's risk. It is estimated that soon 25,000 experts will come into the field of research in wireless, and the report points out that at present all wireless operators on the shipping covered by the Marconi Company have to sign a document, clause 7 of which claims that every improvement, new invention or discovery in connection with or having any relation to any articles manufactured by any processes or methods whether patented or otherwise, employed by the Marconi Company which said applicants may discover, make, or become possessed of, shall become the property of the company employing them. That is to say, an efficient bar is placed on any research work on the part of the 25,000 operators signing such an agreement. The Society which has control of the work of such operators intends to take action and the conférence that will arise between it and the Marconi Company should satisfactorily settle clause 7 in order to give better encouragement to the operators for development work on a fair share system.

The report states that taking the long distance "beam" experiments, if the Marconi Company and Amalgamated Wireless of Australia can make a success of the long distance scheme, congratulations would come from all associated with radio development, but it must be understood that extravagant claims should not be made for any possibility in wireless unless such has been definitely proved, otherwise failures will be taken as a rebuff to wireless development generally.

In commenting upon broadcasting the report points out that for broadcasting to be a success it must satisfy the manufacturer, the supplier, and the general public. The public listener-in doesn't think that a cheap receiving set can spoil a good broadcasted item, nor that a good receiving set cannot make a poor broadcasted item good, so that what is broadcasted, has to be good. The general public is to be made aware that is you can spend good money on a good piano, so you can spend good money on a good receiving set. The companies transmitting should be properly recom-

pensed. There are two ways in which this recompense can be made; from the proper proportion of money received from licenses, and financial support from the Government. A further proposal for the support of broadcasting concerns is that a portion of the duty on wireless goods should be distributed between the broadcasting companies. This would not only appeal to the companies to transmit the best of programmes, but would also encourage wider application on the part of the public for licenses; as well as a wider demand for wireless sets, thus making up by increase of imports of wireless apparatus, the proportion of the tariff distributed to broadcasting companies; and to ensure the public obtaining the best possible programmes from various broadcasting stations one or more censors should be appointed to check all proposed programmes. Mr. Taylor's report includes the following suggestions concerning the division of at least three sub-committees of the new Executive. Mr. Taylor suggests that these sub-committees be formed immediately in order to get active so that complete schemes would be ready for the Association members.

1. Legal committee, covering the investigation of copyright charges, patent right fees and tariffs, the latter being mentioned, as it may be considered a source of Government support for assisting broadcasting.

2. Broadcasting committee, covering investigations of sources of support for our members who are particularly interested in broadcasting such as helping them to win avenues of entertainment, they may desire or strengthen their stand on any matter that concerns the development of wireless.

3. Development committee, covering the membership of Association (a) State, (b) Interstate, (c) Inter-dominion. The question of fees payable will certainly have to be discussed as the position of members paying fees into similar concerns should have some recognition, and some arrangement made for strengthening our Association without weakening other bodies that may be concerned with sections of electrical science other than radio.

#### AMBITIOUS PRIVATE RADIO STATION.

The Island of Anticosti, in the mouth of the St. Lawrence River, Canada, is being fitted with a wireless station under novel circumstances. The island, which is British, is wholly owned by M. Gaston Menier, the French chocolate manufacturer, whose object in installing wireless is to be able to "rule" his possession from his chateau in France.

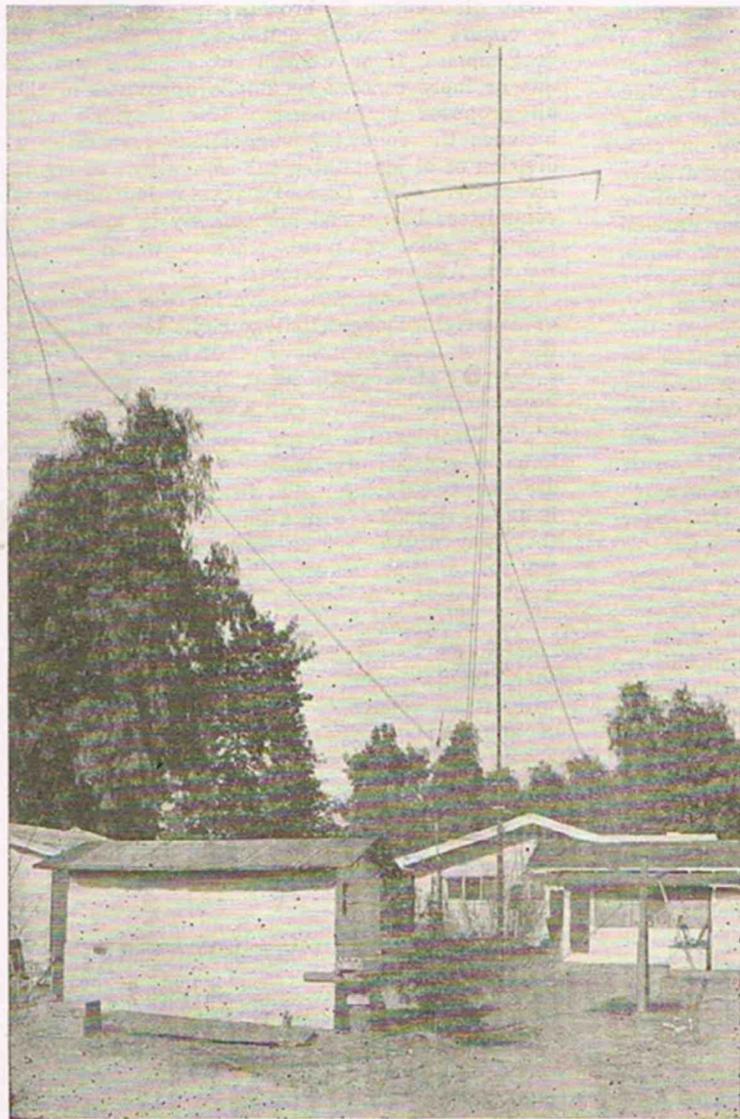
## THE FIRST AMERICAN.

**T**HIS is first and foremost a tribute to U6AHP, W. Williams, Pomona, Cal., as the first Yank to get two-way working with an Australian, and to A3BQ, the Aussie, who held the fort this end.

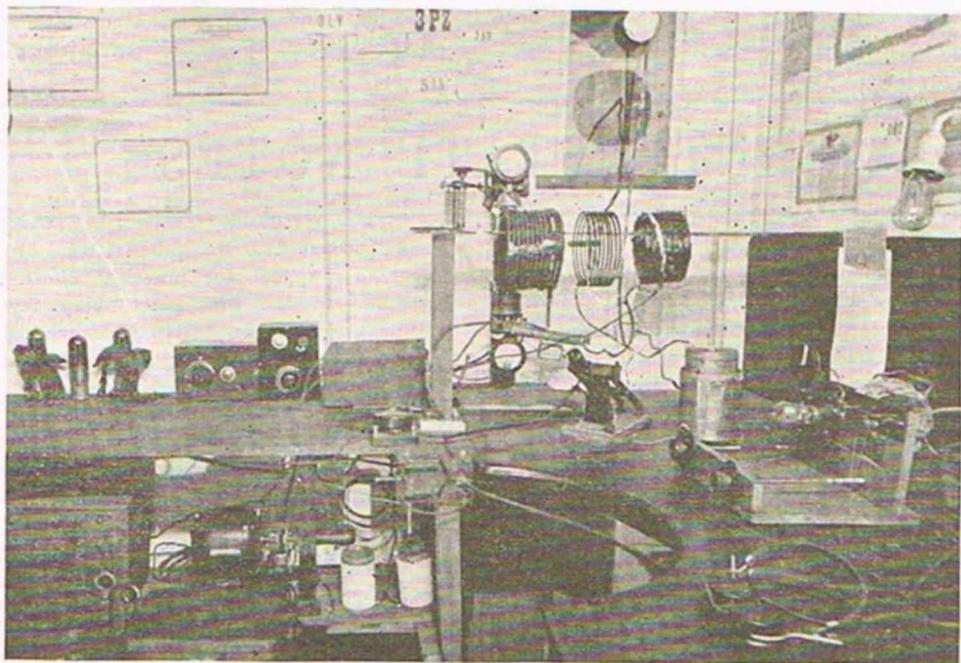
The occasion when these two first communed together via short waves is only a matter of weeks ago, yet, in the light of all that has happened since, it is already ancient. Still, as marking the final breaking down of the barrier of space between the United States and Australia by amateurs, it must go down in history as a very great achievement, and as the culmination of months and months of patient trying, with many a setback.

Pomona, a town with 20,000 inhabitants, is located about 36 miles east of Los Angeles, and here is situated the station of 6AHP, which is worked by the three operators shown in the photograph facing this page. The aerial is 70 feet long from set to insulators, slanting on an 80 degree angle and pointing north. No. 10 bare copper is used for aerial wires, and the insulators are of plate glass 4 ft. long; 12 bare copper is used in the counterpoise, which is 150 ft. long, 60 ft. wide, and 10 ft. high. The 3-coil Meissner circuit is used, the aerial inductance comprising half-inch copper strip edgewise wound, all inductances being in helix form and coils mounted on plate glass strip. Aerial and counterpoise lead-ins are brought through holes in plate glass window. For a series condenser, two tin cans mounted on a glass rod are used, and its maximum capacity equals that of the double-spaced variable, with plates all out at minimum. Electrolytic rectifiers are used, and a UV204 250-watt tube with an input somewhere near 700 watts. Aerial ammeter reading on high power varies from 3 to 4 amps. Sigs from 6AHP have been reported from India, Argentina, England, Alaska, Mexico, and, of course, Aussie. It is very interesting to note that the Australian and New Zealand signals are received through a bad buzz from power leaks and so forth, and this has been a

(Continued on Page 22.)



*The 75 ft. stick and buildings at U6AHP.*



Interior view of U6AHP. Note the two "toobs" draped in black. The low loss on the right looks like an old friend.



The three operators at U6AHP. Reading from left to right: C. Fitch, Bill Williams (chief and owner), and H. Ziegler.

(Continued from page 20)

severe handicap in DX work, much of which has been spoilt. The receiver is of the low loss type, using

a 3-plate condenser, with a small thin piece of glass for insulation, and a UV201A is the only valve used.

## INTERSTATE NOTES

### VICTORIA.

#### Advertising and the Institute.

AT the monthly dinner of the Institute, to which some of us were inveigled under the impression that Major Conder was to be present and offer a few remarks on 3LO, there were present quite a score. In place of the Major, however, up rose the Advertising Manager of the Victorian Railways and delivered an interesting address on "Poster Advertising." What this has to do with wireless will be seen when we add that Mr. Masters, the organising secretary of the Institute, in moving a vote of thanks to the after-dinner orator, mentioned that there is to be a Wireless Exhibition next May, and that it is to be advertised. Visions of a Reso train equipped with wireless for the backblocks and an Institute official presiding over its orgies rise before the dazzled eye, with Mr. Clapp's last slogan over the Swanston Street entrance: "If on wireless you go nap, never mind the thunder, Clapp!"

Among other information imparted by the genial Ad-man it was gathered that the public knows nothing about Art, and that if we see a poster on the railways that we don't like, we mustn't tear it down, but humbly gaze upon it in the fond assurance that we are being educated up to its higher level by the wise billsticker who pasted it there. One was irresistibly reminded of that immortal Duchess who is reputed to have remarked:

"I speak severely to my boy  
And whip him when he sneezes,  
For he could thoroughly enjoy  
The pepper if he pleases."

Next time Mr. Clapp sprinkles the pepper of his advertising all over our most exclusive railway carriages, let us reflect that we could thoroughly enjoy it if we were all educated up to the high standard of the Railway Commissioners in Art.

#### Esperanto and the Institute.

Mr. Rawson, the enthusiastic secretary of the Esperanto Club, addressed the All-Clubs' meeting of the Wireless Institute, Victorian Division, on February 17, before an audience of about two dozen. His exposition of Esperanto was most interesting and his advocacy of it as a wireless auxiliary language would have been convincing to any audience with

more pronounced DX proclivities. As it was, however, his appeal for practical effort fell on stony ground. In the first place, very few transmitters were present. Secondly, those who were confining their range to strictly English-speaking countries, and their knowledge of the rest of the world may be gauged by the assertion made by one of them that the majority of radio experimenters in the world reside in Amurrika and talk English. What a majority has to do with this sort of question is not really obvious, however. The true experimenter surely reaches out after the minority, and would rather hear Czecho-Slovakia than even 60GW, on whom all DX infants cut their first teeth. Yet another rock on which Mr. Rawson struck was the fact that the All-Clubs' meeting, although composed of apparently intelligent members, is not an initiatory body, and the president had to confess that any appeal to those present was quite ultra vires. Only the council is competent to deal with such a matter. This seemed to puzzle Mr. Rawson, as it puzzles others, but the politics of wireless abounds in such perplexities. The lecture itself, of course, was a model of elucidation. Mr. Rawson is a master of his subject, as well as its devout lover. After telling us the sixteen rules that never have an exception, and of the ingenious system of word-building that lifts Esperanto up on to a high pedestal even among the national languages, Mr. Rawson then gave a rapid outline of his very interesting travels through most of the countries of Europe, where he lived in the homes of the people themselves and by means of Esperanto not only made himself understood, but was able to address delegates from 27 countries with ease and intelligibility, his only trouble—very soon overcome—being that at first he mispronounced his o's and a's. Finally he stressed the need for some definite study of Esperanto by the Institute, in order to link up with foreign wireless stations, and after some discussion it was left an open matter for the council.

### SOUTH AUSTRALIA.

THE transmissions from 5CL, Central Broadcasters Limited, Adelaide, have shown a marked improvement lately, but a better class of artist is badly needed. Their bedtime stories are some-

thing of the comic opera line. THE two principals, King Electron and Uncle Radio, try to amuse the youngsters by bantering one another. Such arguments as to whether King Electron drank his tea from a dipper, proffered toffee to pies, or was the hungriest thing out of gaol are very amusing to some children, no doubt, but it is not quite the thing for an A class broadcasting station.

So far the choice of a site for the station which is to be erected by this company has not been made, but Mr. J. L. Brown (of Melbourne), who has been appointed manager, and who is at present in Adelaide, will probably arrive at a decision before he returns to Melbourne.

5 Don N. continues with transmissions of very good quality for which he is known all over Australia. Although his output is stated to be only 35 watts, his transmissions have enormous punch. He is practically modulating the whole of his carrier wave; in fact, his music seems to come in stronger, if possible, than does his carrier-wave.

On Saturday evening his transmission of pianola music and gramophone items was as good as it is possible to get them, but the evening's entertainment was marred by the announcer, who seemed to be afraid to speak into the microphone, and one had to listen very attentively to be able to hear what was said. This was rather annoying, and tends to spoil what would otherwise be a very good evening's entertainment.

5BS, Bedford Park, was heard transmitting on Sunday morning, and very good it was, too. They had on some very fine records, which came through very clearly. When closing down for the morning the announcer stated that they would start up again at 2 o'clock in the afternoon, but I did not hear them again.

Short wave receivers are being built by the score in Adelaide, and logging Yanks is the favourite pastime. Quite a number of American hams have already been heard.

The weather conditions in South Australia have during the last three weeks been very bad. Static has been so bad that it has been practically useless listening for the interstate broadcasting stations. This is the worst period that I can remember having for many years. It is only on an occasional evening that one can get on to 2FC, 3LO, or 6WF. If only those stations would bring down their wavelength we might be able to enjoy their concerts more often, as often when it is useless listening to the broadcasting stations, owing to the static, the interstate experimenters can be heard quite clearly.

#### THE WIRELESS INSTITUTE TO DEMONSTRATE SHORT WAVE APPARATUS.

AT the next meeting of the S.A. Division of the Wireless Institute, which will be held in the Adelaide University on Wednesday, March 4th, a demonstration with short wave apparatus will be given by Messrs. H. A. Kauper and H. L. Austin.

During the evening an attempt will be made to pick up interstate transmissions.

A very interesting evening's entertainment, which should also be very instructive, is promised.

#### COASTAL RADIO SERVICE.

##### Staff Changes.

Mr. H. F. Coffey, officer in charge, Thursday Island Radio, has been transferred to Brisbane Radio on completion of his term of tropical service.

Mr. J. Leslie, officer in charge, Brisbane Radio, has been transferred to Thursday Island Radio.

Mr. J. H. Leverett, Hobart Radio, has been transferred to King Island Radio, as officer in charge.

Mr. F. J. Gowlett, radiotelegraphist, King Island Radio, has been transferred to Brisbane Radio.

Mr. C. J. Lennon, radiotelegraphist, Townsville Radio, has been transferred to Adelaide Radio on completion of term of tropical service.

Mr. E. J. O'Donnell, radiotelegraphist, Adelaide Radio, has been transferred to Cooktown.

Mr. G. H. Smith, radiotelegraphist, Cooktown Radio, has been transferred to Brisbane Radio on completion of tropical service.

#### "THE XAVERIAN."

WE are indebted to the publishers, Messrs. Varleys Pty., Ltd., Melbourne, for a copy of "The Xaverian," the magazine of Xavier College, Kew, Vic. This is an extremely high-grade production, and easily outdistances others of the same type produced in Sydney—that is, those that we have seen.

Amongst a host of interesting articles and comments is a special wireless section containing some very interesting articles. Of especial interest is "Commercial Wireless," by Geoff Brennan (we seem to remember that name), who shows an intimate knowledge of his subject. Other articles are "The Value of Crystal Sets," by W. Hay; "The Broadcasting Policy in Australia Compared with Other Countries," by W. O'Neal; "What Broadcasting Means to Those in Isolation," by K. Loftus-Hills; and "A Survey of Wireless," by "Loquacious Laddie." These writers evince a knowledge of their subjects which is somewhat surprising, and the articles combine some of the most interesting reading we have had for some months.

# Wiles' Wonder

56—62 GOULBURN ST., (1 door from Pitt St.)

384 PITT ST., (Near Goulburn Street.)

23 PITT STREET, Near CIRCULAR QUAY

# and Electric

CONSTRUCT YOUR OWN BROADCAST RECEIVING SET. WE SUPPLY C

Have the pleasure of making your own Radio Set in a few hours with a few tools, a few pliers and soldering iron, and spend a thoroughly enjoyable afternoon.

No EXPERIENCE necessary. No SPECIAL

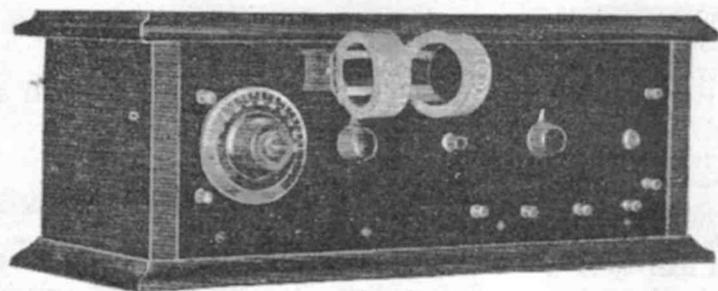


Illustration of 3 Valve Set constructed from advertised parts.

Complete parts for 1 Valve  
Maple Cabinet for 1 Valve  
Complete parts for 2 Valve  
Maple Cabinet for 2 Valve  
Complete parts for 3 Valve  
Maple Cabinet for 3 Valve  
Complete parts for 4 Valve  
Maple Cabinet for 4 Valve

Only the best quality parts are supplied including Bakelite components, which include Dry Cell Valves, Batteries, Headphones, Soldering Iron, and operating which are so clear,

MAIL ORDER DEPT., 60 GOULBURN ST., SYDNEY

# Successful Wireless

## Radio Stores

SAME QUALITY.  
SAME PRICES.  
SAME SERVICE.

Established  
20 Years

COMPLETE INSTRUCTIONS AND ADVICE WITH EACH ORDER.

A few hours of your spare time, with a screw driver,  
an enjoyable evening putting together these famous sets.  
NO TOOLS or DRILLING REQUIRED.

Radio Set . . .	£6	8	1
Radio Set . . .	1	5	0
Radio Set . . .	9	17	4
Radio Set . . .	1	5	0
Radio Set . . .	12	13	4
Radio Set . . .	1	10	0
Radio Set . . .	17	3	3
Radio Set . . .	2	5	0

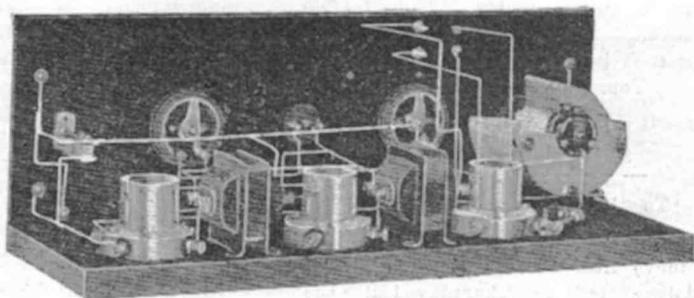


Illustration of Wiring of 3 Valve Set constructed from advertised parts.

elite panel drilled and Engraved. The accessories  
including Iron, Solder, Screws and instructions for assembling  
it, that you cannot go wrong.

Complete Stocks of all Radio Supplies stocked. Write for Price  
List R5.

Apparatus," a local manufacturer has placed on the market a condenser embodying the suggestions made therein. He has metal end plates connected to the rotor plates, and has one more rotor plate than there are fixed ones. These two modifications are, of course, for the purpose of giving effective shielding. I notice also that a dealer is exhibiting in his window "Low loss coils" embodying my suggestions. He is using circular turns instead of "zigzagging" them, and has air spaced them. The coils are wound without formers,; as they are short wave coils, having very few turns, he is able to use a single layer only, so my remarks re turns per layer and number of layers do not apply.

Yours, etc.,

E. JOSEPH.

-----  
To the Editor.

Dear Sir,—Last week I wrote to you asking you to publish a letter in your correspondence column. The gist of that letter was that in spite of trying numerous circuits, and altering the aerial in various ways, I got the same result as all listeners-in in Inverell, i.e., 2BL comes in about one-third to one-quarter louder than 2FC. In "Wireless Weekly," dated 3/2/25, page 8, "C.B." writes, "Fainter from Farmer's at Camden." Again I would ask if this is the usual experience in N.S.W.?

Yours, etc.,

LEONARD L. SNOW.

Inverell.

-----  
To the Editor.

Sir,—Having heard the announcement that Broadcasters (Sydney) Ltd. were giving a "Radio" concert at the Adyar Hall on Thursday last, the 19th inst., for the purpose of allowing the B.C.L. to see how a broadcasting studio is run, I thought I would tune in and listen to them. My sympathies go out to each and every B.C.L. who tuned in 2BL on that occasion. The audience at the hall may have enjoyed the concert; the unseen audience certainly did not. On occasions the wavelength varied 10 to 20 metres from normal. The modulation varied so that results varied from a whisper to a shout more rapidly than I can write it, and the programme was throughout punctuated with a series of thumps, howls, and whistles, which made it impossible to follow an item. There was also a persistent noise like running machinery at least as loud as the voices and music. If this is how broadcasting is to be conducted, and if—as stated in the newspapers recently—our broadcasting compares favourably with that of other parts of the world, then the sooner we stop

the better. No wonder so many people object to paying 35/- for a license. I, myself, got fed up at half-time and tried 2FC for a change. I found that 2BL'S defects were not due to static, because 2FC easily stood four-valve amplification. I would suggest that those in charge of 2BL cease experimenting or making adjustments during the scheduled transmitting periods.

Yours, etc.,

"B.C.L."

-----  
To the Editor.

Dear Sir,—In reading Mr. E. Joseph's article on "Static" in "Wireless Weekly" of 20th February, I noticed that he states that there appears to be no record of serious effects to an operator due to lightning discharging through the aerial. I can state one case that occurred whilst I was stationed as mechanic at VZK (Morote, N. Guinea). The O.T.C. was on watch when the aerial was struck by lightning, the result being that he was dazed for fully ten minutes. I might also state that at the time there was very little indication of lightning likely to occur. The same operator, whilst stationed at VIF (Woodlark Island), saw the results of lightning striking the aerial. When the relief operator went on watch at 6 a.m. he found the other operator on the floor, unconscious, and it was some time before he was brought round. Every indication pointed to it being the result of lightning. Trusting that this information may be of some use to you.

Yours, etc.,

"VZK."

Harrow Road, Kogarah.

-----  
(To the Editor)

Sir,—There were two letters in your last issue which are worthy of note. But how greatly they differ in tone! Both are appeals, one is reasonable, but the other is of the "cave man" type. The first over 2CM's name obtains my hearty endorsement, but the other I feel calls for pretty strong comment. I refer to the one by 2JR. Since this letter has appeared and since a certain Morse (?) conversation one night last week, a lot of people have been asking "who is 2JR?" First and foremost, requests of any description expressed in a sarcastic tone never bring any response, but only a greater desire to ignore that request. But there are several points in 2JR's letter which must be commented on. 1st: By what right does 2JR criticise the experimenter? I have not heard of any "pioneering" work done by him. Need I remind

(Continued on page 34)

# MONEY SAVED

## REPAIRS.

Do not throw away those damaged accessories. We specialise in all kinds of repair work. Headphones and loud speakers rewound, condensers adjusted, etc. **Bring that nasty job to us.**

## REWIRING.

If you are not getting the results with your set that you should, consult us. We have rewired and adjusted hundreds of sets of all makes.

## ENGRAVING.

Engraving gives that professional touch to an otherwise amateurish set. It looks ever so much neater, and will provoke the admiration of your friends. We have an up-to-date plant. The cost is small. It is worth while.

LET US QUOTE YOU.

## BURGIN ELECTRIC CO. LTD.

WIRELESS ENGINEERS AND SUPPLIERS

340 KENT STREET—turn to the left out of King Street,———SYDNEY

Telephones: City 141, 9886, 1874, M 3096.

Telegrams: "Burgineco" Sydney.

## Columbia 22½ Volt "B" Battery No. 4766



**E**SPECIALLY adapted for use with soft detector tubes. Large size cells make it the most economical. Six Fahnestock spring clip connectors with a range of 16½ to 22½ volts.

Use only

## Columbia Radio Batteries

Made by the manufacturers of the Famous Columbia Dry Cell

## New Type of H.T. and L.T. Battery.

**L**IT BROTHERS, one of the best known and most progressive broadcasting stations in the east of the United States, has embraced a new innovation in broadcasting by the installation of a Philco diamond grid storage battery unit, which furnishes the entire power for the operation of their broadcasting station. This innovation was resorted to assure the public of the finest broadcasting reception that is possible to obtain.

Broadcasting stations have almost universally used a motor generator for their transmitter tube requirements, not because the power is more suitable, but because the motor generator takes less space and is cheaper to buy than the proper storage battery equipment.

"Smooth, constant, and noiseless current" is required for efficient broadcasting. Philco diamond grid batteries solved the problem for station WDAR. They eliminate absolutely the most disagreeable feature of radio reception—the noisy commutator hum—caused by the making and breaking of the contact as the brushes pass over the commutator segments, which is not only distinctly heard between the words of speeches and musical numbers, but often blurs reception to such an extent that it is inaudible.

The direct current delivered by the generator to the transmitter tubes, if represented by a line, would be a line made up of small ripples, whereas the direct current delivered by the Philco storage battery is free of ripples and can be represented by an absolutely straight line. The filters designed to absorb or suppress the commutator hum of a motor generator do not overcome this objectionable feature.

Philco batteries, when used as the power unit in broadcasting, do eliminate this hum and all other extraneous noises except static and studio noises.

The Philco diamond grid battery used for the plate circuit of the main transmitter tubes is of particular interest, as it is a new and improved 1760-volt battery made up of 880 cells made up on the improved type of Philco battery, that has only recently been placed on the market. The cells are made up in twin-compartment pressed glass containers, which are mounted in supporting trays in 20-volt units. The glass containers have high and low water-level lines moulded on the sides, so that a glance will tell whether or not cells are in need of water. The cells are closed and tightly sealed with a new form of cover, having a spray-proof filler-vent

designed to condense and feed back into the cell any spray that tends to pass out during charging.

One cell in each 10-cell tray unit is provided with a visible built-in charge indicator of a new type, and serves as a pilot cell. This charge indicator, which does away with the usually sloppy hydrometer, consists of two balls of different densities, enclosed in a hard rubber cage. These balls rise and fall as the specific gravity of the electrolyte solution changes during charge and discharge of the battery.

Philco batteries of this new type, with the built-in charge indicator and other features mentioned above, are also made for receiving purposes in 2, 4, and 6 volt types. Due to the spray-proof construction, it is perfectly safe to use this type of battery inside a fine cabinet-type radio receiver.

The "A" battery for the heating of the filaments of the oscillator and modulator tubes consists of twenty large cells of the Philco diamond grid "PMS" type. This battery is made up in heavy rubber jars with thick plates and separators. The same type of battery has been used extensively for ship wireless and other marine users, as well as for auxiliary power and emergency purposes in the large electric light and power stations.

### VISITORS TO THE UNITED DISTRIBUTORS LTD. 72 Clarence Street, Sydney.

**M**R. ANDREWS, of Andrews' Photographic Stores, The Arcade, 42 Rundle Street, Adelaide, S.A., who is at present taking a vacation in N.S.W., was an interested visitor to the United Distributors during the week.

Mr. Andrews, who is accompanied by Mrs. Andrews, is staying at the Grand Central Hotel.

He reports that the wireless trade is improving in Adelaide, but is still more or less hampered by bad broadcasting conditions. He is, however, very optimistic as to the future of the business, even granting the bad broadcasting conditions, as a very considerable public interest is still displayed.

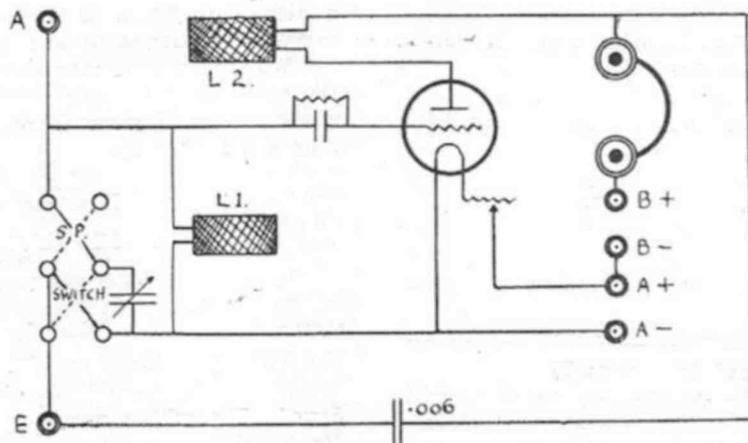
He brings interesting news from Mr. Higgs, who manages the United Distributors Ltd., Adelaide office, and speaks very highly of the esteem in which this capable manager is held. The convenience of a large wholesale house carrying stocks in Adelaide is much appreciated by the dealers.

Mr. Andrews states that he has no difficulty in bringing in Sydney stations on the United Home Assembly Sets.

After looking over our samples of new season's products and witnessing the manufacture of the new

(Continued on Page 30)

## THIS WEEK ——— HERE'S CIRCUIT No. 2

*"You have my word for it."*

CIRCUIT No. 2.

Here is a most interesting Single Valve Receiver, a modified 2 levelling circuit, differing from the original inasmuch as only one .006 fixed condenser is used. This, as may be seen, is taken from the plate of the valve to the earth terminal. If this condenser is dispensed with the circuit becomes the ordinary P1.

In operation this receiver will be found somewhat critical, but it would be worth while persevering with, as wonderful signal strength will result.

## Parts required are:

1 Panel, 10 x 8 x 1/8 . . . . .	6/6
1 2-Coil Holder (Melway) . . . . .	7/6
1 .001 Variable Condenser (Master) and Dial . . . . .	27/-
1 Wetless Grid Condenser and Grid Leak . . . . .	4/-
1 Valve Socket, Nutmeg . . . . .	3/6
8 Terminals . . . . .	2/8
1 .006 Wetless Condenser . . . . .	2/6

£2/13/8

We suggest the use of a De Forest DV3 Dry Cell Valve which will function admirably on this circuit. This Valve sells at 30/-. Prices for A and B batteries are respectively 6/- and 12/6. Prices quoted are for apparatus of the highest quality. There are of course alternative prices of apparatus which are priced much lower.

*E. R. Cullen*

Late A.I.F.

RADIO &amp; ELECTRICAL STORE,

96 BATHURST ST.

Phones: City 869 &amp; 2596.

1925 De Luxe Radiobox, which he is most interested in, Mr. and Mrs. Andrews left for a short stay on the Hawkesbury River. Making the most of a very short vacation, they intend making a visit to the Blue Mountains and other spots of beauty.

Other visitors from the country to the United Distributors Ltd. showrooms this week were:

Mr. J. P. Henry, jun., Uralla Electric Supply, Uralla.

Mr. A. W. Lee, Port Kembla Garage, Engineering and Supply Co., Port Kembla.

Mr. Jones, Kiama Motor Works, Kiama.

Mr. J. Meagher, Messrs. John Meagher and Co., Forbes.

Mr. H. L. Hawken, Bellambi.

Mr. A. Hand, Charles Street, Lawson.

Mr. J. Pall, Springwood.

Mr. Reynolds, Young.

Mr. Murphy, Messrs. W. Dunn and Co., Mayfield, Newcastle.

(Continued from page 7)

will be on the air very shortly, and the others will follow in the not far distant future. This development gives amateur wireless in this district a distinct and progressive step forward, and we can claim some credit in this advancement inasmuch that the whole of these prospective operators are members of the Illawara Radio Club.

#### Last Meeting.

The last meeting held at Club-room, on February 24th, drew another good attendance. After formal business the Secretary reported on the activities of the Delegates' Council, and also reported progress in the fitting out of the practical department, which showed that the work is going rapidly ahead. The feature of the meeting was a lecture by Mr. S. Atkinson, on "Tuning Elements." He explained the development from early beginnings in coil design and construction, and the various styles of winding and construction which had evolved from time to time with the object of producing a coil with a high inductance factor and low distributed capacity, and the comparative efficiency of various types of coils, many of which were on exhibition, was described. The subject was an interesting one and many questions resulted. A vote of thanks was accorded Mr. Atkinson at the conclusion.

#### Next Meeting—Special Lecture.

Attention of members is called to the feature at next meeting, to be held at club-room, 75 Montgomery Street, Kogarah, on Tuesday, 10th March at 8 p.m., when Mr. G. Maxwell Cutts (of Croydon Radio Club) will deliver a lecture on "Low

Power Transmitters," under the Wireless Institute's Lecture Scheme. This subject should be an intensely interesting one, not only to transmitters but to members generally, and all members are particularly requested to roll-up, not only on account of the information which is to be gained, but also as a matter of courtesy to our visiting lecturer, Mr. Cutts. Now don't forget, fellows, and bring a friend with you, as a cordial welcome is extended to anyone interested to attend.

We hope all our members have seen and noted the club's lecture roster which appeared with our last report in Wireless Weekly. If not, get your copy and read it up.

W. D. GRAHAM,  
Hon. Sec. and Publicity Officer.

#### RAILWAY AND TRAMWAY RADIO ASSOCIATION.\*

The Railway and Tramway Radio Association held its usual weekly meeting in the club room at the Railway Institute on 25th February, 1925. A lecture on "Rectifiers" was delivered by Mr. Percy Sewell. The subject was very clearly explained by Mr. Sewell, and this was greatly appreciated by his listeners. At the conclusion of the lecture a vote of thanks was accorded the lecturer. Much useful information was obtained by the members. On Wednesday, March 11th, 1925, Mr. Minahan will speak on "General Hints for the Construction of Wireless Receivers." Information regarding the association's activities will be welcomed by the hon. secretary, Mr. W. L. Carter, c/o the Solicitor for Railways, 139 Phillip Street, Sydney.

C. H. CLARK,  
Publicity Officer.

#### BRIGHTON SECTION OF THE WIRELESS INSTITUTE OF AUSTRALIA

Owing to such a large number of persons desiring to become members of the above club at the first meeting held in the club's new spacious club rooms at the Higinbotham Hall, Brighton Library Buildings, Bay Street North, Brighton, the seating accommodation was found most inadequate; the committee is arranging for further seats at the next meeting.

Many improvements have been effected to the new club rooms during the last fortnight the whole of the interior having been redecorated, a transmitting room and the secretary's office have been built.

A most interesting talk was given by the Hon. Secretary, Mr. W. Kerr, the subject being a detailed account of the 10 watt transmitter, a low

(Continued on page 32)

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(Continued from Page 30)

loss set, and a three valve receiver that the technical committee of the club are now building.

The Brighton Club will have at the next council meeting a new scheme in place of the present grading scheme as prepared by the central council of the Institute; it is thought that the present scheme will be very detrimental to the objects of the Institute, this being the reason for preparing an entirely new scheme.

Meetings of the club are held in the club room every Thursday night, when an excellent lecture is always given. Persons who are interested in membership should communicate with the Hon. Secretary, Mr. W. Kerr, at the club office, 241 Bay Street North, Brighton. X4861.

R. SURRIDGE, Publicity Officer.

#### WIRELESS SOCIETY OF NEWCASTLE.\*

Interest in the Wireless Society of Newcastle is still unabated.

At the society's rooms, Y.M.C.A. Buildings, King Street, Newcastle, on Wednesday night, 18th February, 1925, the president (Mr. L. T. Swain) delivered an interesting and much appreciated lec-

ture on inductances, dealing at some length with each class of inductance, including those of the "low loss" kind, the last-mentioned being especially interesting to amateurs who are installing "low loss" transmitters and receivers.

Mr. G. Seward, a member of the society, and a very keen experimenter, exhibited his partially completed "low loss" set, which was much admired by members.

The society's transmitter (wavelength 230 metres) is again in operation.

In order to keep pace with the times it is the society's intention to instal a new transmitter on the "low loss" principle to operate on low waves, when it is expected that the society's good record for DX work will be continued.

Persons who are genuinely interested in "wireless" and who desire to join the society are requested to communicate with the hon. secretary (Mr. S. Childs), 55 Ridge Street, Merewether.

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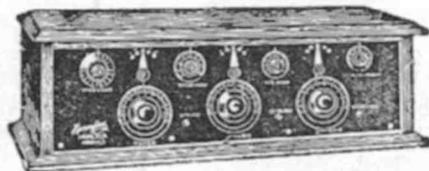
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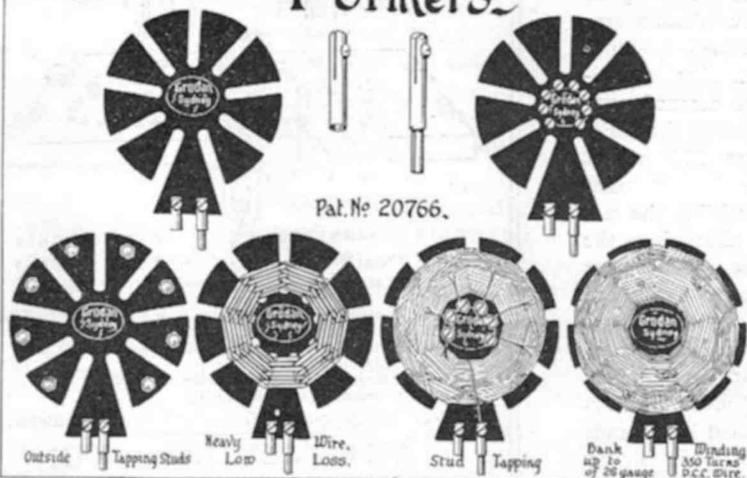
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(Continued from page 26)

him of the recent records established by "alleged" experimenters. One never heard until after those exploits, of any such work on the part of "professionals." Is 2JR aware that many of these "alleged" experimenters who have established these records are not electrical engineers or engineers of any description, but then experiments are to them hobbies—hobbies which have contributed something to science. If these men can do this work without the training obtained by the professionals, should not we have heard more from professional sources? One often wonders what would have resulted if these "alleged" experimenters had been professionals. If the experimenter has not been original he has certainly taken hold of those "crumbs" from the professional table and put them to some use instead of keeping them locked up. Bear in mind that the experimenter has not the resources of the radio engineering professionals, but has done his work under, at times, very adverse circumstances.

Now, another point—those short wavelengths. The experimenter has just as much "moral" right to those wavelengths as he has to the higher band allotted to him and steps have been taken to claim that right and in this we are glad to see the controller by wireless has agreed and has allotted certain bands for our use. I would like to know if 2JR actually obtained permission to use the lower wavelengths for transmitting purposes. Now, further, 2JR will do well to read and digest a paragraph in 2CM's letter in the same issue. Further, I maintain that there is more actual experimentation to be done on phone on the short wavelengths than on C.W. Once contact with a distant station has been established, the continued working of that station does not, of a necessity, constitute experimentation. Once we have crossed over on C.W. why not try for phone. I notice that 3BQ and 2CM have realised this. Does 2JR object to them attempting this? I want to say right here that the day the authorities prohibit the use of phone on any short wavelengths allotted to the experimenter will put a damper on the advancement of the science. It is my intention to carry out short wave phone experiments on the allotted band when I am ready and to risk the natural instinct, apparently for 2JR "to take up a club and commit a murder." Finally what does 2JR mean by saying "the nest of 75-100 metres that men have made for DX telegraphy"? What men made it, or and band for that matter? So take a tumble 2JR, and broaden your outlook a bit.—Your etc.,

Royal St., Chatswood.

2CX

## INFORMATION.

F.S. (North Sydney):

Sends us a diagram of a one valve reflex receiver and asks: (1) Would it pick up KGO and possibly 6WF on an aerial 50ft. high and 60ft. long? (2) What would be the value of the components? (3) Would dry cell valves be suitable, such as Weco or DV3? (4) Which side of the transformer is connected to the crystal—primary or secondary?

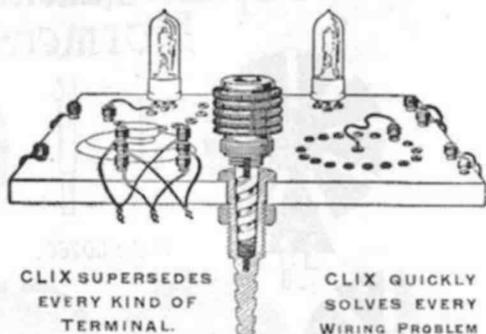
Answer: (1) The circuit forwarded is a good one, but nobody in the world could tell you whether it would receive KGO except yourself. So much relies upon your own ability, and local conditions must of course be taken into consideration. (2) This query is a little bit vague, but as a guide we are showing you the coils required for 2BL with a condenser in series as shown in your circuit:

Station . . . . .	L1	L2	L3
2BL . . . . .	50	75	100
2FC . . . . .	200	150	200

(3) Weco or DV3 valves are O.K. (4) The primary side is connected to the crystal.

(Continued on Page 38)

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Name.....

Address.....

(Continued from page 34)

R.P. (Templestowe, Vic.):

Question: (1) I have a large 6 volt automobile type Exide accumulator; how can I best run from it; AR .06 (2.5-3 volts), DEV (4 volts), a Phillips D1 (3-5 volts), and a 201A (5 volts)? If I use the negative terminal as a common negative and tap off at the 1st cell for the AR .06, the 2nd cell for the DEV and D1, and the 3rd cell for the 201A and charge each cell individually, would this be O.K.? (2) For detection, can I use potentiometer control for the B battery variable between 10 and 40 volts? Has it any advantages and is the Bradleyometer resistance correct for this voltage? (3) What resistance is necessary for covering from 1-10 volts with a 12 volt C battery? (4) Using .0005 condensers in the Wireless Weekly all wave Reinartz, I want to cover all the broadcast wavelengths from 60 metres upwards. Could you give me the sizes of the different coils and the tapings, for each band?

Answer: (1) The sketch we have sent to this subscriber would probably not interest other readers, but the other questions appear to be of general interest. (2) Yes, you can use a potentiometer as a resistance to vary the B battery voltage, but it is very unnecessary. The ordinary

tappings are quite sufficient. (3) No resistance is necessary for use with C battery. Small dry cells should be used for this duty. You should connect them in series to give about 9 volts, then by taking your tap on to various voltages you can see which voltage suits your valves best. Usually 9 volts is a good bias with 120 volts high tension on the plates. Less grid battery is required if smaller high tension is used. (4) You should wind several sets of coil if you wish to cover such a wide band, remembering, of course, the ratio of turns 1-3-1 as described in Wireless Weekly.

*(A large amount is unavoidably held over.)*

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Victoria.—Fone: 3BM, 3BU, 3JM, 3XF. C.W. and I.C.W.: 3JH, 3HH, 3OT, 3UX, 3TM.

Queensland.—Fone: 4CM. C.W.: 4AZ.

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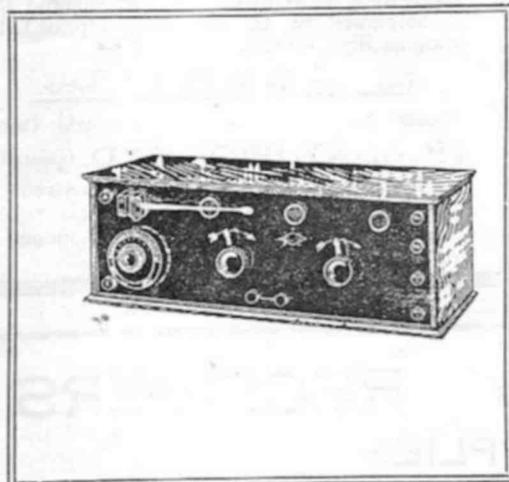
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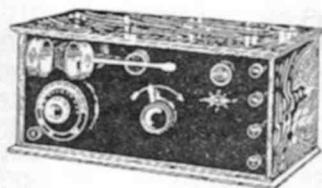
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10 ROWE STREET (NEXT HOTEL AUSTRALIA) SYDNEY

# COL-MO LITTLE GIANT SETS

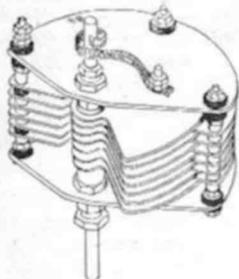


The Little Giant Sets are sold complete with all accessories, including aerial wire. The three valve Little Giant is complete with all accessories and Loud Speaker.

One Valve Set . . . . . £7/10/-  
 Two Valve Set . . . . . £12/10/-  
 Three Valve Set . . . . . £24

THE LITTLE GIANT ALWAYS LIVES UP TO ITS NAME. A GIANT IN TONAL QUALITIES, EFFICIENCY AND SIMPLICITY OF OPERATION ARE FEATURES NOT SURPASSED IN LARGER HIGHER-PRICED INSTRUMENTS.

## Col-Mo Low Loss Condensers



It is interesting to note that at last a GROUNDED ROTOR brass plate condenser of the LOW LOSS type has been constructed in Sydney. The construction is entirely of brass, having brass ends common to the Rotary plates, and electrically connected thereto by a pig-tail connection of brass flex. Absolutely no body capacity effects are possible with this condenser for in addition to the earthed end plates, the fixed plates are further screened by two extra Rotary plates. Designed on a straight line principle to facilitate accurate tuning.

COLMO LOW LOSS CONDENSERS are made in one capacity only .00025. This obviates the necessity of a vernier, thereby reducing high frequency losses. PRICE . . . . . 16/-

**Colville - Moore**  
**Wireless Supplies, Limited**  
 10 Rowe Street (Opposite Hotel Australia) Sydney

# Spare me days....

## Get a feed off this:-

The COMPLETE parts for a THREE VALVE PI RECEIVER, INCLUDING VALVES, TRANSFORMERS, BATTERIES AND COILS for 2FC and 2BL. Circuit supplied free, and all parts guaranteed—an honest and wonderful offer.

# £7 - 6 - 0

Loud Speaker Extra.

## Price's Radio Den

220 OXFORD ST., WOOLLAHRA.  
Wav. 451.

15 minutes from the City—Just past Centennial Park. Service Station open from 6 a.m. to 8 p.m. daily.

"IF YOU KNOW A BETTER DEN—GO TO IT."

Now for Winter

## RADIO

### New Stocks of Parts

Keenly Priced.

David Jones' have received shipments of wanted Radio parts in time to cater for the huge demand which is sure to be heralded by Winter. The public interest in Wireless will, no doubt, be centred in attempting to receive long distance stations, and David Jones' have secured stocks of Accessories most fitted for distance reception.

Cunningham 301A or 299A Valves; new bakelite base. Price, ea., 30/-.

Union Valve Socket, improved pattern with standard base. Price ... 6/6

Remler 199 Socket ... 4/6

Jefferson Star Transformers. Price .. ... 22/6

Columbia "B" Batteries. 45 volts. Price ... 26/-

## DAVID JONES'

for Radio Service.

22 YORK STREET, SYDNEY



*"Got It at Smith's"*

**CHEAP!** Look in Our Windows

**SMITH'S**  
RADIO STORES

3 VICTORIA ARCADE :: (Opp. Hotel Australia)



DEAR MR. EDITOR,—

A long time ago I decided to act upon that old slogan, "Do It Now!"

For some reason or other, although I've been reading your paper regularly and intended to subscribe long ago, I kept putting it off. However, I'm putting it off no longer, but am doing it now.

Here's my money, and I look to you to give me the same service as your other subscribers get.

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

..... 192....

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

Annual Subscription, 13/-, post free.

"Wireless Weekly," 12-16 Regent St., Sydney.

## Big new possibilities for better and cheaper radio pleasure



You who have Valve Sets and have up to now been content with Headphones, should at once hear the Baby Brunet Loud Speaker. With it your whole "Radio life" takes on a new and more pleasurable phase, and others, too, are able to enjoy the reception of broadcasted programmes at the same time.

# BRUNET

## Baby Loud Speaker

This fine little device has made a very welcome debut in the wireless world—firstly because it gives all the results you can possibly desire for his entertainment secondly because it is so light and easy to connect, being complete with connecting unit and cord, then because it is

32/6 32/6 32/6

so conveniently set in position on any table or flat surface, and lastly because its price is so remarkably cheap—merely 32/6.

Ask to hear Baby Brunet Loud Speaker at any Radio Dealer.



## Tunawave Honeycomb Coils

—a size for every purpose

These beautifully made coils are finding enthusiastic owners all over the State, because of their reliability and perfect construction. There is a size for every requirement, and prices are as keen as possible.

### PRICES FOR TUNAWAVE COILS:

25 turns .. 2/-	125 turns .. 3/-
35 turns .. 2/2	150 turns .. 3/3
50 turns .. 2/4	200 Turns .. 3/6
75 turns .. 2/6	250 turns .. 3/9
100 turns .. 2/9	300 turns .. 4/3

Honeycomb Coil Mounts .. 1/6 each

## CORBETT, DERHAM & CO. PTY. LTD.

NOTE THE NEW ADDRESS: 231 CLARENCE STREET, SYDNEY.

MELBOURNE, SYDNEY, BRISBANE, ADELAIDE, LONDON, NEW YORK, CHICAGO.

REPRESENTATIVE FOR QUEENSLAND: WALTER F. DENBY, 80 EAGLE ST., BRISBANE

# Want to hear more stations ?

Old Man Ohm says it's easy if you know how to vary the resistance smoothly and continuously in your radio set.

Old Man Ohm knows all about resistance. He's the fellow who goes around measuring it.

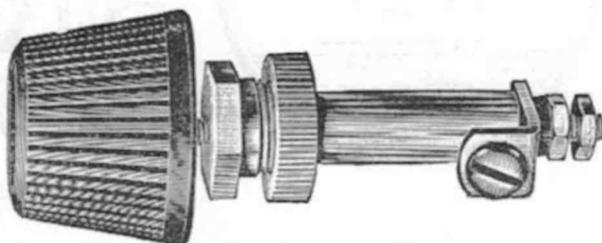
The Marshall-stat is a great favourite of his, because it varies resistance, not step by step, but smoothly and uninterruptedly from zero to maximum. On the Marshall-stat, Old Man Ohm can get any resistance he wants with absolute precision.

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So can you. And if you control the tubes in your receiving set with Marshall-stats you will hear new stations and clear up those which you hear only occasionally and then indistinctly.

The Marshall-stat is the ideal rheostat for radio work. It is compact in size (see full size cut takes up very little room, and can be fitted anywhere.

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**Marshall-stat**

*Exact Size.*

Its resistance discs are made of specially-treated material which is the result of years of experimental and research work by radio and electrical engineers. They are absolutely uniform throughout, and are so constructed and proportioned that breakage is impossible.

For smoothness of adjustment, there is nothing like the Marshall-stat. Take Old Man Ohm's word for it.

## WHY OLD MAN OHM LIKES THE MARSHALL-STAT—

It requires only one hole in panel. Can be inserted in hole from which old rheostat is removed.

Vernier all the way—but only one adjustment to make.

Can be used with any tube or combination of tubes.

Working parts entirely enclosed in nickel-plated chamber.

Knob can be replaced with knob of your set.

Get it in the green, orange, and black box.

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# PACIFIC ELECTRIC CO. LTD.

87 CLARENCE STREET, SYDNEY

Phone B 5891

Sole Australian Distributors

# Distance and Volume

## With the Super-Amplifier Valve Radiotron UV-201-A.

UV-201-A is a high vacuum tube which, while suitable for a detector, is intended primarily to be used as an amplifier of either radio or audio frequencies.

It contains a new Tungsten Filament, the characteristics of which are long life, low power consumption and low operating temperature.

### FEATURES :

- (1) The electron emission from the filament of this new tube averages about five times that of the ordinary amplifying tube, and it therefore gives improved loud-speaker operation.
- (2) The filament energy consumed is only one quarter of an ampere.
- (3) It has a very high vacuum, thus ensuring uniform characteristics and quiet operation.
- (4) It is exceptionally independent of filament adjustment and does not require critical values of grid leak and condenser.

**CHARACTERISTICS :** Filament potential, 5 volts.  
Filament current, 0.25 amperes.  
Plate potential, 20-100 volts.

Price : £1/10/-

Amalgamated  Wireless  
(Australasia) Ltd.

97 CLARENCE STREET, SYDNEY  
Collins House, COLLINS STREET, MELBOURNE.

# Radiotron



TYPE R. 5. V.

## CHARACTERISTICS:

Filament volts, 5.	Filament current, 0.65 amps.	Anode volts, 30-120.	Impedance, 35,000 ohms.	Amplification Factor, 7.
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TYPE D. E. 5.

## CHARACTERISTICS:

Filament Volts, 5.	Filament Current, 0.25 amps.	Anode Volts, 30-150.	Impedance, 7,000 ohms.	Amplification Factor, 7.
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# GecoValve

## Efficiency and Long Life

**G**ECOVALVE Dependability is not a superficial quality—you discover it as time passes; later on you take it for granted. And still your GECOVALVE is operating with maximum efficiency.

This lasting dependability is the natural outcome of GECOVALVE manufacturing methods—skilled British workmanship, modern plant, and the use of only the best materials.

GECOVALVES are made at the Osram Lamp Works, England, the largest of its kind in the Empire. Their manufacture is directed from the Research Laboratories of the General Electric Co. Ltd., by valve experts who are also experts in the design of wireless sets.

There's a specific type for every requirement.

### British General Electric Co. Ltd.

"Magnet House,"

154 CLARENCE STREET,  
SYDNEY;

And at Melbourne, Perth, Adelaide,  
Newcastle.