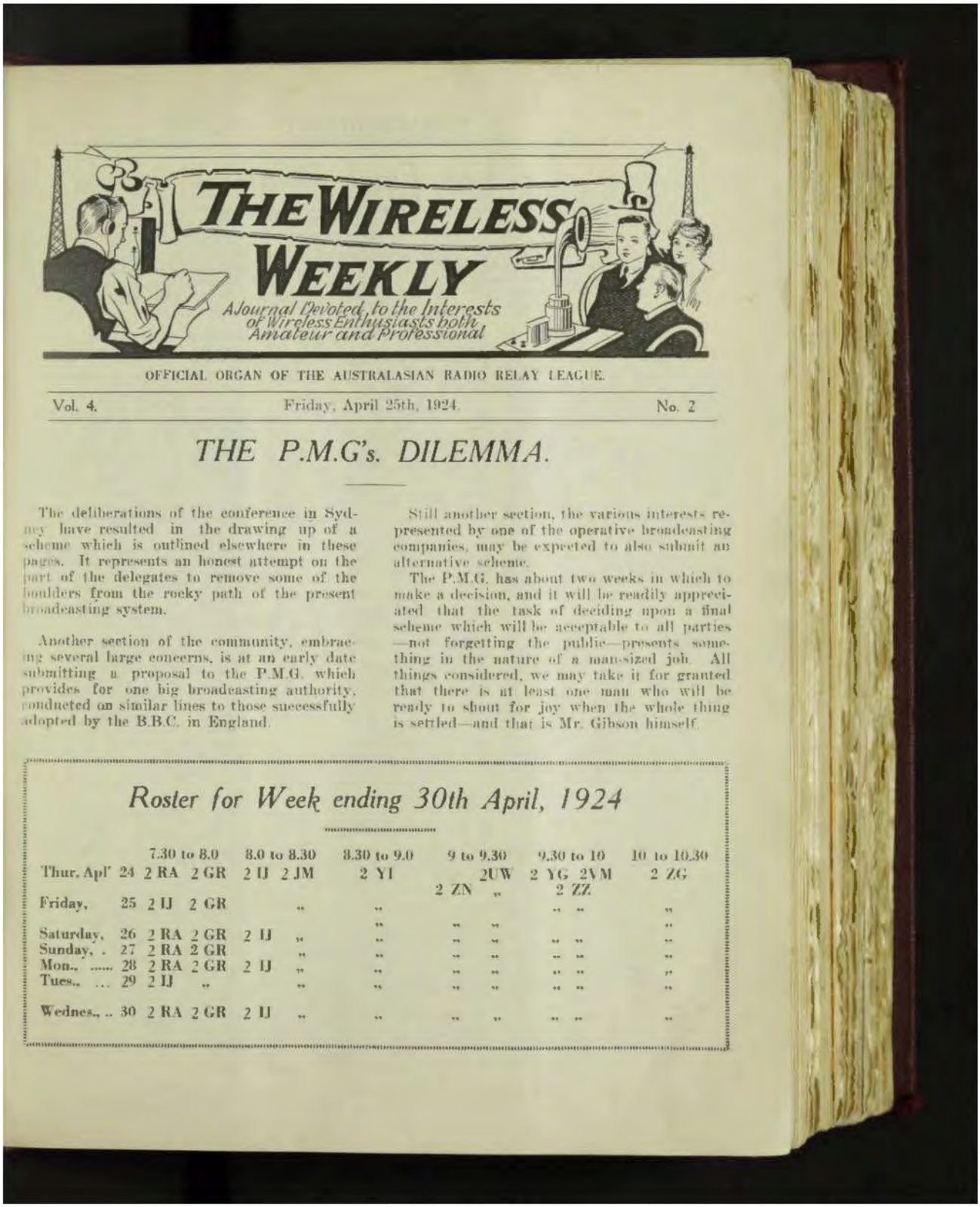


THE WIRELESS WEEKLY

A Journal Devoted to the Interests of Wireless Enthusiasts both Amateur and Professional

OFFICIAL ORGAN OF THE AUSTRALASIAN RADIO RELAY LEAGUE.

Vol. 4. Friday, April 25th, 1924. No. 2

THE P.M.G's. DILEMMA.

The deliberations of the conference in Sydney have resulted in the drawing up of a scheme which is outlined elsewhere in these pages. It represents an honest attempt on the part of the delegates to remove some of the boulders from the rocky path of the present broadcasting system.

Another section of the community, embracing several large concerns, is at an early date submitting a proposal to the P.M.G. which provides for one big broadcasting authority, conducted on similar lines to those successfully adopted by the B.B.C. in England.

Still another section, the various interests represented by one of the operative broadcasting companies, may be expected to also submit an alternative scheme.

The P.M.G. has about two weeks in which to make a decision, and it will be readily appreciated that the task of deciding upon a final scheme which will be acceptable to all parties —not forgetting the public—presents something in the nature of a man-sized job. All things considered, we may take it for granted that there is at least one man who will be ready to shout for joy when the whole thing is settled—and that is Mr. Gibson himself.

Roster for Week ending 30th April, 1924

	7.30 to 8.0	8.0 to 8.30	8.30 to 9.0	9 to 9.30	9.30 to 10	10 to 10.30
Thur. Apl' 24	2 RA 2 GR	2 IJ 2 JM	2 YI	2UW	2 YG 2VM	2 ZG
Friday, 25	2 IJ 2 GR	"	"	2 ZN "	2 ZZ " "	"
Saturday, 26	2 RA 2 GR	2 IJ "	"	" "	" "	"
Sunday, . 27	2 RA 2 GR	"	"	" "	" "	"
Mon., ... 28	2 RA 2 GR	2 IJ "	"	" "	" "	"
Tues., ... 29	2 IJ "	"	"	" "	" "	"
Wednes., .. 30	2 RA 2 GR	2 IJ "	"	" "	" "	"

The Final Draft.

PROPOSAL OF CONFERENCE

The following proposed alterations to the existing wireless regulations have been drawn up by the delegates to the Radio Conference convened by the P.M.G., in Sydney. These proposals, which have been forwarded to the P.M.G., are endorsed by the undermentioned bodies. N.S.W., W.A., S.A. and Queensland branches of the Association for Development of Wireless, South Australian Broadcasting Company, Associated Radio Company, Broadcasters (Sydney) Ltd., and West Australian Farmers' Ltd.

1. The public to be allowed to use "open sets."

2. Any form of reaction to be allowed, but each licence should contain the provision that no set used in such a manner as to cause the aerial to oscillate during broadcasting hours.

3. The issue of a common licence for all owners of radio receiving sets at 40 shillings per annum for the broadcasting subscription, exclusive of 5 shillings per annum for the Government. In cases where a set is used for other than domestic uses an additional fee of 40 shillings be charged. The broadcasting subscription is hereinafter called the "revenue," and shall be exclusive of all broadcasting transmitting royalties if any, which shall be ascertained by the P.M.G., and when determined, added to the licence fee and collected as a separate item.

4. A "dealer's" licence fee shall be 40 shillings per annum, with no additional charge for demonstration purposes. All applicants for a dealer's licence shall satisfy the Minister as to his bona fides.

5. There shall be no restrictions on the sale of apparatus. However, the names and addresses of purchasers of receiving sets are to be recorded by the seller and a list of such sales is to be rendered monthly to the P.M.G.

6. Each licence is to be permanently available at the address where the set is used. A penalty of not less than fifty pounds (£50) for housing a set without a licence.

7. Broadcasting transmitting licences shall be of two kinds:—"A" licence, the holders of which shall be remunerated from the revenue; and "B" licence, which shall be issued to persons or firms who desire to broadcast without remuneration from the revenue.

8. That provision be made in the proposed amendment to the regulations by the P.M.G. (after consultation with the law officers of the Crown) with a view of preventing the unified or monopolistic control of two or more "A" class broadcasting licensees within any one State.

9. All "A" class stations shall broadcast seven days per week, with a minimum of seven hours per day, except Sundays, when there shall be a minimum of four hours.

10. All "A" class stations operating in any one State shall do so under one name, and shall be identified by a call sign. No trading firm or company operating an "A" class station shall in any way use the station for self-advertising purposes, or link the sale of goods sold by them with their station, or associate it with any trade name.

11. That the maximum number of "A" broadcasting licences in each State shall be:—New South Wales, 3; Victoria, 3; Queensland, 2; South Australia, 2; Western Australia, 2; Tasmania, 1.

12. Holders of an "A" class broadcasting transmitting licences, issued prior to the 8th April, 1924, and who are entitled to continue broadcasting under these proposed new regulations, and who do so broadcast, are hereinafter termed "original licensees." Similarly, all other "A" class broadcasting transmitting licensees or applicants for such licences, are hereinafter termed "subsequent licensees" and "subsequent applicants" respectively.

13. "Original licensees" shall be remunerated in the first instance equally and monthly, from the revenue of their respective States, at a rate not exceeding £20,000 per annum per "original licensee," or such lesser amount as may be available. "Original licensees" shall have first call upon the revenue. After such remunerations have been made, the balance will be available for the remuneration of "subsequent licensees," vide (14) and (15) hereof.

14. "Subsequent licensees" shall not participate in the revenue until there are 10,000 subscribers for each 'original licensee'' in the State in which they are broadcasting. When such a number of licences have been issued, subject to paragraph (11) hereof, a "subsequent licensee" (the selection to be made by the P.M.G. on the basis of priority of issue of licence, or priority of application) may begin to broadcast, and shall be entitled to receive from the revenue as from the date of broadcasting, an amount equal to:—

$$R—20{,}000\ S\ (£)$$

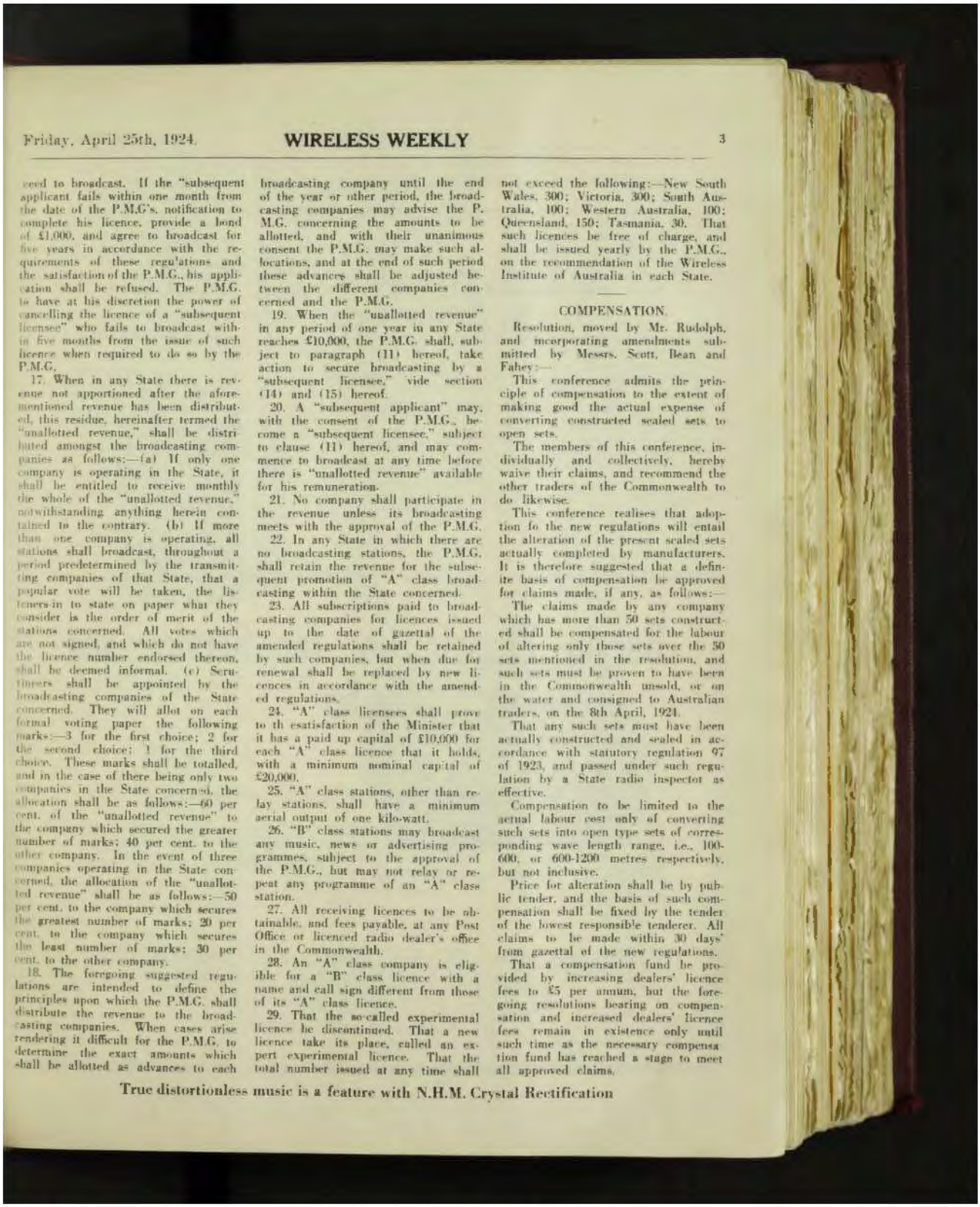
Where R is the total revenue of the State concerned for the calendar year ensuing on the date on which "subsequent licensees first broadcasted to the satisfaction of the P.M.G., and S the number of "original licensees" in that State. Each 'subsequent licensee" shall receive monthly, as an advance against this remuneration, an amount not exceeding 75 per cent. of all new licence fees (excluding renewal) issued within the month concerned. A final adjustment to be made at the end of the calendar year referred to in this paragraph.

15. The payment to the "subsequent licensee" vide (14) shall not exceed £20,000 per annum, and, when such amount is reached, he shall be treated, for the purposes of these regulations, as an "original licensee," and the P.M.G. shall, subject to (11) hereof, take steps to invite broadcasting by a second "subsequent licensee," who shall receive from the revenue, as from the date of commencing broadcasting to the satisfaction of the P.M.G. an amount equal to:—

$$R—20{,}000\ B\ (£)$$

Where R is the total revenue of the State concerned for the calendar year ensuing on the date on which the second "subsequent licensee" first broadcasted to the satisfaction of the P.M.G., and B the number of broadcasting transmitting companies participating in the revenue of the State on the date the second "subsequent licensee'' first broadcasts to the satisfaction of the P.M.G. This principle shall be successively applied by the P.M.G. until the maximum of companies is formed, vide (11) hereof.

16. When the revenue available for the payment of additional broadcasting transmitting companies, vide (14) and (15) hereof reaches £10,000, the P.M.G. may call on a "subsequent licensee" or "subsequent applicant" to pro-



ceed to broadcast. If the "subsequent applicant fails within one month from the date of the P.M.G's. notification to complete his licence, provide a bond of £1,000, and agree to broadcast for five years in accordance with the requirements of these regulations and the satisfaction of the P.M.G., his application shall be refused. The P.M.G. to have at his discretion the power of cancelling the licence of a "subsequent licensee" who fails to broadcast within five months from the issue of such licence when required to do so by the P.M.G.

17. When in any State there is revenue not apportioned after the aforementioned revenue has been distributed, this residue, hereinafter termed the "unallotted revenue," shall be distributed amongst the broadcasting companies as follows:—(a) If only one company is operating in the State, it shall be entitled to receive monthly the whole of the "unallotted revenue," notwithstanding anything herein contained to the contrary. (b) If more than one company is operating, all stations shall broadcast, throughout a period predetermined by the transmitting companies of that State, that a popular vote will be taken, the listeners-in to state on paper what they consider is the order of merit of the stations concerned. All votes which are not signed, and which do not have the licence number endorsed thereon, shall be deemed informal. (c) Scrutineers shall be appointed by the broadcasting companies of the State concerned. They will allot on each formal voting paper the following marks:—3 for the first choice; 2 for the second choice; 1 for the third choice. These marks shall be totalled, and in the case of there being only two companies in the State concerned, the allocation shall be as follows:—60 per cent. of the "unallotted revenue" to the company which secured the greater number of marks; 40 per cent. to the other company. In the event of three companies operating in the State concerned, the allocation of the "unallotted revenue" shall be as follows:—50 per cent. to the company which secures the greatest number of marks; 20 per cent. to the company which secures the least number of marks; 30 per cent. to the other company.

18. The foregoing suggested regulations are intended to define the principles upon which the P.M.G. shall distribute the revenue to the broadcasting companies. When cases arise rendering it difficult for the P.M.G. to determine the exact amounts which shall be allotted as advances to each broadcasting company until the end of the year or other period, the broadcasting companies may advise the P.M.G. concerning the amounts to be allotted, and with their unanimous consent the P.M.G. may make such allocations, and at the end of such period these advances shall be adjusted between the different companies concerned and the P.M.G.

19. When the "unallotted revenue" in any period of one year in any State reaches £10,000, the P.M.G. shall, subject to paragraph (11) hereof, take action to secure broadcasting by a "subsequent licensee," vide section (14) and (15) hereof.

20. A "subsequent applicant" may, with the consent of the P.M.G., become a "subsequent licensee," subject to clause (11) hereof, and may commence to broadcast at any time before there is "unallotted revenue" available for his remuneration.

21. No company shall participate in the revenue unless its broadcasting meets with the approval of the P.M.G.

22. In any State in which there are no broadcasting stations, the P.M.G. shall retain the revenue for the subsequent promotion of "A" class broadcasting within the State concerned.

23. All subscriptions paid to broadcasting companies for licences issued up to the date of gazettal of the amended regulations shall be retained by such companies, but when due for renewal shall be replaced by new licences in accordance with the amended regulations.

24. "A" class licensees shall prove to th esatisfaction of the Minister that it has a paid up capital of £10,000 for each "A" class licence that it holds, with a minimum nominal capital of £20,000.

25. "A" class stations, other than relay stations, shall have a minimum aerial output of one kilo-watt.

26. "B" class stations may broadcast any music, news or advertising programmes, subject to the approval of the P.M.G., but may not relay or repeat any programme of an "A" class station.

27. All receiving licences to be obtainable, and fees payable, at any Post Office or licenced radio dealer's office in the Commonwealth.

28. An "A" class company is eligible for a "B" class licence with a name and call sign different from those of its "A" class licence.

29. That the so-called experimental licence be discontinued. That a new licence take its place, called an expert experimental licence. That the total number issued at any time shall not exceed the following:—New South Wales, 300; Victoria, 300; South Australia, 100; Western Australia, 100; Queensland, 150; Tasmania, 30. That such licences be free of charge, and shall be issued yearly by the P.M.G., on the recommendation of the Wireless Institute of Australia in each State.

COMPENSATION.

Resolution, moved by Mr. Rudolph, and incorporating amendments submitted by Messrs. Scott, Bean and Fahey:—

This conference admits the principle of compensation to the extent of making good the actual expense of converting constructed sealed sets to open sets.

The members of this conference, individually and collectively, hereby waive their claims, and recommend the other traders of the Commonwealth to do likewise.

This conference realises that adoption fo the new regulations will entail the alteration of the present sealed sets actually completed by manufacturers. It is therefore suggested that a definite basis of compensation be approved for claims made, if any, as follows:—

The claims made by any company which has more than 50 sets constructed shall be compensated for the labour of altering only those sets over the 50 sets mentioned in the resolution, and such sets must be proven to have been in the Commonwealth unsold, or on the water and consigned to Australian traders, on the 8th April, 1924.

That any such sets must have been actually constructed and sealed in accordance with statutory regulation 97 of 1923, and passed under such regulation by a State radio inspector as effective.

Compensation to be limited to the actual labour cost only of converting such sets into open type sets of corresponding wave length range, i.e., 100-600, or 600-1200 metres respectively, but not inclusive.

Price for alteration shall be by public tender, and the basis of such compensation shall be fixed by the tender of the lowest responsible tenderer. All claims to be made within 30 days' from gazettal of the new regulations.

That a compensation fund be provided by increasing dealers' licence fees to £5 per annum, but the foregoing resolutions bearing on compensation and increased dealers' licence fees remain in existence only until such time as the necessary compensation fund has reached a stage to meet all approved claims.

A NEW RADIO BODY FOR MOSMAN

On Thursday, March 27th, 1924, a number of gentlemen who are keenly interested in the science of radio, met at the residence of Mr. N. D. Bale, 100 Muston Street, Mosman, to discuss the possibilities of establishing some form of association for research and experiment in wireless telegraphy and telephony.

Many interesting points were dealt with, and it was eventually decided that the body be called the Mosman Radio Research and Experimental Laboratories, wherein it is anticipated a great deal of very interesting and scientific work will be carried out.

Considerable advantage is claimed in that the Laboratories will be kept free from all formalities, and that the number of members will be limited.

DETERMINING THE EFFICIENCY OF YOUR EARTH.

D.T.K. submits the following, which will be of interest to experimenters:—

In order to satisfy yourself as to the efficacy of your earth, follow this proceeding:—With the earth lead disconnected, get the set oscillating strongly. Keeping the phones on the head, rub a wet finger tip along the bare earth wire. A grating noise will be heard. A tap will sound like a click. Now, if, as is usually the case, the set is near the window, but the earth wire goes to earth some distance from the window, act as follows: Just outside the window scoop out a basin in the ground and pour a bucket of water into it. Reach in through the window and get the 'phones, which place on your head. Also take the earth wire in your hand. With a wet finger, tap first the bare earth wire and then the surface of the pool of water. The water may be regarded as a perfect earth, and if the sound in the 'phones is stronger when tapping the water than it is when tapping the earth wire, then you may conclude that the earth is capable of improvement. It is really surprising to hear the loudness of the click obtained by this procedure. The explanation of its presence at all is I presume "body capacity." It is, of course, not so loud outside the room as it is inside, but it is quite audible.

In order to differentially diagnose static, disconnect the aeral wire and, with the set oscillating, touch the metal telephone leads where they enter the 'phones. The static noises will be reproduced faintly, but faithfully in the 'phones. You can then be assured that you are not dealing with any other adventitious noises.

INTERESTING EXPERIMENT.

Mr. C. E. Ames (S.A.) writes as follows:—"Having been engaged to transmit a number of musical items recently, I was naturally very much disturbed when the filter chokes on the power unit of my transmitting set gave out, thus preventing me from using the usual rectified AC (500 volts).

"My thoughts turned to my 90 volt B. battery, used in connection with my receiving set. Connecting this to the power terminals of my transmitter, I was able to carry out my programme, the music being reported quite strong and clear, and amply filling the hall, which was about six miles distant.

Six Electrode Modulating Tubes

By Edward Pollock

The following article relates to an invention which the writer provisionally protected by application for patent. No. 13937, on August 20th, 1923, and later communicated to Mr. Geo. Apperley, Amalgamated Wireless, Sydney, in addition to the Western Electric Co., Chicago (Ill.), U.S.A.

Both firms are uninterested, and the invention is to be abandoned untried.

A useful purpose is therefore served by notifying the general public, through "Wireless Weekly," of the inventor's decision in this respect, prior to the expiration of temporary protection. Readers will be interested.

The inventor contemplated constructing and employing a valve having at least six electrodes in order to attain more complete modulation of a high-frequency carrier wave, lessen distortion, and increase the range of a telephony transmitter by narrowing the wave-band of signals emitted therefrom.

Such a valve may consist of a glass or silica envelope containing (1) three anodes, two grids and a filament, or (2) two anodes, three grids and a filament, or (3) two anodes, two grids and two filaments, shaped, stayed and anchored as are the electrodes of tubes in general use at the present time. The position of grids relative to filament and anode elements, however, is a most important and essential feature of the invention, as will be seen by referring to the accompanying diagram (of type (1) and circuit) wherein—

A equals high-frequency electro-magnetic (carrier) wave-generator.

B equals aerial inductance (aerial circuit).

C equals anode inductance.

1 and 2 equals side anodes.

3 equals centre anode.

4 and 5 equals grids.

6 equals filament (1 to 6 valve).

D equals source of filament current.

E and F equals secondary and primary microphone-transformer windings.

G equals microphone battery.

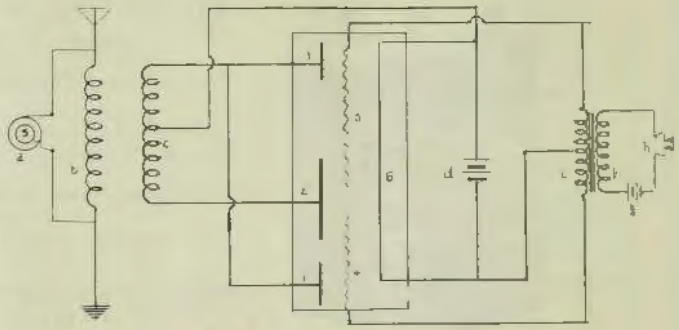
H equals microphone, conventionally represented.

The aerial is continuously excited or energised by A, and normally radiates an undamped wave of sustained amplitude or unmodulated characteristic. Under such conditions, of course, the valve has unvarying resistance, and dissipates a constant amount of electrical energy, absorbed at C from B, as heat.

It is obvious that since the zero point or no-voltage middle tapping of C is directly connected to a filament limb, the oscillations which traverse this coil and apply high frequency alternating potentials to the anodes are actually completely rectified by the valve, since 1 and 3 are positive when 2 is negative, and vice-versa.

A similar scheme of connection on the grid side enables both half waves of microphone current to be utilised in signalling, the winding E being bridged across grids 4 and 5, and joined at its centre turn to the other filament leg.

[Continued on page 9]



Adding Radio Frequency to your present Set

By The Little American

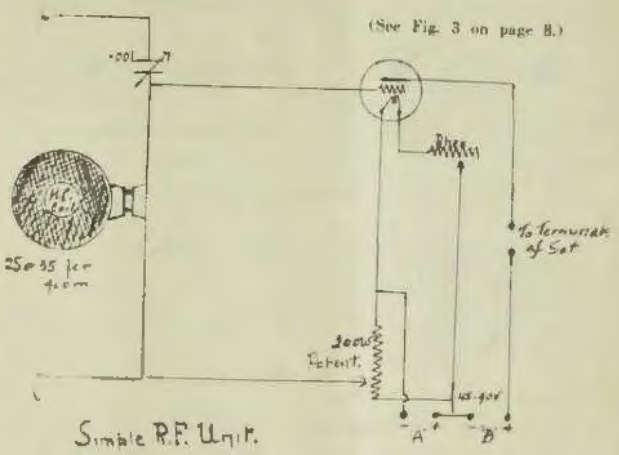
Two designs of simple radio frequency units for attaching to your present set are described here. The first is a very simple arrangement and very good results have been obtained. It is easily changed to the various wave lengths by replacing different sized honeycomb coils.

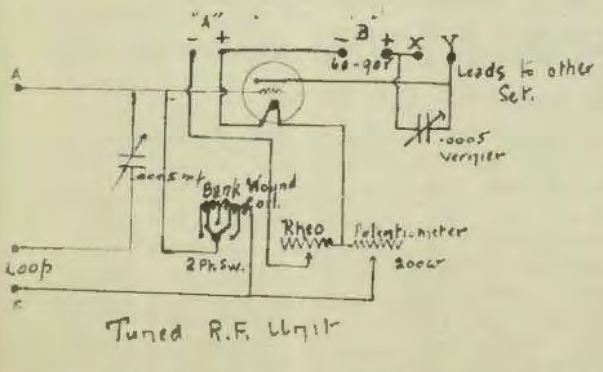
Consisting of a .001 variable condenser, panel mounted H.C. plug, 200 ohm potentiometer, socket and valve, it can be assembled on a small sized panel. The panel of about 8in x 8in. or made in the size to match the set to be used with. Use the following diagram. (Diagram 1.)

The other unit that has proved very popular with amateurs in the U.S.A., is of purely tuned radio frequency.

It consists of a bank wound coil on a bakelite tube 3½in. in diameter. Wind 120 turns using 22 D.C.C. wire and tap off at 15, 30, 45, 60, 75 and 90. This coil should be mounted on the back of one of the condensers. Use two .0005 variable condensers, 200 ohm potentiometer, rheostat and socket. Then make a range of five coils wound on bakelite forms. These forms are 3½ in. bakelite, 1¼in. wide. Wind six turns on the first, 12 turns on the second and 18, 30 and 50 on the others respectively. These coils are connected to the terminals X and Y of the R. F. unit by flexible leads. This unit works with any set using variocoupler, variometers or honeycombs for tuning. Tie the aerial and ground binding posts together of the receiving set to be used. Then place the coil attached to the set near or over the variocoupler of the receiving set and operate. The coils have a varying range up to 1500 metres. The diagram is self explanatory. It may be used with aerial or loop.

(See Fig. 3 on page 8.)





D.X.

Here is a list of stations heard by George Eastway, Maroubra, during January and March:—

New South Wales.: 2CQ, 2CR, 2SO.
Victoria: 3BD, 3BC, 3BQ, 3JU.
Queensland: 4CG, 4CK, 4CM, 4GE.
South Australia: 5AC.
Tasmania.: 7AA, 7BE.
New Zealand: 1AA, 2AP, 3AA, 4AA.

When 1AA (Edwards, Auckland) was heard, his radiation was only 8 amps. the lowest power to get across the Tasman so far. The valve used by 1AA as a transmitter was a 201A amplifier, and the power used was only 5 watts. Mr. Eastway's receiver is a two coil circuit, employing one UV199 valve. His aerial, running north and south, is of the inverted L type, 100ft. long and 18ft. high.

ANOTHER ONE-VALVER. IS THIS A RECORD?

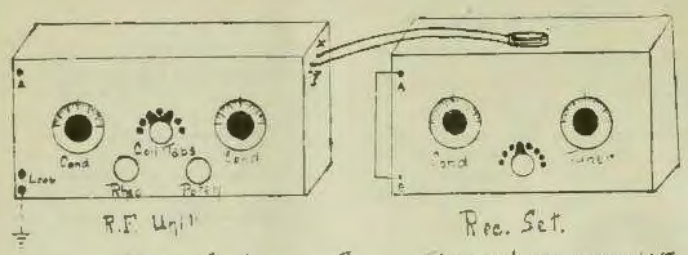
Roy V. Thomas (Rose Bay) sends the following list of stations logged during March and April:—

New South Wales: 2CQ, 2HM ('phone), 2SO ('phone), 2YA.
Victoria: 3BC, 3BD, 3BH, 3BM, 3BU, 3FH, 3JU, 3SW, 3XF.
Queensland: 4AE, 4CK ('phone), 4CM ('phone).
New Zealand: 4AA.

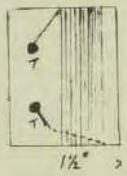
2CDM, April 11th. 12.5 a.m. 2CM De 2CDM. QSL, QSA, R. O.K. Cum Bak.

Adding Radio Frequency to your present Set

Continued from page 7



Place Coil over Tuning Element in receiver



April 12th, 11.30 p.m., 2YG, De 2C DM. Will call U 9.30 p.m., Our time to-morrow evening.

April 13th. 12.35 a.m. 2CM De 2CDM. Nr. 4 O.K.

Mr. Thomas' aerial is a single wire copper weld, 75ft. long and 20ft. high.

FROM QUEENSLAND.

Robt. J. Browne (Toowong, Q.) sends his. Using one detector and two audio, his outfit has brought in the following:—

New South Wales: 2GR, 2GQ, 2HM, 2YA, 2SO, 2YO, 2ZZ, 2UW, 2JM, 2LO, 2CR, 2RA, 2FA, 2CM, 2CDM, also Wireless Supplies, Wagga.

Victoria: 3BM, 3JU, 3BD, 3BU, 3BII, also 3AR?

New Zealand: 1YA, 1AA, 2AC, 2AQ, 3AC, 4AA.

American: 6AGK, 6CGW, 6AHP, 9MC.

2CDM has been QSA since April 5. No attempt was made to log him before that date. On Saturday, April 12th, at about 11.30 p.m., he was heard on speech and coming in very strong. Jack Davis was speaking, and remarked that 2HM, Armidale, was coming through well.

[Continued from page 6]

An alternating voltage established across E by F when H is agitated by sounds impresses equal but opposite potentials on 4 and 5. The tube, therefore, changes in conductivity, and behaves as a varying power-dissipation device, thus damping or modulating the carrier oscillations to the waveform of the microphone current.

The strength of the current flowing from anode 2 to filament 6 is affected by changes of potential on both grids, whereas that passing from anodes 1 and 3 is influenced only by voltage variations on 4 and 5, respectively. This explains why 2 has twice the active area of either 1 or 3.

Potential on					Strength of plate current increases between filament and
Anode 1	Anode 2	Anode 3	Grid 4	Grid 5	
+	—	+	+	—	Anode 1
—	+	—	+	—	Anode 2 [due to Grid 4]
+	—	+	—	+	Anode 3
—	+	—	—	+	Anode 2 [due to Grid 5]

Assuming that the carrier wave frequency is 1,000,000 per second, and the average frequency of the wave modulating signal is 1,000 cycles for a similar period, it is comparatively easy to prove by means of the following table that in such a tube the load taken off the aerial during modulation is equally shared by the anodes. Note that the voltage on an anode alternates 10 times for every reversal of the potential on a grid.

As mentioned in the provisional specification, valves of this type may be employed to effectively absorb the energy induced in a receiver by a transmitter at a station embodying the features of a duplex signalling system claimed in the writer's British patent No. 194,070, 1923.

Tell your friends about "Wireless Weekly"

1. Showing C. A. Wiles in his car; 2. A view of the cottage with the set on the verandah; 3. Tuning in on the 4 valve Inverse Duplex Set. During fine weather the wire fence was used as an aerial; 4. Shows two of the impromptu costumes worn at a jazz evening at which the music was supplied by radio; 5. Returning home after 5 hours and no fish; 6. At ebb tide.

Honeycomb Coils

(By "Insulator.")

Oh, folks, I ask you to let me down lightly this week, as I have had a most strenuous time this last few days. Fleet week and Show week right on top of each other, and I am, or let me say have been, very interested in both, the latter compulsory. No, not demonstrating wireless sets.

Speaking of the Fleet, I or my wife simply had to "go over the Hood." Well, adopting the air of a martyr, I went, thinking to myself that perhaps I might see the wireless room. But my hopes were dashed to the ground, the only portion of the wireless gear I was permitted to view was the aerial. Some aerial, too! To-day I have a stiff neck looking up.

This week I propose to tell you how to make honeycomb coils. I know most experimenters are, or will be, interested in these, and after all, they are very easily made.

Obtain a circular piece of wood as a former two inches in diameter, by anything from 2 to 4 in. long. This should not be a difficult matter, a wood turner will make you one for a few pence. Smooth the outside, the periphery I think it is called, with a piece of sandpaper.

That done, cut a strip of paper, writing pad for instance, about 8-3/8 in. long by 1in. wide; wrap this round the former and see that the ends meet exactly. Unwrap and with a pair of compasses mark off 31 equal sized spaces along this strip. Fig. 1 will assist you in this. I have asked the Editor to print Fig. 1 actual size so that you will be saved the trouble of calculating the 31 equal spaces. All that will be necessary is to make an exact copy of Fig. 1 and paste this around the former. Don't you think I am considerate because the biggest difficulty in making honeycomb lies in spacing the former. I know folks, because I have had to draw Fig. 1.

With the former now decorated with Fig. 1 (we'll call it that; it's easier), you have to drill 62 holes about 3/8 of an inch deep, 31 on each side of the strip. I will leave it to yourself to devise the most suitable means of doing this, but I may mention that I myself succeeded in holding the former steady while the drilling was being done by enlisting the services of Mrs. Insulator to hold the former.

The drill I used was just the same thickness as a hair pin, and now I

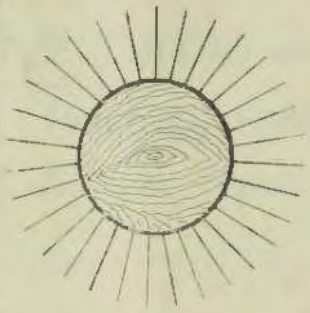


FIG 2

think of it, let me advise caution in drilling it for it is so easy to break these small drills by forcing or driving them too hard. Drill slowly and lightly; you'll finish the job as quickly as if you tried to rush it.

I mentioned a hairpin a moment ago. This is exactly what I used for pins, but, of course I cut them at the bend and again cut them so that when they were inserted in the holes I didn't have more than an inch projecting. Should the pins tend to fall out this can be overcome by using a hammer to flatten out one end of each pin and pushing flattened end into the former. All the pins having been inserted the former should resemble Fig. 2 which of course is only showing one end or row of pins. Actually the other row is inserted.

We come now to the actual winding of the coils. This is accomplished by twisting one end of the wire round spoke 1, and taking it across, the paper strip to the outside of spoke No. 8 of the opposite round, across to spoke No. 16, to spoke No. 24, thence to spoke No. 2. (This is shown by the diagonal line drawn on Fig. 1.) One complete turn has now been made. Carry on the second turn by taking the wire around spokes Nos. 9, 17, 25 and 3. Make all other turns by taking the wire around a spoke in advance of that employed in the previous turns after making your coil. Withdraw the spokes and slide coil off end of former. Simple, isn't it? By this method you can make any size of honeycomb you may desire.

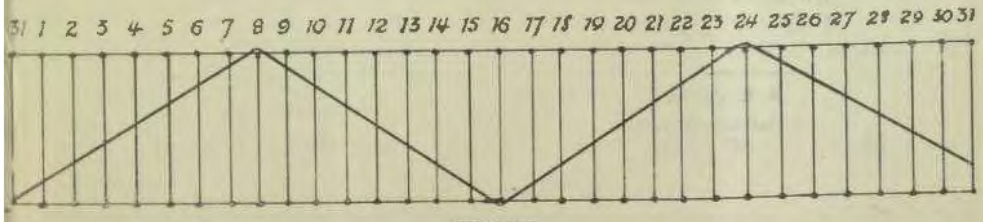
Perhaps some of you would prefer to wind your coils on presspahn ribbon. It is an easy matter to wrap this ribbon around the former between the spokes and wind your coil on top. This will simplfy the slipping off process when coil is completed.

With a well made coil of this class and provided you have a substantial gauge of wire you will find it necessary to soak the smaller size coils in shellac.

With the larger ones this may be advisable, but be sure to hang the coil up so that it will drain, as shellac gives too much distributed capacity.

With these very useful tables which are approximate, I will "close down" till next week.

FIG 1



ACTUAL SIZE

(Continued from page 11)

No. of turns	Millihenries Inductance	Wave Length	Gauge of wire
25	.040	170-375	22
35	.075	200-515	24
50	.15	240-730	24
75	.3	330-1030	26
100	.6	450-1460	26
150	1.3	660-2000	26
200	2.3	860-2850	26
250	4.5	1120-4000	26
300	6.5	1340-4800	28
400	11.	1860-6300	28
500	20.	2350-8500	28
600	40.	2940-12000	28
750	65.	3100-15000	28
1000	100.	5700-19000	30
1250	125.	5900-21000	30
1500	175.	7200-25000	30

With the following table I give the size of the Tickler Coil, as I believe it will be of interest to some.

Wave Length	Primary coil (turns	Sec. coil (turns)	Tickler coil (turns)
120-240	25	25	35
210-550	35	35	50
550-700	75	100	50 or 70
900-1400	100	150	75 to 200
1650-2750	300	300	100 to 200
8000-15000	600	750	300 to 500
16000-20000	1000	1250	300 to 500
18000-25000	1250	1500	400 to 600

QUESTIONS AND ANSWERS

G.H. (Cremorne): (1) 2 BL being so close and using so much more power, breaks in on amateurs. You should however, be able to tune him out if you adjust carefully. If not successful, try a .001 Variable Condenser in the aerial circuit and a .001 fixed condenser across the phones. (2) Yes, both VLA and VIB should be received provided crystal O.K. We recommend Galena. (3) No, it would be essential to use a valve to improve your short wave reception.

Wireless (Burwood): Welcome. Try your touch out first on a crystal set, because it's always wiser to start anything from the beginning. It also gives you a firm ground work for when you tackle a more advanced set. We strongly recommend you to follow "Insulator's" articles commencing from March 21st issue, in which you will find an article, "A Highly Efficient Loose Coupler." A circuit comprising a valve is much more sensitive than a crystal set, consequently it receives further. No, you can't work a loud speaker from a crystal set only.

V.R. (Keith, S.A.): Re C.K.V. There is no such call, but what you heard was probably VKC, S.S. 'Milluna." There are no calls beginning with Q. Sure it wasn't MQC, S.S. "Persic", you heard?

A.J.T. (Rupanyup): The abbreviations and call signs for all ships and shore stations in the world are contained in the "Year Book of Wireless Telegraphy and Telephony," which you could very likely obtain from the N.S.W. Bookstall Co., Ltd., George St., Sydney. The abbreviations alone are contained in the P.M.G's. handbook which you could probably obtain from the same source. Let us know if unsuccessful.

"A.H." (Bondi): 2VM about 220 metres. Coils, P19, S20, T 40 turns.

"T.B." (Mortlake); "L.S.D." (Newtown) and "C.H." (Concord): Space will not allow us to reply fully to your questions. Please send us stamped addressed envelope.

AFFILIATION IN SOUTH AUSTRALIA.

Mr. C. E. Ames (Hon. Secretary of Wireless Institute of Australia, S.A. Division) writes us that the two radio clubs in South Australia have been approached regarding affiliations upon the same terms as those decided upon in N.S.W. The West Suburban Radio Club has already decided to affiliate, but up to the time of writing, no word had been received from the St. Peter's College Radio Club. As far as is known these are the only two clubs in South Australia.

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EXPERIMENTERS ORGANISED.

It has come as a pleasant surprise to all to find that the movement towards concerted action initiated by the Wireless Institute in bringing the clubs together has been so unanimously approved.

With mutual interests our duty one to another has led to a common understanding being reached. The ramifications of the experimental world are so thoroughly well known to us all that we appreciate the magnitude of the work in hand and having supreme confidence in the foresight and wisdom of those controlling the movement we feel assured that it will ultimately be most successful: Undoubtedly as things go on there will be much to learn as is ever the case in matters of this kind, but when it is remembered that the influence and financial strength of the Institute is at the back of the movement, there can be no doubt that the interests of all clubs will receive consideration hitherto quite unobtainable.

It is but natural that some of the clubs should feel that the proposition as it stands appears to give the Wireless Institute Executive Council the final say. This is a fact and rightly so. But as to that Executive exercising its veto against the decisions of the delegates' council, this is utterly unthinkable, except in a most extreme case as it would threaten immediate collapse of the whole scheme of affiliation. It has been clearly demonstrated in the past how powerful the Institute has become and as a matter of fact the name is a household word even outside radio circles and any attempt by an outside body to carry on legislation without the full measure of the Institute's support will no doubt end in disaster. The N.S.W. Radio Association for example.

Credit where credit is due. The

Institute has felt in duty bound to exercise its influence on behalf of the whole experimental movement and it cannot be accused of profiteering at the club's expense as the affiliation fee of £1/1/- per club per annum is ridiculous considering the obligation the Institute is shouldering, and we candidly say let no man be small minded in a matter such as this, which requires a broad viewpoint and much skill. How easy it is to criticise and what a burden the self imposed tasks of the Institute officers have become is hardly realised. Yet these men work tirelessly for the good and protection of all in the movement and a glance at the Institute record in the past leaves no critic a leg to stand on in this regard.

Let all the affiliating clubs show the same spirit which permeates the "old gang" and be ready to step forward and take their places when the time comes as it most assuredly will and we will see experimental wireless as the best organised and most harmonious of all research activities.

Trust your leaders. Give them that measure of support which their experience merits and you will assume a strength which is at present unimaginable.

MR. ALEC. HECTOR

Again to Lecture to Experimenters.

Experimenters will recollect with pleasure the lecture delivered to them on May 10th, last year, by Mr. Alec. Hector, managing director of Messrs. Burroughs, Wellcome, and Co., in the Assembly Hall of the Education Buildings.

On being again approached, Mr. Hector has consented to deliver another lecture early in June this year to a mass meeting of New South Wales experimenters.

The Illawarra Radio Club has been responsible for approaching Mr. Hector, who gladly signified his consent.

At the request of the Illawarra Club the Wireless Institute is making the arrangements and will invite all clubs and experimenters to be present. When we keep in mind the excellent organisation of the Institute we have no doubts as to the lecture receiving just the correct advertisement to pack the hall, as was the case on the last occasion.

Every experimenter worthy of the name should take a careful note of the date which we expect will be known by next week and let nothing prevent him from attending, as Mr. Hector is a thorough scientist with the most modern conceptions of "Relativity."

THE LEICHHARDT AND DISTRICT RADIO SOCIETY.

The 76th general meeting of members of the Leichhardt and District Radio Society, held at the club room, 176 Johnston St., Annandale, on Tuesday, April 15th, was well attended.

On Tuesday next the 78th general meeting will be held, when a special lecture will be delivered by Mr. R. C. Caldwell. The subject, "Fading Signals," is a particularly interesting one, and a good roll up of members is anticipated. Also, Mr. Phil Renshaw Hon. Secretary of the Wireless Institute of Australia, will pay his postponed visit to the Society for the purpose of placing before members the views of the Institute regarding the affiliation with it of other similar bodies in N.S.W. Mr. Renshaw's visit is looked forward to with much interest, as he is in a position to throw much light on the very important question of the proposed amalgamation of all radio societies and clubs throughout this State.

All information regarding the activities of the Society will be supplied by the Hon. Secretary, Mr. W. J. Zech, of 145 Booth St., Annandale, to whom inquiries should be addressed.

CONCORD AMATUER RADIO CLUB.

The above club held its usual weekly meeting at the club room, 'Euripedes," Wallace Street, Concord, on Thursday, 10th April, when a very interesting evening was spent.

The attendance was again excellent. The vice-president, Mr. Stephenson, took the chair, and business was proceeded with.

Correspondence was then received, and it was decided to send the affiliation form to Wireless Institute as soon as possible.

It was proposed and seconded that Mr. Gray be elected to fill the vacancy in management committee. This was carried.

As the transmitting fee had been sent to Melbourne, it was decided to start the construction of the transmitter.

A meeting of the management committee is called for Sunday, the 13th April.

The members then entered upon the usual quarter of an hour question and answers period.

After buzzer practice, refreshments were served. Mrs. Barker was thanked by the club members for the refreshments.

All communications should be addressed the Hon. Secretary, W. H. Barker, Wallace St., Concord.

ILLAWARRA RADIO CLUB.

The 45th meeting, held on the 8th inst., drew a fair attendance of members, considering the inclement weather.

A letter from the Marrickville Club, regarding the action they considered should be taken on behalf of experimental interests at the conference with the P.M.G., was read and discussed, and the secretary was instructed to reply with the club's views thereon.

A letter from the Wireless Institute, forwarding a bond for affiliation for completion by the club in pursuance of the resolutions of the delegates, carried at the meeting on the 19th March, was received.

Mr. Graham (secretary and delegate) here proceeded to deal at length with the many points of doubt and matters in dispute which arose on this question at last meeting, and also in connection with the affiliation bond now before them. He explained that since last meeting he had given the matter a great deal of consideration, and had also had the benefit of legal advice on the more important points at issue, as to the possible effect of the Institute memorandum and articles on the affiliation, and also as to the form and effect of the bond. He was pleased to assure the members that the fears expressed in connection with the many points involved were without foundation, and that the articles in question could not in any way affect the club's position or saddle the members with any additional financial liabilities or responsibilities. He did not see that the affiliation scheme or the method of control could prejudice the club in any way, nor be detrimental to its welfare or activities; but on the contrary, he considered it would, as he had said before, be to their great advantage.

The lucid explanation given on the numerous points at issue, served to entirely clear up all existing doubts, with the result that the matter was closed to the satisfaction of all concerned.

A motion was thereupon accordingly carried unanimously that the bond of affiliation with the Institute be adopted and completed as desired.

As the membership of the club (being over 50) entitled it to two delegates, Mr. Graham's position as delegate was confirmed, and an additional delegate in the person of Mr. W. T. Watkin Brown, F.R.M.S., was appointed.

It being decided to make a drive for more members, information circulars were issued to the members for distribution among outside experimenters, and members were asked to do all they could to induce the outsiders to join up, as it was thought the membership could and should be considerably increased. All members are asked to apply to the secretary for some of these circulars, as each member is required to do his bit in this direction.

It was reported that the committee was still actively dealing with the arrangement of lectures and attractions for popularising the club, and that arrangements were also well in hand for the forthcoming picture show entertainment and wireless demonstration for the purpose of augmenting club funds. By thorough organising work and the active help of each individual member, the committee look to make a big success of the show in every way—so members are asked to come to the club and see how best they can help in the good cause.

This meeting had been set aside for an impromptu exhibition and display of members' apparatus, so after business had been dealt with, half a dozen or so members brought to light the various sets and gadgets which had been brought along for the occasion. Following are the particulars:—

Combined crystal and single valve set, with switching devices for using a combination of circuits; also some home-made crystals, made from lead dust and sulphur heated together, several specimens of which were very sensitive.—Mr. Sellenger.

Improved Crystal Holder, a simple but ingenious arrangement, using the usual cup, but a neat spring contact replacing the usual screw.—Mr. Watkin Brown.

Everset Crystal Set, neatly mounted on panel, using spider-web coils.—Mr. Brown, Junr.

Tuning Panel and Single Valve Panel Combination, good lay-out, using push-bell devices for switches, condensers, rheostat, &c.—Mr. Blackwood.

One Stage Audio Amplifier Unit, well laid out, compact and neatly mounted in small cabinet, table type, good workmanship.—Mr. Mashman.

Each exhibitor was invited in turn to give a brief description of his apparatus, which he did, explaining the various features, advantages, etc.

The Moore Fund

To the Editor.

Sir,—As one of the trustees of the above fund, and in my capacity of Hon. Secretary thereto, I desire to draw attention to the extremely poor response from experimenters.

In matters of this kind a quick and sure response gives great heart to those who are entrusted with duties which are truly sacred. The trustees of this fund feel very acutely that the spirit of the experimenters must have undergone some change. It has been a matter of deep satisfaction that the traders in wireless apparatus have given such splendid support. We all know the experimenters can do better. Many have given, but they are a very small percentage after all. There are 2500 experimenters in New South Wales and the trustees can be pardoned for having expected to collect at the very least £250; whereas only about £130 is in hand so far.

I appeal to all experimenters to rally to the assistance of the widow and two young children of our unfortunate friend and associate who was beloved by all who knew him.

We have shown in many ways that we are a body, well organised, and seriously to be reckoned with when occasion demands, so now let us also prove in our charity we can be as strong as we are in our battles. Every experimenter can help by "passing a word." It is easy, and, no matter how small the contribution, the £250 will then be assured.

"In things important, act, quickly and decisively."

Yours sincerely,
PHIL. RENSHAW.

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Proprietors Wireless Weekly	£5	0	0
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Colville Moore	1	1	0
—. Herker	0	5	0
—. Sanders	0	1	0
Concord Radio Club	2	10	6
V. J. M. Darby	0	12	6
Wireless Institute	5	5	0
J. Usher	0	5	0
D. T. Hinchen	5	0	0
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C. Storm	0	15	0
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E. Mason	0	5	0
N. Ambrose	0	3	0
J. G. Prichard	1	0	0
Keith Davis	0	5	0
C. Leaver	0	5	0
R. Seach	0	2	6
Campsie and District Radio Club	0	15	0
A. E. Henry	0	5	0

Charles Tripp	0	5	0
Wireless Branch (P.M.G. Department, Melbourne)	1	8	0
Illawarra Radio Club	0	10	0
T. E. Dickenson	0	5	0
Aust. Radio Relay League	£1	1	0
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O. F. Mingay	0	10	0
G. E. H. Blanchard	0	10	0
F. Lucas	0	2	6
Mr. Howell	0	10	6
Marrickville and District Radio Club	0	10	6
Croydon Radio Club	1	1	0
Leichhardt District Radio Society	1	1	0
Newcastle Radio Club	1	10	0
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"Vic."	0	7	0
Waverley Radio Club	2	10	0
Wireless Institute of Australia (S.A. Div.)	2	2	0
J. Leverrier	10	10	0
H. Francis Markell	2	2	0
V. S. Liardet	0	1	0
Total	£108	17	6

The Wireless Institute Council invited Captain Therm (Hood) and wireless officers to dine with them at Wentworth Hotel on Thursday last, 10th inst. Unfortunately, owing to pressure of public functions the invitation had to be very regretfully declined.

Messrs. H. A. Stowe and Phil. Renshaw are proceeding to Melbourne on 14th May to participate in the Victorian Division of the Institute's Wireless and Electrical Exhibition that week in that city, and will represent N.S.W. Division at the Wireless Institute Federal Conference on May 16th in Melbourne.

FOR SALE—Complete 3 valve Receiving Set, will pick up all Sydney's stations, have also heard Victorian amateurs. For tuning use honeycomb coils 100-2000 metres, with other suitable coils will work up to 30,000 metres. The valves telephone and accumulator are English make, all parts mounted on bakelite, and enclosed in polished cabinet. Set cost £35, will sell for £18. Reason for selling, have got 5 valve set. If interested, write for appointment. F. TOOPE, 1 Jarocin Av., Glebe.

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Twenty-Four Radio Diagrams and Hook Ups, of Crystal and Audion Receiving Sets. Price, 3/3 posted.

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Radio Frequency Amplifiers and How to Make Them. By J. Avery. Price, 1/8 posted.

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INFORMATION.

(By "The Little American.")

One of the first questions one asks in connection with any receiving set is, "How far will it receive?" In many instances advantage has been taken by the spreading of propaganda designed to create a demand for certain instruments used in radio. In some cases this has been originated to mislead and create a demand for a certain receiving set, and in other cases through ignorance. The above question is seldom answered in an intelligent manner. Probably this is because the question is somewhat ambiguous. It amounts to saying, "How far can you hear the tone of middle C of the pianoforte?" The answer to the latter is, of course, that it depends on the volume of that tone at its source; Whether the tone is emitted by a steam whistle or a child's mouth organ; whether the sound originated from a hilltop or from a valley; whether the listener was on a country prairie or in the midst of city traffic and noises.

A rather mediocre receiving set may bring in signals from a 1000 watt broadcasting station 800 miles away; but a receiving set that will record the signals from a 10-watter 100 miles away will have accomplished a much greater feat. The distance over which radio can be picked up varies with time of year, day and night and other factors. It is sometimes possible to hear a station 1000 miles away at night, while 200 miles would be the greatest distance covered in daylight.

Very long aerials will not bring in loud signals from broadcasting stations. Aerials over 150 feet in length make tuning more difficult, give weaker signals, and bring in more static. More than one wire will not increase the effectiveness of your aerial except in the case of exceedingly short ones of about 20 feet in length.

A radio aerial is not so much of a fire hazard as it is sometimes reported to be. This is not meant to indicate that lightning arresters are not worth while, for protection of the radio apparatus, however. If you have a good protector, the house and instruments are as safe as if you did not have a radio at all. Without a protector, the house is safe, but slight damage might result to the instruments if lightning struck in the back yard.

The term, "wave length," or "wave frequency," has no direct relation to the sending power or range of a sending set, nor does it refer to the distance from which you can receive with a given receiving set. To say that a station is sending at 350 metres wave length is comparable to the statement that a violin string is tuned to "G" of the pianoforte. A lower power radio transmitter, with a maximum range of ten miles, might be tuned to 350 metres, while another transmitter, with a range of 1000 miles could use the same wave length. Likewise, the violin string at "G" might be heard at a distance of 200 feet, a steam whistle also pitched at "G" might be audible from two miles away.

Do not expect amplifying transformers with a high step-up ratio to always give best results. Many 9-to-1 transformers are inferior to 3½-to-1 types. There are good ones of each style. Remember, that the transformer cannot add energy, the B batteries do that.

Annual dinner of Wireless Institute will be held on May 6th next at Wentworth Hotel. Mr. Maclurcan will make his first public appearance thereat, after his return from 'Frisco. Mr. Jack Davis will be a guest of the Institute, and invitations are being sent to Lord Forster and Sir Dudley de Chair, Federal and State Governors respectively, Mr. Gibson (P.M.G.), Mr. Malone and Mr. Crawford, representing the Postmaster General's Department, the President of the Association for the Developing of Wireless in Australia, New Zealand and Fiji, representing the trade, Major Marr, D.S.O., M.C., M.H.R., representing the Federal Government, and Messrs. Tatham and Watt, respectively editors of "Radio" and "Wireless Weekly" representing the local wireless press.

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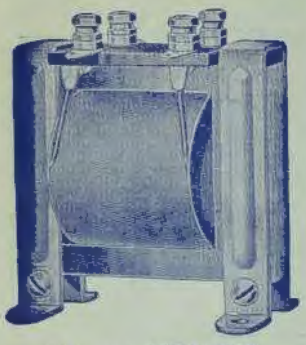

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The Jefferson line embraces a variety of amplifiers to meet every demand — six Audio and two Radio Frequency types.

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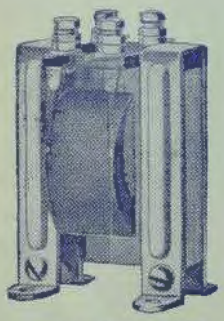

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