



Friday, June 27, 1924.

WIRELESS WEEKLY



# United Coils

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**A GENUINE HONEYCOMB COIL**  
TRUE INDUCTANCE FOR ALL WAVE LENGTHS

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United Transformers

Cutler Hammer Rheostats

United Condensers

Quick Heat Grid Leaks

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Signal Fixed Condensers

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**United Distributing Coys., (N.S.W.) Ltd.**  
WHOLESALE ONLY

Manufacturers of

**RADIOVOX SETS**

A FEW TERRITORIES OPEN FOR AGENTS

28 Clarence Street, Sydney and at 592 Bourke Street, Melbourne



Official Organ of the Australasian Radio Relay League

Vol. 4.

Friday, June 27, 1924.

No. 11

## The Value of Courtesy

The soft answer turneth away wrath.

Listening in a few evenings ago we overheard a demonstration of what might be termed an "Etherean Comedy Drama," with the far flung heavens for a stage—and for an audience the several thousands of listeners in of this and other States—and probably of New Zealand.

The two actors transmitting in this scene thundered wildly at each other for some time and in a final burst of bad modulation, each told the other just where to go. From somewhere in the distance we thought we heard a faint chuckle. Perhaps it was for someone who had just finished reading an article on the status of the experimenter.

The history of the experimental movement—if it were ever published in book form—would make very interesting reading. It would show how a few enthusiasts banded together and by sheer hard toil, laid the foundation stone of a body which has of late grown to be a powerful

force in the development of Australian wireless. It numbers among its members men of every profession and commands the respect and admiration of the community.

The experimental movement, however is not judged as a whole by the outside world, but by the conduct of its members individually. This fact should be always in the minds of those who feel like dropping a few hasty remarks around the ether. Such remarks serve only to bring into disrespect a movement to which no doubt those who offend in this unfortunate manner are, in saner movements proud to belong. In any case it will be recognised that the ether is not the place to discuss, or adjust grievances.

Courtesy is just as essential in the field of amateur wireless as it is in any other direction. A little tact, a little patience, will work wonders while the hurling of personal abuse can do incalculable harm. As we said before, "The soft answer turneth away wrath."

### Roster for Week ending 2nd July, 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, June 26	2 RA 2 GR	2 IJ 2 JM	2 YI	2 ZN	2 UW 2 YG 2 VM	2 ZG	
Friday, 27	2 IJ 2 GR	" "	" "	" "	2 ZZ	" "	" "
Saturday, 28	2 RA 2 GR	2 IJ	" "	" "	" "	" "	" "
Sunday, 29	2 RA 2 GR	" "	" "	" "	" "	" "	" "
Mon., 30	2 RA 2 GR	2 IJ	" "	" "	" "	" "	" "
Tues., July 1	2 IJ	" "	" "	" "	" "	" "	" "
Wednes., 2	2 RA 2 GR	2 IJ	" "	" "	" "	" "	" "

# A SUPER CRYSTAL SET

(By "A.W.T.")

The tuning of this set is accomplished as I said in my last article by means of the slab coil.

There are two of these coils, primary and secondary. The primary is tapped every 10 turns for the first 100 turns of the coil, and then every single turn for another ten; just the same as you tap the ordinary solenoid, or cylindrical coil. The idea, as you know, is to allow of any number of turns being used.

Now the former for making these coils is made of a piece of soft wood an inch thick, and cut to the form of a circle, making a cylinder 3in. in diameter and 1in. long.

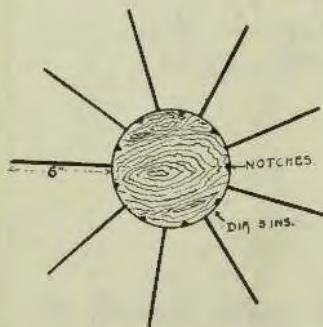
Now, divide the curved surface of this cylinder into nine equal parts and drill holes as per diagram.

In these holes fit nine pieces of 1-8 in. brass rod, so that the former looks like a wheel without a rim.

Then obtain half a pound of number 24 double cotton covered wire (24 d.c. s.w.g.) and wind on the former 110 turns, making a loop every 10 turns on. About 1-4lb. of No. 26 will be ample.

It will be worth noting that if No. 26 is not procurable, either 24 or 28 will do, only it will require a little more 24 by weight and a little less 28 to wind the coil.

The two coils described will work efficiently between 600 and 2000 metre but are not designed for shorter waves. Two coils for use between 200 and 600



metres may be made to the following dimensions:—

Primary, 60 turns 24 d.c.c., tapped every 10 for five tappings, and every single turn for the last ten.

Secondary, 60 turns 22 d.c.c., wound without tappings.

These coils may be tied down to small strips of bakelite, and screwed to a standard coil plug.

When used with the two coil holder they are then easily interchangeable, and coils for any wave length may be fitted.

For the short waves, the primary need not be altered; all that you have to do is to plug in a suitable secondary.

For a station like "Farmer's," on its 1150 metres, you would use the 120 turn coil in the secondary circuit, while for Broadcasters a 40 turn coil would be very efficient.

The 40 turn coil would also work well for the 600 metre traffic, as well as for the amateurs on 240 metres.

For very short waves a 25 turn coil should be used. These coils are very cheap to make, so they are not a very great drawback.

Now, the condenser used in this circuit is a .001 mfd. variable. There are many makes to choose from, the best being, probably, a "United," made by the United Distributing Company, or a "Kilbourne and Clarke," the latter being a somewhat dearer condenser.

Any good type of crystal detector may be used, but preferably one with a screw adjustment.

There are two of the ordinary detectors and a third to use the zincite and hornite combination.

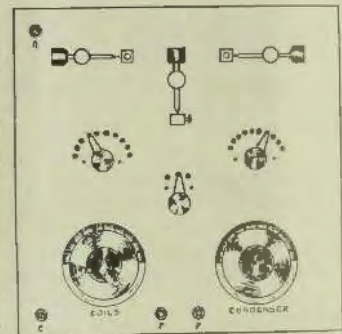
In passing, I might mention that excellent results have been obtained by using two pieces of galena touching together.

Any good make of contact stud will do, while the rotary switches are preferably those with the collar adjustment which enables the arm to be fitted firmly into the panel.

Bakelite tap terminals will give the set a much neater appearance than could otherwise be obtained.

Now, as regards the layout of the panel:—

The coil holder should be mounted at the back of the panel if possible, as it would look ugly to have all the primary tappings on view. The holder is mounted on a wood block at the rear of the panel with the handle protruding. This is fitted with a knob and dial.



It is important to have the switch studs at least 1-8in. apart to avoid capacity losses.

The knob on the coil holder may be screwed off and a knob and dial substituted.

The change over switch enables you to use any one of the three detectors, thus permitting the experimenter to test the relative merits of different crystals without having to keep screwing in and unscrewing them from their cups.

The whole is mounted on 1-8in. bakelite, 12 inches by 12 inches.

There is a great scope for experimenting in this set, as the user will soon discover.

Here are a few suggestions:—

(1) Find the most suitable coils for wavelengths of 1100, 600, 340 and 200 metres.

Up-to-date RADIO EQUIPMENT, of the First Quality, at Competitive Prices.

"COL-MO," 10 Rowe St., Sydney.

Friday, June 27, 1924.

WIRELESS WEEKLY

3

## SIGNAL Home Assembly Sets



Model Phone valve, £5-10-



Model Q 2 valves, £9-9-  
Model R, three valves (Audio Freq.) £11-11-



Model S three valves (Radio Freq.) £11-11-

Model T four valves (Radio Freq.) £13-13-

### *Make It Yourself*

**T**HE SIGNAL HOME ASSEMBLY SETS are designed to meet all demands for complete sets ready to be assembled. Simply constructed, and yet efficient. Each set contains all the parts necessary to construct the set proper. All contained in an attractive oak cabinet, mission finish, with engraved Bakelite panel all bored ready for mounting the parts.

INSTRUCTIONS and a clear diagram make it very easy to assemble these sets.

BOYS, YOUNG and OLD, here you can get all the thrill and satisfaction of MAKING YOUR OWN, and SAVE HALF THE COST

ASK YOUR DEALER FOR "SIGNAL"  
and if he has not yet stocked it write us

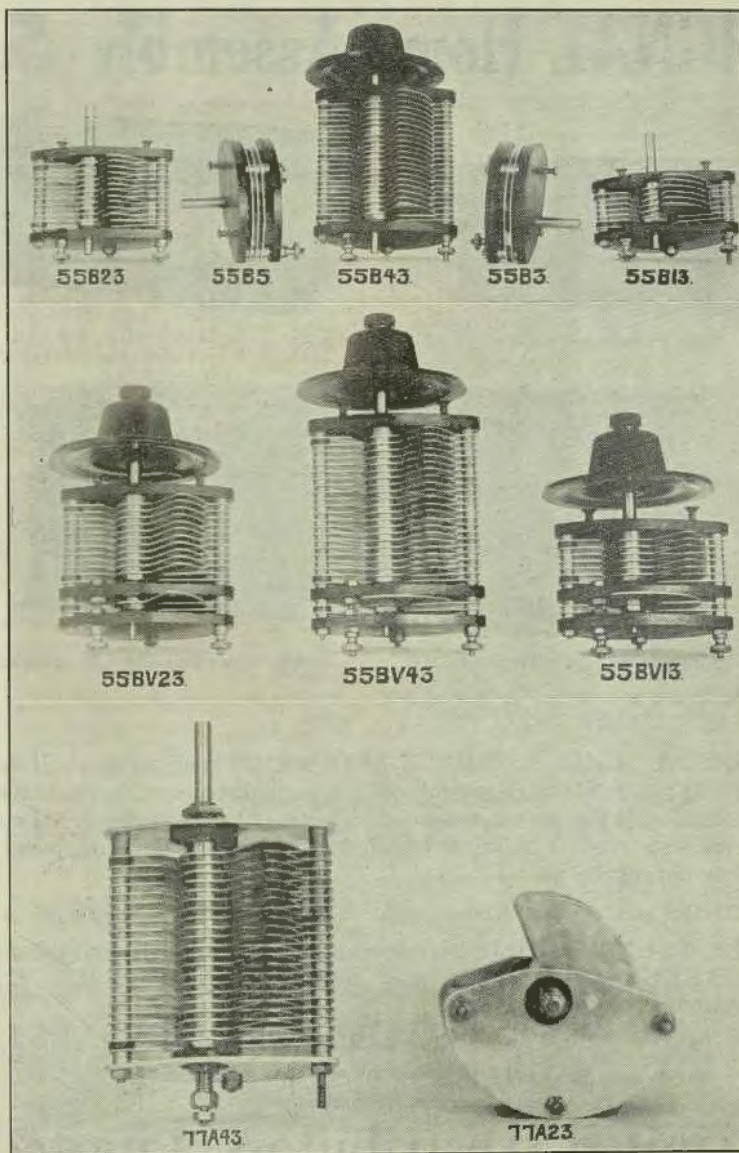
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Something new in Australian Manufacture



THE COLVILLE-MOORE WIRELESS SUPPLIES LTD.  
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Phone B 2261 (Sales and Office)

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Something New in Australian Manufacture!

# VARIABLE AIR CONDENSERS

## THE HEART OF THE TUNING UNIT

Effective Tuning is Only Possible with the Condenser of Low Radio Frequency Resistance.

**TYPE 55B, VARIABLE AIR CONDENSER.**—A better class highly efficient and inexpensive condenser for the radio experimenter.

**ENDS: MOULDED BAKELITE.**—Brass bushed ends.

**PLATES: HEAVY ALUMINIUM PLATES.**—Eccentric in design, providing an extremely gradual variation in capacity, and making this instrument suitable for accurate calibration of wave-meter work.

**CONTACT: POSITIVE SPRING CONTACT.**—Ensuring perfect connections, with movable plates.

**SPINDLES: TURNED.**— $\frac{1}{4}$ in. brass spindle.

**FINISH: NICKEL PLATED.**—Brass and aluminium finish.

**VERNIER, TYPE 55B,** is equipped with a three (3) plate attachment, allowing minute capacity variations for fine tuning.

TYPE 55B—	3	Approximate Capacities.		8/6	Vernier
	5	"	.00075	10/-	"
	13	"	.0015	12/-	20/-
	23	"	.003	15/-	23/-
	43	"	.0055	20/-	28/-

**TYPE 77.**—A highly efficient variable air condenser, of rugged construction. Similar in characteristics of type 55, except that the end plates are of heavy aluminium, hard rubber bushed. Panel mounting by one hole, similar to telephone jack. In two capacities only.

**TYPE 77A—23 Plate Capacity,** approximately 550 M.M.F. (.0055 M.F.) 12/-

**TYPE 77A—43 Plate Capacity,** approximately 1000 M.M.F. (.011 M.F.) 15/-

The Colville-Moore Wireless Supplies Ltd.

10 ROWE STREET, SYDNEY

Phone : 52261. Sales and Offices

Works: B1721

Continued from page 2

for 100 turns, and then a loop for every single turn for the last ten.

Next tie the coil with strong thread to prevent it unwinding, give it a very light coat of shellac, and while it is still wet pull out the "spokes" and gently slip the coil from the former. Now hang the coil up to dry.

A good plan is to notch the former, so as to make it easier to tie the thread.

Now procure some 26 S.W.G., D. C.C. (or D.S.C.) and wind another coil of 120 turns. This coil is the sec-

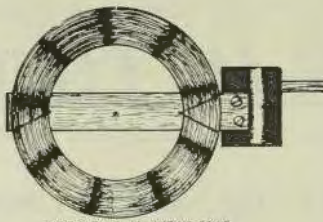
(2) Compare two well-known crystals like Q.S.A. and N.H.M. galena, and decide which is the best and the most stable crystal.

(3) Listen specially for amateurs, and make a neat record of all the stations heard and how clearly and strongly they were heard.

These are only a few, but the constructor's ingenuity will not only furnish more, but will no doubt improve on the few ideas herein expressed.

The circuit, as you see, is just the ordinary "loose coupled" two coil circuit.

A condenser of .001 microfarads capacity shunted across the telephones sometimes improves the tone of the signals.



METHOD OF MOUNTING GRILLS

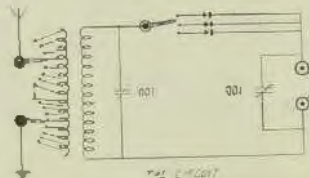


FIG. 14 (CONT)

THE A.R.D.E. VALVE.

A feature—and a most important one—of dull emitter valves, is that they effectually dispose of the bugbear of battery charging, to say nothing of the initial outlay on the accumulator. Not every purse can afford an accumulator; there are many people so situated as to have easy access to a garage or service station where recharging can be effected.

The Ediswan Company, which has several types of highly efficient vacuum tubes to its credit has produced a valve which has been specially designed to meet the growing demand for a valve that will function at very low filament volts and at the same time have extremely long life. This valve is known as the A.R.D.E.

It is the result of much careful experiment and research, coupled with tests under actual working conditions, and it is remarkable for its sensitivity and absence of noise. The filament voltage is 1.8 to 2.0 volts. Filament current 0.30 ampere. Plate voltage, 20 to 50. The overall length, including pins, is 110 m/m., and overall diameter 29 m/m. The valve fits the standard 4-pin socket.

EXPERIMENTERS!—COMPARE THESE PRICES

3in. Dials, 2/6 to .. . . . .	4/-	Aerial Earth Switches .. . . . .	3/-
American V.T. Sockets 2/3 to .. . . . .	4/-	8 point Inductance Switches .. . . . .	10/-
English V.T. Sockets 2/- to .. . . . .	2/6	Mounted Crystal Detectors .. . . . .	9/6
Book Pattern .001 Condensers .. . . . .	15/-	Columbia 22½ V. High Capacity "B" Battery .. . . . .	14/-
Vernier Condensers 3 p. .. . . . .	12/-	Moulded ¼in. Lead-in Insulator .. . . . .	4/-
Var. for Condensers 5 p. .. . . . .	13/6	Moulded 9in. Lead-in Insulator .. . . . .	5/6
Inherent Balance Condensers .0015 .. . . . .	43/-	Variocouplers .. . . . .	24/-
Audio Frequency Transformers .. . . . .	22/6	Variometers .. . . . .	45/-
R.C.A. Audio Transformers .. . . . .	42/6	W.D. 11 Valves with Adaptors .. . . . .	35/-
Jefferson Star Transformers .. . . . .	25/-	Weco Valves fit standard English Socket .. . . . .	37/6
Jefferson 41 Transformers .. . . . .	32/6	De Forest Duo Lateral Coils from 25 turns from 11/3 Mounted.	
Switches 3/6, 4/- 4/6 and .. . . . .	5/-		

See special display in our showcases.

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WIRELESS ENGINEERS AND SUPPLIERS

1ST. FLOOR CALLAGHAN HOUSE 391 GEORGE ST., SYDNEY

Telephone: M 3069

(Opp. Hordern Bros.)

Makers of the famous "Burginphone" receivers.



Friday, June 27, 1924.

WIRELESS WEEKLY

*New Broadcasting Stations planned by the Japanese*

**Wireless Weekly  
SUBSCRIPTION RATES**

Single Copies . . . . . 3d. net  
12 months (52 issues, 13/- post free.  
6 months (26 issues) 6/6, post free.

All communications to be addressed to the Editor, Wireless Weekly, 33 Regent St., Sydney.

Telephone, Redfern 964.

All advertising and other matter for insertion should be in the hands of the Editor by Friday.

All copy must be written in ink or typed, and on one side of paper only.  
Advertising Rates on application.

Early in 1922 several Japanese electrical engineers brought with them from America £1000 worth of apparatus for the purpose of demonstrating to their companies the possibilities of radio broadcasting. One set was established at Waseda University, and as a result of the initial trials several newspapers became interested and a group known as the Wireless Association was organised with a capital of about £100,000. When news of this plan became known the Japanese Government informed the group that they must discontinue operations, as there was no law in Japan permitting the broadcasting of news by private enterprise, whereupon the group, through their connections, prevailed upon the Ministry of Communications to consider the issuance of proper regulations. After nearly a year of apparent inaction on the part of the Government, interest in the scheme began to lag, and it was not surprising that the association lost confidence in an undertaking which was costly, difficult to get started, and of problematical value

in Japan. The earthquake of September 1 destroyed what little enthusiasm remained, and the Wireless Association was obliged because of lack of funds to abandon the project.

In the meantime Government experts had been studying the problem, and on December 20 of last year, at a time when Minister of Communications issued a set of regulations authorising and governing broadcasting by radio.

Although no permits have been issued for broadcasting stations since the publication of the regulations six weeks ago, there are, nevertheless, indications of a slowly reviving interest. Certain newspapers, visualising the possibilities of the radio telephone as a novel means of advertising, are seriously considering the establishment of a low-power station in Tokio and another in Osaka. At the same time, banking interests in Nagoya and Yokohama, who have recently suffered from the frequent interruptions in telegraphic communications, are planning.

*Continued on page 16*

*The Greatest Event ever launched by David Jones'*

Now for

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SENSATIONAL REDUCTIONS  
IN RADIO DEPARTMENT

*Less 2/- in the £ for Cash*

except on a few proprietary lines

**DAVID JONES'**

Radio Dept., 252 York Street, Sydney

Correspondence

K.G.O. ON TWO VALVES.

Corrimal,  
16th June, 1924.

The Editor,  
"Wireless Weekly."

Dear Sir,—There being so much doubt among certain leading experimenters as to the authenticity of reports of reception of K.G.O. on a two-valve set, I venture to make a similar report.

There have been, as the radio public well knows, a few instances of K.G.O. reception in Australia; but these receptions have been obtained by multi-valve sets—at least four valves being used in all cases, to my knowledge, except that of Mr. A. E. Wright, an experimenter at Scarborough, when he used two valves to receive K.G.O.

Last night, however, I received K.G.O., the transmission being received as clear as a bell and at good audibility on a three valve set—one R.F., one Det. and one A.F.—carrying eight high resistance telephones. On listening with the first two valves only, the station was easily audible—it was certainly no whisper, as some experimenters have reported their receptions to be.

The closing announcement was as follows:—

"The music just transmitted was by — (static obliterated the name) orchestra, at the Hotel St. Francis, San Francisco. This is station K.G.O., station K.G.O. Signing off now, at 12.55. Good morning."

This corresponded exactly with 6.55 p.m. local time, and the above can be verified in detail by Miss E. M. Potter, public school teacher, Balgownie. This lady was the only other listener at the time, and like myself, evinced no surprise at the strength of the reception (considering that some amateur had wandered off his wave length and was putting over a real orchestral selection) until the closing announcement was made in the accents that left no doubt as to the nationality of the speaker.

This reception was obtained without resort to aerial reaction such as was used by Mr. Wright.

Marco Rheostats, 30ohms, 6/8; Jacks, 2/6 and 3/6; Plugs, 2/8 and 3/4 each. Colville-Moore Ltd., 10 Rowe St.,

Reaction is obtained by coupling to the tuned anode inductance.

The fact that no aerial reaction was used is perhaps unique—judging by the nightly caterwauling, in this locality, at any rate.

It is almost impossible to do any D. X. work until broadcasting has ceased or else before it has started.

Yours faithfully,

J. S. G. WORLAND,  
Licensed Experimenter.

I can fully verify the above report.  
—(Signed) Edna M. Potter.

THE CASE FOR MR. SANDEL.

During the last few weeks several amateur transmitters around Sydney have complained that their working has been seriously interfered with by continuous transmissions from 2UW, the station of O. Sandel, Bellevue Hill. On occasions there have been wordy battles in the ether, which were unfortunate in that they only serve to discredit the status and dignity of the amateur. We have now received from Mr. Sandel a number of letters forwarded to him by experimenters, testifying to the efficiency of his station. All of these eulogise 2UW's transmissions, and repudiate the suggestion that he has in any way interfered with the reception at their stations.

While we do not wish to open a controversy in these columns, in fairness to Mr. Sandel we feel justified in publishing extracts from the letters.

Percy L. Sewell (2CJ) writes: "Transmissions from 2UW have never interfered with any reception at my station. On the other hand, his transmissions have been very useful to me in numerous experiments I have carried out."

J. H. Drage-Miller: "In my opinion you are one of the best local experimenters regarding quality and clearness. I have never any difficulty in tuning in any other local station."

Arthur Creamer (2VR): "On no occasion have you interfered with me in any way, and in one or two instances you have closed down at my request to enable me to carry out some D.X. work."

C. R. Cramp: "I have never experienced any difficulty in tuning you out from another station."

J. A. Carnsly: "In my opinion your transmissions are consistently the best on the ether. You never cause interference."

SHOULD REGENERATION BE ALLOWED?

In connection with this question, here are the opinions of well known men who have been kind enough to express their views for the benefit of Wireless Weekly readers. (It is interesting to note that at the recent meeting of the Affiliated Clubs' Delegates, it was almost unanimously decided to forward a recommendation to the P.M.G. that full regeneration be allowed experimenters).

Mr. C. D. MacLurcan: It is a very difficult matter to decide without serious thought, but I should say that in the hands of the experimenter who is capable of controlling his receiver properly, there is no harm in the use of regeneration.

Mr. W. D. Scott (President of Association for Development of Wireless): The Australian experimenter is experimenting for the advance of wireless in Australia. Therefore no restrictions should be placed upon him. All the most efficient receivers sold in America are regenerative.

Mr. W. P. Renshaw (Hon. Sec., Wireless Institute of Australia): Australian experimenters have demonstrated that they are the most efficient in the world. I am fully confident experimenters are fully capable of handling receivers so as not to interfere with others. Regeneration should be allowed.

Mr. Malcolm Perry: Considering that in Great Britain and America, both older countries than ours, and where the question is far more important than here, full regeneration is allowed, then there is no reason why the restriction should be imposed in Australia.

Mr. E. T. Fisk (Managing Director, Amalgamated Wireless A/sia, Ltd.) stated that he did not feel disposed to offer any opinions at the moment. He referred, however to his recommendations at the Melbourne conference last year.

Experimenters will be interested to learn that on Saturday, June 21st, the marriage of Mr. R. Shaw and Miss "Billy" Gray took place at St. Mary's Church of England, Waverley, Sydney.

Mr. Shaw, who is now engaged on the constructional staff of United Distributing Company, Limited, will be remembered as the operator of the American sailing ship, "E. R. Sterling," when that ill-fated vessel foundered in the Tasman Sea, and a dramatic rescue was effected by H.M.A.S. "Melbourne."

Friday, June 27, 1924.

WIRELESS WEEKLY

BRITISH BROADCASTING FEES.

The British Broadcasting Company is reimbursed for its operations in two ways—one, by the allotment of a proportion of the annual licence fee paid by listeners, and secondly, by the payment to the company of a royalty or tariff by the manufacturer on the sale of complete receivers. No tariff is charged on components except in the case of apparatus containing valves.

The B.B.C. tariff on a crystal set is 1/-; on a one valve set, 6/-; two valves, 11/-; three valves, 16/-; four valves, 25/-; and so on. This tariff is, of course, included in the price of the receiver, and is paid by the purchaser. The annual licence fee is 10/-, of which 7/6 goes to the B.B.C. and 2/6 to the Government.

Broadcast listeners are not permitted to use receivers which may energise the aerial, but no restrictions whatever are placed upon the experimenter, who must first demonstrate his claim to the title by satisfactorily answering a number of technical questions. The profits of the B.B.C. are limited by law to a certain percentage, and in consequence of this, more stations are being opened up, services are improving, and the tariff on receivers has been reduced.



Howard I. Mitholland, studio director and chief announcer of K.G.O., the Pacific Broadcasting Station of the General Electric Company, Oakland, California, who is known all over the Continent of North America, and even to the residents of the South Sea Islands as "H.M."

BRITISH PRODUCTS.

Mr. W. Bloggs, overseas sales manager for the Sterling Telephone and Electric Co., Ltd., London, has arrived in Sydney with a complete sample line of the Sterling Company's products, which are at present being displayed at MacDonnell House.

Among the most attractive items are two, three and four valve reflex receivers, having a loop aerial projecting from the top, the base of the loop passing down through a slot and making connection in much the same manner as the modern telephone jack and plug. A small compass let into the lid shows the direction in which the loop is turned. The loop is adjusted by means of a knob on the panel.

These receivers have a most pleasing and well finished appearance, and are stated to be extremely popular with broadcast listeners in Great Britain.

The loud speakers shown include the British Magnavox, manufactured exclusively by the Sterling Company, and a range of extremely attractive speakers having the Sterling brand. In addition to radio material, there is a range of telephones, telephonettes,

COMPETITION

- 1st Prize...Complete One Stage Amplifier Value £5.5.0
2nd Prize...One Pair Trimm's Professional Head Sets Value £2.2.0

CONDITIONS

- 1. The prizes will be awarded to the best one valve set complete for reception of telephony.
2. All materials to be purchased from the Woollahra Radio Specialist.
3. There be no less than 10 entries.
4. Entries close with promoter, 30th June, 1924.
5. Sets to be completed and in hands of promoter not later than 31st July, 1924.
6. Results will be announced in Wireless Weekly on the 8th August, 1924.
7. The decision of the Editor of Wireless Weekly be final.
Further particulars and bargain radio goods from:—

A. F. PRICE, Woollahra Radio Specialist
220 Oxford Street, Woollahra

WAV. 451

bells and accessories put out by the Sterling people.

Mr. Blogg says that the broadcasting fever is sweeping rapidly through Great Britain, but that interest slackens very considerably during the summer months, when, owing to the long twilight, people are mostly out of doors.

This fact, however, enables the manufacturers, whose output cannot keep up with the demand, to concentrate during summer upon the manufacture and accumulation of stocks to meet the winter and overseas orders. The Sterling Company employs 3500 hands, and 90 per cent. of these are engaged exclusively in the production of radio apparatus.

Mr. Blogg is returning home via South Africa. Messrs. Lawrence and Hansen are the Australian agents for the Sterling Company.

In view of the close proximity of some finality being reached with regard to the drafting of new regulations governing radio broadcasting, whereby we are assured of open sets, the Universal Electric Company decided to take a bold step and launch out on a much larger scale than here-

before, so accordingly they have entered into a lease of very up-to-date and commodious premises situated at 108 Market Street (between Pitt and Castlereagh Streets).

Realising that the "sealed set" was doomed to an early demise, and anticipating a boom in radio as soon as this absurd restriction, which has almost strangled the industry, is lifted, they decided to take time by the forelock and act promptly. Therefore, about four months ago, Mr. M. C. Fry, who was the originator of this firm, sailed for America, to secure good connections over there and purchase ample stocks to meet the undoubted demand which will follow the advent of the open set.

It is pleasing to note that the first shipments of these goods are now on hand, and are comprised of all the latest products in the radio field, many of the lines being quite new to the Australian market, and by virtue of their quality, coupled with reasonable prices, we feel sure these goods will soon gain popularity.

The Universal Electric Co. has been fortunate in obtaining the sole agency for Thordarson transformers, C.R.L. products, both recognised as being of

the highest efficiency in their particular field. They should make a strong appeal to the experimenter in search of quality apparatus.

The Universal Electric Company will be pleased to demonstrate their new lines to all interested parties, and we feel sure that a visit to their new store will amply repay the prospective purchaser.

A NEW VARIOMETER.

A feature of the Sterling apparatus now on sale is a variometer, which covers a wave range of from 250 to 2725 metres. Its construction is an entirely new departure from the conventional type customarily used, being finely made and high-class in every particular.

Will give away a number of back numbers of Wireless Weekly to school boys starting in wireless. Write in first instance, to C. Luckman, 11 Queen St., Croydon.

FOR SALE.—Crystal set with 3 valve amplifier, panel mounted, speaker, batteries, etc., £16 or offer, "Langley," Griffith St., Balgowlah.



**HEAD PHONES**

NEW SYSTEMS 2,000 & 4,000 ohms **35s.**

WESTERN ELECTRIC 4,000 ohms **44s.**

VISIT OUR  
**RADIO SHOWROOMS**

NEW GOODS ALWAYS ARRIVING

DUBILIER CONDENSERS  
BRADLEYSTATS AND GRID LEAKS  
GILFILLAN, REMLER & IMPERIA PARTS

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MAGNAVOX M4 **£8-0-0**

MAGNAVOX M1 **£10-10**

AMPLIONS from **£4-0-0**



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And at Melbourne, Brisbane, Adelaide, Katoomba,  
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*Continued from page 7*

in conjunction with the local Stock Exchanges, to establish wireless stations for the broadcasting of stock quotations; financial, foreign exchange and commodity market news. A representative of the Nippon Electric Company states that it has been asked to make five different bids on radio broadcasting apparatus of a maximum power of 500 watts.

It is reported that the future development of radio telephony in Japan is dependent upon so many factors as to render it practically impossible to indicate with any degree of certainty the probable trend of the industry. It would be natural to suppose that a novelty-loving race like the Japanese would show as keen an interest in a new development of this kind as they have, for instance, in phonographs and cameras. However, whether this interest will develop into more than a fad with a limited appeal will depend upon the cost of the instruments, the quality of entertainment available, and the degree of strictness with which the Government enforces the regulations.

With regard to the first factor, low cost is essential to the success of radio in Japan. Experts estimate that the Japanese public will not be willing to spend on the average more than 50 yen per receiving set, and that the other incidental costs, such as fees to the government and to the broadcasting stations, will have to be kept at a correspondingly low figure. At this price, of course, it is evident that the majority of sets must be of crystal type and, because of the prohibitive import tariff of 20 to 40 per cent, they will of necessity be of domestic construction. Sets of this type receive very satisfactorily within a radius of twenty miles, and are therefore particularly well suited to the demands of the large potential markets in such centres of population as Tokio, Nagoya and Osaka.

The question of supplying the right sort of entertainment presents another serious problem. There is a dearth of high-grade talent in Japan; there are practically no good orchestras, and as the broadcasting of news cannot be depended upon to satisfy the demands of the public for any length of time,

the broadcasting stations will, in the beginning, have to rely chiefly on phonograph records and native story tellers.

Here is the result of three night's listening-in at the station of Gordon Weyman, Lindfield.

- Victoria: 3BD, 3BL, 3BU, 3JH, 3BH, 3JU.
- Queensland: 4EG, 4CM, 4CK.
- South Aust.: 5BQ, 5AG, 5AH, 5DA.
- Tasmania: 7AA.
- New Zealand: 2AO, 3AM, 2AR, 2AP, 4AR, 3AD, 2AS, 1AO, 2AW, 2XA, 4AA, 4AY, 2AL.
- America: 6XAD, 6BBC, 6CGW, 9AGU.

This list will also serve as QSL to the transmitters mentioned.

There were 184,965 pounds of radio apparatus exported from the United States during January, valued at 331,849 dollars, according to figures just made public by the Department of Commerce. Of this amount by far the largest went to Canada, with a value of 160,282 dollars.

## THIS WEEK'S SPECIAL

TO COUNTRY CLIENTS, THIS OFFER IS GOOD FOR A FORTNIGHT - - - LOOSE COUPLER PARTS, FULL SET, £1.

YOU CAN BUILD A LOOSE COUPLER SET FOR £1 AT ELECTRICITY HOUSE, 387 GEORGE STREET.

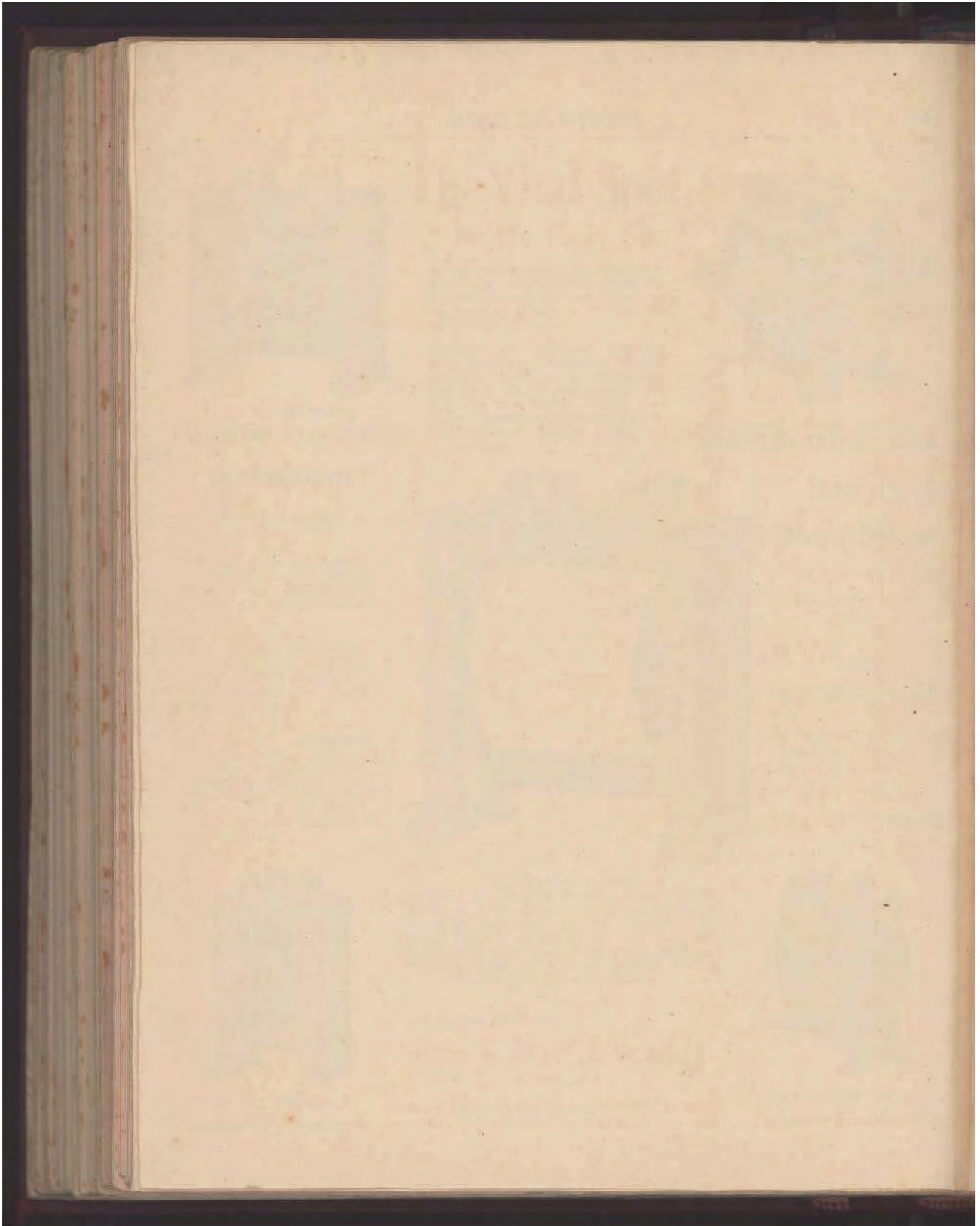
	s.	d.		s.	d.
2 Primary Ends, Maple			Cardboard Tubes	each	6
2 Secondary Ends, Maple	set	2 0	Secondary N.P. Switch		1 6
Baseboard, Maple		2 6	8 Studs and Nut		1 0
Primary Wire		2 0	2 Stops		6
Secondary Wire		2 6	Ball and Socket, Det. Am., N.P.		2 0
Slide Bar and Slider	each	1 6	Crystal Cup, N.P.		6
Sliders	pair	1 6	4 Terminals, N.P. at 4d. each		1 4

On account of prices being greatly reduced our catalogues are now obsolete. Send for prices and particulars of anything required. We have it cheaper.

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J. S. MARKS, 2 G R. Manager



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### SINGLE SLIDE CRYSTAL SET

(150 to 1000 metres)

1 Improved C.R. Tube	2 4
2 Wood End Supports	2 0
1 No. 24 Enamel Wire	1 1
1 N.E. Glass and Box	4 0
1 Pure Rhinoceros	1 0
1 Mounted Lenscap	1 0
1 Galena Crystal	1 0
1 R.P. Resistor	1 0
1 Ant. and Feed Choke	7 6
Aerial Equipment	
	<b>21 3 6</b>

### THE FAMOUS S.E. 100 SET

2 Valve Reflex

1 14 x 1 1/2 4/1000 Elbow	1 4
1 Coil Mount	0 0
2 K.D. Variable Condensers	12 0
2 Audio Transformers	4 4
2 Fixed Condensers	2 15 0
2 Valve Holders	4 0
1 Pure Wire	0 0
1 Rhinoceros	0 0
1 Crystal Resistor	4 0
1 Mounted Crystal	7 0
2 1/2 in. Coloured Glass	0 0
Aerial Equipment	7 6
	<b>27 3 6</b>

EXTRA EQUIPMENT—2 Valves, 1 Head Set, 1 Loud Speaker, 1/4" Bat Battery, "B" Battery Cabinet, B.C. Cables

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### LOOSE COUPLER CRYSTAL SET

(Wave Length, 150 to 2000 metres)

1 Improved C.R. Tube	2 4
1 Mel Wood Ends (4 pieces)	1 0
1 No. 24 Enamel Wire	1 1
1 N.E. Glass and Box	4 0
1 R.P. Inductance Coil	2 0
1 R.P. Choke	1 0
2 Switch Keys	0 0
1 Pure Rhinoceros	1 0
1 Mounted Detector	1 0
1 Glass Crystal	1 0
1 Pure Secondary Coil	7 4
1 R.P. Resistor	1 0
1 Ant. and Feed Choke	7 6
Aerial Equipment	
	<b>21 15 0</b>

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Model L (1 valve)	1 0 0
Model M (2 valves)	2 0 0
Model N (3 valves)	3 0 0
Model O (4 valves)	4 0 0
Model P (5 valves)	5 0 0

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# A P.I. SINGLE VALVE SET

(By "Insulator.")

In response to many requests I am this week going to describe a single valve set which is the best I know. It will function splendidly anywhere, and is guaranteed to give good results. It is regenerative, a feature which the authorities will not allow in towns of 1000 inhabitants or more, as they say regeneration will cause interference if not properly handled. This may be true, but I have quite a number of followers in the country to whom this particular set will appeal, as it is hard to beat for long distance work.

Using this circuit some time back, I myself only using a single valve, have logged many interstate amateurs both C.W. and 'phone and quite loudly too.

It employs the same circuit as the portable single valve set which I described in detail in "Wireless Weekly" of June 6th last, and of which I have received many good reports.

The material required is as follows—

- 1 Bakelite panel, 13in. by 8in. by 3-16in.
- 1 Set of parts for a variocoupler, 4½ in. stator.
- 1 Switch arm, 1½in.
- 7 Contact studs.
- 1 Variable condenser, .001.
- 1 Filament rheostat. Vernier preferable.
- 1 Series parallel switch.
- 1 Valve holder.
- 1 Piece of Bakelite or Ebonite, 2½in. x 2in. x ¼in.
- 2 Knobs and dials.
- 8 Terminals.
- 1 Grid condenser .00025 and leak.

- 8oz. No. 24 D.C.C. wire.
- 3 Inches of 3-8in. x 1-8in. brass.
- 1 'Phone condenser .001.

Before passing on to constructional details let me tell you that all the parts required may be purchased from any of the advertisers in this issue. The variocoupler parts I used are known as the Grodan brand, the vernier rheostat used is the Master, while the series parallel switch could it speak would answer to the name of Framingham. I mention these because the panel is laid out to accept these parts, and I know them all to be good. I will leave the choice of variable condenser to yourself, but the one which is in front of me now is a United. In figure 1, which shows you just how to drill the panel you will note that I have not given any measurements beyond the hole for the centre spindle as the different brands of condensers require varying measurements for fixing to the panel. Now keep this in mind and don't drill the panel until you purchase the variable condenser, so far I think is clearly understood.

After smoothing up the edges with sand-paper mark and drill the panel as shown by Figure 1. Now wind the stator of the variocoupler with 70 turns of wire.

Borrow a hatpin and ¼ an inch from the top of the former, pierce three holes triangular fashion. Thread 8 inches of wire through these holes and wind closely and evenly until you have completed 10 turns; take a tap, continue to wind another 10 turns, tap again, 10 more turns, tap again, five turns more and take the 6th turn down

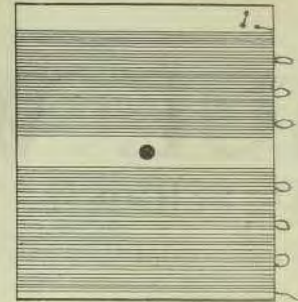


FIG 2

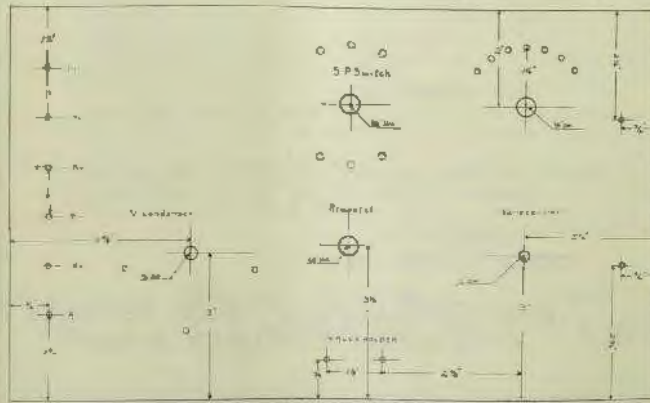
a ½ inch and wind another four, tap again and continue to wind until you have 70 turns wound on, taking tapings at every 10 turns. Figure 2 shows the completed stator and shows the ½ inch spacing. This spacing is to allow the spindle of the rotor to come through and the space should be exactly in the middle of the former. Should any other than 24 gauge wire be employed, before winding draw line round the middle of the former (2½ in from top) and wind on the wire taking taps of course until you come to within a quarter of an inch this line and take the next turn a quarter of an inch below the line, and wind to the end.

Now pick up the rotor and pierce a hole through the outer edge and wind on 20 turns No. 24 gauge wire on each side of the rotor. To do this start from the outer edge and wind upwards to the middle.

At the 20th turn break the wire and thread 1 inch through a hole to the inside. Do likewise with the other side and solder the two ends inside. Note carefully that the winding on each side of the rotor when completed is running in the same direction.

To complete the variocoupler it is now only necessary to assemble the rotor inside the stator using the shaft assembly supplied for the purpose. This is no difficult matter but see that the rotor revolves freely.

Having done this solder the beginning of the winding of the rotor to one side of the shaft assembly and solder the end of the winding to the other side of the shaft assembly. When soldering never use spirits of salts but employ resin or fluxite. Spirits will corrode and eat through copper therefore creating considerable trouble at some later date, possibly the night when your mother-in-law comes



Colmo new Price List is nearly ready. Send in your name for a copy



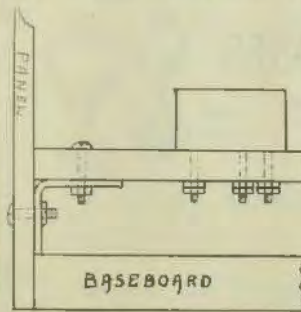
along to listen in.

I'll never forget one night my mother-in-law—oh! I'll tell you about this some other time.

We have now to mount the valve holder, so fashion two brackets from the 3 inches of brass as shown by Fig. 3. On each side of the bakelite drill a hole in each three eighths of an inch from the ends. The small 2 1/2 in. of bakelite is drilled to take the valve holder and the bracket. Note the position of the holder.

Now assemble the various components on the panel. Start with the contact studs and switch arm, then series parallel switch, rheostat, variable condenser nest, followed by valve holder and terminals. Mount the whole panel on a baseboard 1/4 inch thick and bring through the hole for the purpose, the spindle of the vario coupler. Fig. 1 shows just where these parts should go; the terminals down the left side, next the variable condenser, then the series parallel switch under which is the rheostat under which again is the valve holder. The contact studs are mounted above the vario coupler and the aerial and earth terminals on the right side of the panel completes the mounting.

Gaze for a moment at Fig. 4. This shows the circuit and the manner in



which I have drawn it will simplify the wiring.

Figure 5 shows just how to wire up a series parallel switch. This is worth keeping by you as there are times when one forgets how to do this. I have forgotten more than once and it takes quite a few moments to sit down and plan it out. So don't lose it; keep it safely in the archives of the family. Mine is now duly stored in the Family Bible alongside of the wedding photo of Mrs. Insulator. She objects but I don't; no, not a wee bit.

This completes this little set, all

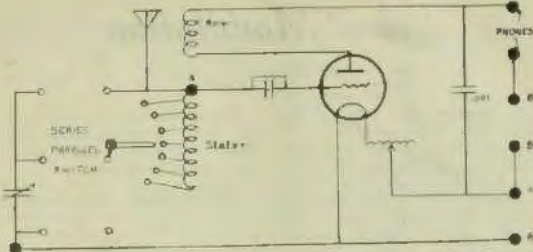


FIG 4

but the tuning, which is very easily acquired. To tune in low wave lengths such as in the amateurs or 2BL place the variable condenser in series and with judicious use of reaction you will be pleased with the results.

For longer wave lengths such as ship stations and 2FC it will be necessary to switch the condenser in parallel.

Of course this circuit is liable to oscillate, so please be careful. Should this occur lower the reaction which is contained on the rotor. When I say lower, I mean you to turn the rotor until the whistling disappears. If on turning the rotor the mushiness (reaction still continues lower the filament of the valve which should rectify the difficulty. Pay careful attention to the grid leak which should be of the type on which can be added manganous lines. See my previous articles on valve sets and it will be seen just how to achieve the correct value of leak in a set. Variable grid leaks are on the market and some may wish to purchase one of these as it will simplify his matter very much indeed.

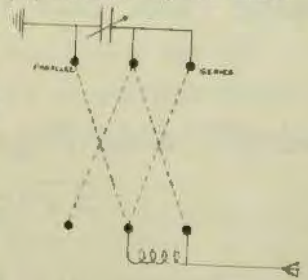


FIG 5

Before closing I want those enthusiasts who experience difficulty with this little outfit to write me and I will reply immediately to any point on which further information is desired.

### HOW REGENERATION WAS DISCOVERED

Regeneration is a study in itself, as it is applied to a radio receiving set. And to get perfect regeneration and keep a circuit in perfect balance while doing so is no small task to-day even with apparatus manufactured by enterprising manufacturers who have spent thousands of pounds in some cases to figure out the correct balance in the particular instrument to be used. If you will look back for a moment and place yourself in the position of Edwin H. Armstrong when such a thing as regeneration had never been heard of nor even sought by some inventor who may have thought such a thing existed you may appreciate in some small degree the genius of Armstrong. Perhaps in experimenting we lose thousands of chances to invent something very useful because we do not appreciate the effect we are causing nor can we properly apply its principles to something useful.

In using the audion as a detector of wireless signals certain coils were required, and Armstrong accidentally placed two of these coils nearer to each other than they should normally be and a strange noise was heard in the telephones. This strange noise started Armstrong to work on his wonderful discoveries.

Certainly it was an accident that led Armstrong to his work. But by those who may, at this point, think that an accident may some day make them also famous, let it be remembered that after the accidental noting of something unusual it was a long, difficult road which led to complete explanation and utilization of the phenomenon involved. This is where the great credit is due.

Continued page 23 col. 1

## Tube Modulation

By C. PRESTON-SMITH (2ZZ).

For the amateur who contemplates D.X. work with 'phone as well as C. W., some information regarding tube modulation may be helpful. To fully modulate the carrier wave, tube modulation invariably gives the best results. For D.X. work a wave that practically vanishes when modulated by speech or music is most desirable. A-5BQ is an example worth following.

Tube, or Heising, modulation requires, unfortunately, modulating tubes in equal number and power to the oscillators, thus bringing up the cost of the station, but if speech of good carrying quality is desired it is worth the extra outlay.

The tubes, which are to be used as modulators should be, for best results, of similar characteristics to the oscillators.

Fig. 1 illustrates connections for tube modulation, using a three-coil exciting circuit.

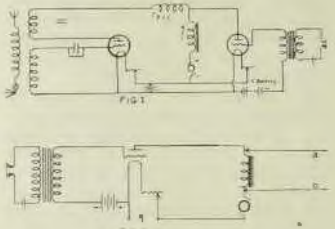
The modulating portion consists of the tube or tubes, audio frequency choke, modulations transformer, grid bias, and microphone.

The operation of the circuit is as follows: While there is no speech impressed on the microphone, the oscillating tube is emitting a pure (?) C. W. carrier. The direct current through

the microphone is of a constant value until varied by sound waves, and hence induces no current into the secondary winding of the transformer. Now, if the microphone be spoken into, the varying resistances of its carbon granule contents produce a varying current which induces one of similar variation, but of greater voltage, in the secondary. This voltage is impressed on the grid of the modulator tube, and, of course, varies the resistance of the tube from plate to filament. This normally would lead to the plate current varying inversely to the resistance of the tube, but another governing factor has to be taken into consideration.

It is apparent that both tubes are supplied by the same H.T. current. This voltage is constant, whether given by a generator or transformer.

The audio frequency choke now comes into prominence. This choke, having a very high self-inductance, prevents any change of current through it, therefore the total current supplied to the two tubes is constant, and is equal to—C. of mod. plus C. of Osc., minus Constant. Now, pre-



Continued on page 22



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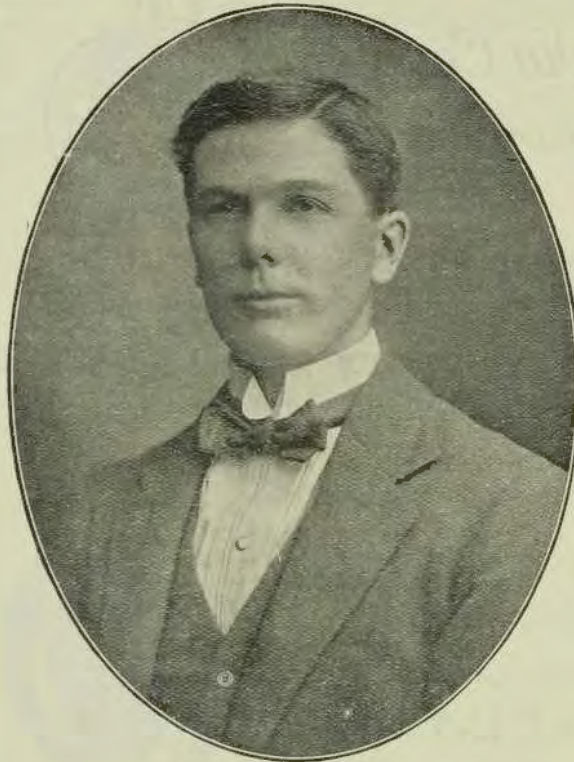
	£	s.	d.		£	s.	d.
Bakelite (for panels), per sq. in., from	1			Contact Studs, with nuts	1	0	
Rheostats	4	6		Extra Nuts, doz.		4	
Giblin Rember Coils	4	0		Battery Clips		6	
Insulators	3			Terminals	from	4	
Valve Sockets, English	2	0		Ebonite Slider		1	6
" " American	3	0		Valves, WD11		1	15 0
Telephones	1	2	0	" WD12		1	15 0
Transformers, Jefferson, 4L	1	12	6	" UV200		1	15 0
" " Star	1	6	0	" UV201A		1	15 0
" " Muir	1	5	0	" UV199		1	15 0
" " United	1	10	0	Dry Cells		3	0
" " Airway (large)	1	19	0	Accumulators	from	1	1 0

PRICE LIST ON REQUEST.

Further particulars and details of this receiver may be obtained from.

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### Personalities in the Australian Radio World.



MR. A. S. McDONALD, M. Inst., R.E.  
(Chief Engineer, Amalgamated Wireless, A/sia. Ltd.)

Born in Victoria in 1890, the subject of our sketch received his technical education at the Melbourne Technical College.

Entering the electrical engineers' branch of the Postmaster-General's Department in 1911, he was the following year appointed erection engineer in the Commonwealth Government radio service. At the outbreak of war Mr. McDonald became Assistant Engineer for Equipment, and in 1918 was appointed Radio Engineer.

When the Commonwealth Government radio activities were taken over by Amalgamated Wireless (A/sia.) Ltd., in 1922, he took charge of the

engineering division.

In 1922 he was admitted a full member of the Institute of Radio Engineers, New York.

During the 13 years that Mr. McDonald has been associated with wireless, his activities have covered practically every phase of radio engineering, from the relatively comfortable position of operator to an unsung and hazardous trip across the Northern Territory from Darwin to Tennant's Creek, and on to Townsville, and from there to Willis Islets, in a 40ft. long open launch.

In 1922 the Company selected Mr.

True distortionless music is a feature with N.H.M. Crystal Rectification.

McDonald to go abroad to investigate the latest practice in connection with wireless telegraphy, telephony and broadcasting.

While away he spent a deal of time at the modern stations at Ongat, Brentwood and Carnarvon, in England; St. Assise and Bordeaux, in France; and Nauen, Eilvese and Konigs Wusterhausen, in Germany. The latest equipment utilised in broadcasting stations in England and the Continent also claimed his attention.

Since his return Mr. McDonald has been engaged in connection with the Company's large wireless undertaking, his principal work being the construction of 2F.C.

A big man—both in stature and mind—a typical constructional engineer—somewhat sparing in words, but abundant in action—such is A. S. McDonald—probably the foremost Australian radio construction engineer of to-day—and to-morrow.

*We are continually receiving enquiries for the issue of "Wireless Weekly" containing particulars of the making of a crystal receiver. The first of the weekly constructional articles, by "Insulator" entitled, "A Highly Efficient Loose Coupler," appeared in "Wireless Weekly," March 21st. This was followed on March 28th by the second article, "Crystal Detector Unit." These two articles give full details upon the construction of a home-made receiver. We have a limited number of these issues left, each of which we will mail to any address upon the receipt of 4d. in stamps.*

#### "PRACTICAL RADIO"

By Henry Smith Williams. This book is all that its title indicates, and something more.

It is a practical guide to the making of Radio outfits from the simplest crystal detector apparatus to the most elaborate amplifying and super regenerative equipment.

When you have read the book you will be able to make your own Radio outfit to use it effectively and you will understand how it works.

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United Distributing Coys. (N.S.W.) Ltd.  
(Wholesalers)  
28 Clarence Street, Sydney.  
Telephone: City 3566.

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

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

E. R. Cullen  
96 Bathurst Street  
Telephones: City 869, 2596.

Radio House  
619 George Street Sydney  
Telephone: City 1487.

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

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

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

Swains Ltd.  
119-123 Pitt Street, Sydney



**THE LEICHHARDT AND DISTRICT RADIO SOCIETY.**

There was the usual good attendance of members of the Leichhardt and District Radio Society at the 85th general meeting held at the club-room 176 Johnston St., Annandale, on Tuesday, 17th June. Amongst other business transacted it was announced that a lecture entitled "Esperanto: Its Relation to Radio," would be delivered by Mr. J. N. Edmonds, on July 15th, by courtesy of the Sydney Esperanto Society. Members were also reminded that another "Sale and Exchange" evening was to be conducted on the following meeting night.

Formal business being disposed of Mr. F. Lett was called upon to deliver the 9th lecture of the syllabus, which took the form of a talk on the

very interesting subject of "Radio Frequency Amplification." The subject was well dealt with, and members derived much benefit from all that Mr. Lett had to say to them. The usual batch of questions followed the lecture, after which a vote of thanks was carried by acclamation.

Next Tuesday night the Society will hold its 21st monthly business meeting, when a number of new applications for membership will be dealt with, as well as other business on hand, and on the following Tuesday night the 10th lecture of the syllabus—Valve Circuits—will be delivered.

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

**CROYDON RADIO CLUB.**

On Saturday, June 14th, the usual weekly meeting was held at the club rooms, "Rockleigh," Lang Street, Croydon, at 7.30, when the business in hand was quickly discussed and attended to.

Owing to the absence of the lecturer, the routine for the evening was somewhat upset. We are, however, looking forward to a lecture by Mr. Malcolm Perry, for the next meeting.

On Saturday, June 21st, the election of officers for the forthcoming year will take place. After numerous discussions between the members, the meeting closed at 10 p.m. All intending members are respectfully invited to communicate with the Hon. Secretary, Mr. G. M. Cuts, "Carwell," Highbury Street, Croydon.

**WIRELESS SOCIETY OF NEWCASTLE.**

(Newcastle District Radio Club.)  
The Editor,  
"Wireless Weekly."

Dear Sir.—A special general meeting of the above society was held at the club room, 25 Winship Street, Hamilton, on Wednesday, 4th inst. Mr. Seward, the president, occupied the chair, and there was a full attendance of members.

Mr. A. Cotton was elected to the vacancy of publicity officer.

A scheme was formulated by which the society will absorb the members of the recently formed Hamilton Experimental Radio Club, and thus bond experimental activities in Newcastle under one control.

It was also decided, in view of the growing importance of the club, as the

*Continued page 20.*

**U.E.C.**

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Standard English Valve Sockets		4	6	Hydrometers, complete for testing accumulator			3 10
Standard American Valve Sockets		1	6	7in. Strain Insulators			4 6
Aerial Insulator, 2in. Porcelain, each			3	2in. Strain Insulators			1 3
Ammeters, Panel Type	10	0		Jacks, 3 Point, for intervalve work			2 9
"B" Batteries, 40 Volt.	12	6		Ebonite Knobs, 2d., 3d., 7d., 8d., and			1 0
Nickel Plated Bezels		1	6	Plugs for Telephones			3 6
Nickle Plated Phone Terminals		4		Connectors, for Switch studs			2 6
Bradleystats	12	6		N.P. Contact Studs, with N.P. Nuts, doz.			1 3
"C.R.L." 6 ohms, Rheostats, complete with knob		3	0	Series Parallel Switches Panel Mounting			3 6
"U.N.X.L.D." 6 ohms, Rheostats, complete		5	0	Rotary Switches, best type			1 6
"U.N.X.L.D." 30 ohms, Rheostats, complete		5	6	A Real Variable Condenser, with 22 gauge Heavy Plates, Bakelite End Pieces, .0005 m.f.			15 0
Square Bus Bar Wire, 24in. lengths		3		Aerial Earth Switches, on Porcelain Base			3 6
Fixed Condensers .0025, French Type	1	0					
Fixed Condenser, .00025, Bakelite		1	6				
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Geared 3 Coil Mountings		1	10				
Coil Plugs		3	6				

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*Continued from page 16*  
 viously, we have seen that the resistance to the plate current alters in the modulator tube, hence the current flowing through it must alter. But if the total current is constant, then the extra current, when the resistance is lowered, must come from the oscillation tubes' share. In return the oscillator gains a little more when the modulating tube has its resistance heightened, by the impressed grid voltage. The resistance of the modulating tube will decrease its resistance whenever a sound is impressed upon the microphone which will cause the grid to receive a positive potential.

We were saying that the audio frequency choke prevented any change of current through it. Well, not quite. For this to be so the value of the choke would have to be infinite which is, of course, impossible, therefore there is some current change through it, though small.

However, as a current change takes place, there must be a voltage drop across the choke. Let us analyse the effect of this.

Firstly, this voltage drop will be similar to that voltage received by the grid of the modulator tube, but of greater magnitude as the modulator tube acts as an audio frequency amplifier. Fig. 2 illustrates this.

The voltage variations across A and B are exactly proportional to those produced by the microphone. When this voltage is positive at A, it is added to the H.T. voltage—from the generator or transformer, and when it is negative it opposes the H.T. supply.

This has the effect of increasing and decreasing the amplitude of the R.F. oscillations produced by the oscillator tube, hence the previously constant wave is now cut into one of varying amplitudes of speech frequency, corresponding to the microphone fluctuations.

The grid bias is essential if good speech is desired. The value of this battery will vary with the character-

*Continued on page 23, col. 3*

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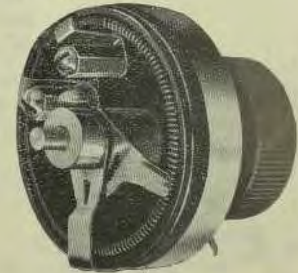
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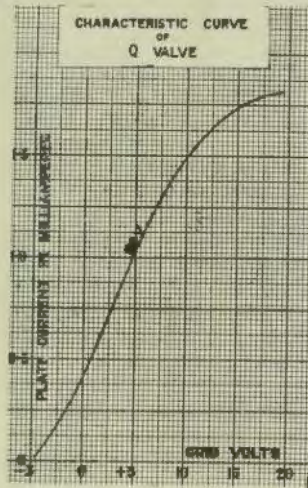
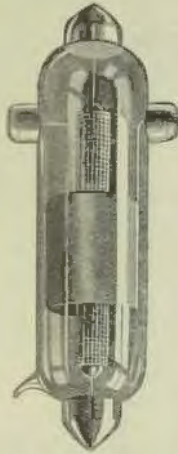
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## "Q" Valve



"Q" VALVE

The "Q" type three electrode receiving valve is used chiefly as a rectifier. Splendid results may also be obtained with this valve as an amplifier for general receiving work. It gives good amplification with reaction, and is also suitable for heterodyning C.W. signals. The distance of the plate from the grid and filament ensures good control and good slope of characteristic. The characteristic curve shows that good rectifying action may be obtained, and also shows that good amplification may take place.

Like the "V24" the "Q" valve has a small spiral spring incorporated in the filament to absorb mechanical shock, and keep the filament taut.

The plate and grid leads are also taken out through the sides of the glass tube, thus reducing self-capacity of the valve to a minimum.

Characteristics of "Q" Valve:—Fil. bat. volts, 6; fil. terminal bolts, 5; fil. amps., 0.45; anode volts, 50-150; holder clips, type "24"; overall length, 73 m/m; diam. of bulb, 18 m/m.

Continued from page 22

istic curve of the tube. For five-watt tubes, between 30 and 80 volts will probably be suitable.

The inclusion of the grid bias is to prevent distortion by giving the grid a negative potential so that the tube may be operated upon straight portion of the curve.

This bias is common to most as a "C" battery, and is often used in conjunction with audio-frequency amplifiers.

If the operating point of the curve were not upon a straight portion, equal variations on either side of zero potential on the grid would not give equal variations of plate current, and distortion would result.

The radio frequency choke is to prevent any R.F. from entering the modulator.

As for the values. The transformer, about 10: 1-15: 1. Choke, audio, about 20-30 henries. Choke, radio, honeycomb of 200 T. Microphone, any is suitable provided it passes enough current to approximately saturate the core of the modulation transformer.

These are the fundamental principles of Heising modulations which it is necessary to grasp before installing and successfully operating this system is possible.

Continued from page 13

The noise which Armstrong heard was the beat note between the oscillation being set up by the De Forest audion he was using and a signal being sent out from some continuous wave station. He found that the pitch of the note varied with the adjustment of his circuit and by keen intuition he came to the conclusion that the tube he was using was oscillating at a high frequency. He pursued the study of the cation until it became very clear to him and he made patent application for his idea—which is fundamentally this: If the plate circuit of a three electrode tube and grid circuit are suitably connected (by magnetic induction or otherwise) the reactions occurring between the two circuits tend to set up alternating current which has a condenser and coil connected together, the value of inductance and capacity determining the frequency of the alternating current generated.

He found out that even if the adjustment was not sufficiently carried out to make the tube oscillate, still the interconnection of the plate and grid circuits might cause a tremendous increase in signal strength. This is the "feed back" or regenerative idea for which Armstrong's work is known.

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*Continued from page 20*

representative body of experimental interests in the State's second largest city, to change the club's name to the "Wireless Society of Newcastle."

A committee of six members was appointed to inquire into the practicality of holding a public demonstration in aid of the club's funds. The committee is to report to the next club meeting.

**WIRELESS INSTITUTE OF AUSTRALIA.**

South Australian Division.

The Monthly General Meeting of the South Australian Division was held in the Prince of Wales Lecture Theatre at the Adelaide University on Wednesday evening.

Although the weather conditions were not by any means ideal there was a large attendance over which Mr. R. B. Caldwell presided.

A letter was received from Mr. Norman Makin, M.H.R., stating that he and Mr. Cunningham, M.H.R., were watching the new regulations in the Federal Parliament House on behalf of the experimenters, and would take the necessary action to object if they were found to be unsatisfactory.

A lecture on "Transformers" was given by Mr. W. Honnor, who gave curves and diagrams illustrating many different points of interest, and gave demonstrations with several different types of transformers.

Members who listened to Mr. Honnor's lecture will be rather critical in the examination of audio frequency transformers when purchasing one of these instruments in the future, so radio dealers, look out.

A very interesting and instructive lecture was given, and the meeting closed with a hearty vote of thanks to the speaker.

**WAVERLEY RADIO CLUB.**

The Club held a meeting on the 10th June, with Mr. A. Burrows in the chair. After the correspondence which included letters from the Wireless Institute re the affiliation, was read, Mr. G. Thomson delivered a lecture on different valve circuits, consisting chiefly of short wave receivers. Members benefited greatly by Mr. Thomson's instructive talk.

The meeting of the 17th, with Mr. M. Perry in the chair, was marked by an unusual attendance. Mr. F. J. Si-

mon, of the Esperanto Society, gave a striking address on the relation of Esperanto to wireless, emphasising the fact that when international broadcasting, eventuated some common language would be almost a necessity. He traced the course of Esperanto, which had its beginning in 1887, from the time when Zharminoff, its inventor, first conceived the idea of a universal language. Its purpose would be not to supplant a national tongue, but to supplement it. The lecture was highly interesting, and at its conclusion a vote of thanks was carried by acclamation to Mr. Simon.

The meeting marked the last occasion on which Mr. J. Marsland, the Club's Treasurer for the last twelve months of so, would be with the members, or, in any case, for a very long time, as he was leaving for Cairns shortly. A travelling case was presented to him by Mr. R. Howell (Secretary) on behalf of the club. Mr. Howell spoke of Mr. Marsland's unflinching energy in his work for the Club; he was the best treasurer they ever had, and his work in other directions was always an example to other members. Mr. Perry also spoke of Mr. Marsland's service. Musical honors followed the presentation.

Mr. Marsland said he was rather taken aback; he was hardly due for this honor; and it was pleasant to hear some nice things said about one before one was dead. He thanked the members deeply.

*We regret very much that on account of last Monday's holiday we were compelled to hold over club notes which did not reach us in time for insertion.*

Radio is becoming more popular every day in Belgium. Concerts are broadcast daily from Brussels, and many persons have sets capable of receiving from Paris, London and other near-by stations.

Permission has not been granted to amateurs to transmit wireless messages, but in certain cases the Belgian Government has given this privilege to large schools and universities.

It is reported that an interministerial commission will convene shortly to discuss questions relative to the use of radio by amateurs. Delegates representing radio apparatus manufacturers and amateur societies are expected to be present.

It is thought that as a result of this meeting many of the difficulties now hindering the progress of radio in Belgium will be eliminated.

*Published by A. W. Watt, "Strathaird," East Crescent St., McMahon's Point, for the proprietors and printers, Publicity Press Ltd., 33/37 Regent St., Sydney.*

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