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GRACE BROS. LTD.

Broadway, Sydney

March 2, 1923.

WIRELESS WEEKLY

1

A Talk With Wireless Weekly

In the near future the Wireless Institute of N.S.W. will be holding a Radio Exhibition which no doubt will be patronised by large numbers of the general public.

Naturally there will be Wireless Music at the Exhibition. What is going to be the first question the interested public will ask?

Can I instal one of these sets in my home and get music, etc., like this any night?

Are we going to be able to answer Yes? or must we still prevaricate and say, Oh, Well! the Broadcasting Co. will be starting soon and Mr. So and So, an amateur, generally sends on Sunday night and you will probably hear So and So transmitting—of course V.I.S. can always be heard sending Morse. (I have heard conversations like this over and over again and have myself had to answer questions in the same strain.—Editor).

Amateurs Wireless Dealers and Manufacturers of Wireless Material, how long do you intend to allow this state of affairs to go on? Here we have an industry that should be giving employment to thousands, held up simply because we have no Broadcasting. Wireless Weekly is striving to assist you, but you must also help yourselves.

BROADCASTING

Will Permission to Advertise Make Broadcasting Possible?

Mr. Mingay's Views.

To the Editor of W.W.

Sir,—After careful perusal of Mr. J. W. Robinson's letter on "Broadcasting," I would deem it a favour to be afforded space to support Mr. Robinson in the majority of his remarks.

Broadcasting must and will come here very shortly.

Prior to the introduction of "Broadcasting" in other countries, Australia was able to hold her own, and in many cases to outdistance many other countries in matters "Wireless."

During the war, the A.I.F. used wireless to a great degree.

Practically the whole of Mesopotamia Campaign was controlled per medium of wireless

(under charge of Major C. W. C. Marr, D.S.O., M.C.) in charge of Australians.

The Palestine Campaign was also responsible for a considerable display of "Initiative" on the part of the Aussies.

And in France the results of the Wireless Section were the subject of commendatory remarks by several British signal Generals.

Since the war we have literally stagnated in progressive wireless.

Except the wonderful performances of Mr. Maclurean and those who have received from a distance, his signals and music.

The words of the now Prime Minister, Captain Bruce, "too

much government" are probably very applicable to the existing state of affairs of wireless.

The Radio Companies are now endeavouring to bring Broadcasting into actual being.

But apparently the amateurs are not doing much to bring matters to a head.

The factor of making Broadcasting a paying concern (not necessarily a prolific profiteering machine) is one that is troubling many people.

This is where I thoroughly endorse Mr. Robinson's suggestion of using Broadcasting as a medium of advertising.

In fact Mr. Robinson has reiterated my sentiments on this matter, which I have been impressing on many of my friends in amateur and business circles.

We go to the theatre which is essentially an amusement place—and we do not complain

about the advertisements used in the interval.

Rather do the majority sit and more or less enjoy them.

Then the programmes of the theatres are three parts full of advertising matter.

The movies are also used advertising.

Our railways, trams, ferries, etc., etc., also.

Then last, but the most important, the newspapers.

Essentially a means of distributing news is probably half full of advertisement, for which much money is paid, and paid willingly too.

Do we object? No! If we do not like them or are not interested we are not compelled to read, but can turn over.

Every newspaper reserves the right to censor the advertising matter printed in their columns.

Now with wireless, providing the Broadcasting management use discretion in regard to the advertising, then who should complain?

If the "Listener-In" did not wish to hear, he could easily turn off his filament and wait for the next item.

If judiciously supervised, I contend that advertising should be allowed.

This avenue of advertising would be rushed by all the advertising specialists, and so the whole cost and considerable profit made, to cover the Company.

This would also do away with the unnecessary taxing of Radio sales (as in England) to the extent of 10 per cent.

So far as a public meeting is concerned, the existing amateur experimenters are to blame as they have not yet showed that they possess sufficient in-

terest in the situation to do much for themselves.

But this will no doubt come in due course.

EVERY ROOM IN THE HOUSE WIRED FOR RADIO AND CALL BELL.

The pleasure and educational benefit from broadcasted radio programs so appealed to me that I had every room in my house wired for radio. Later the same wiring was utilised for an emergency call system from one room to another, says L.C.P. in "Popular Science."

If my family chooses to sit on the front porch, the music is with us. If we are washing dishes in the kitchen, there, too, we may have music, lectures, sporting results, and the like. It takes but a few seconds to change the phone from one room to another.

Contrary to the general impression, a loudspeaker does not have to be located at or close to the radio receiving set. It may be placed at almost any desired distance from the set and connected with it by means of ordinary bell wire. Neither is it necessary to have a large or expensive horn. A cone of stiff brown paper rolled up so that it is about 6 in. long, 4 in. in diameter at the mouth, and $\frac{1}{2}$ in. in diameter at the throat, will give satisfactory results. A 25 cent. megaphone, such as is used at football games, with a type C Baldwin phone taped to the end, makes a good loudspeaker.

I ran a pair of No. 18 bell wires from my radio set to every room in my house, as well as the attic, the cellar workshop and the front porch. These wires terminated in each room

in a pair of binding posts set into a small block of wood nailed to the trim. Over each pair of binding posts a cup hook was screwed into the wall about 7 ft. above the floor to hold the loudspeaker and horn out of the way. The receiver was placed permanently in the living room, connected by leads through the floor with the storage battery in the cellar. A single point switch was arranged for disconnecting the radio instrument, when desired.

The same wiring is used as a call system. Two standard dry cells are kept in a wooden box with a doorbell and a small switch on the outside. About 4 ft. of ordinary lamp cord are connected with these. A push button is attached to one end of another 4 ft. cord. Therefore, if the bell is attached to any pair of binding posts, and the push button to any other set, pushing the button will ring the bell. This is a great convenience in case of illness, because the push button can be placed beside the patient's bed and the bell in the kitchen.

THE WIRELESS "DETECTIVE."

Copenhagen, Denmark, has developed a system of transmitting finger prints by radio, and the results of experiments carried out there make it possible to arrest a man on suspicion and receive the necessary identification by finger print by means of a radio from police headquarters. Crime is an international affair, and with telephone, telegraph and radio on his track, the lot of the "wanted" man or woman will be a hard one.

March 2, 1923.

WIRELESS WEEKLY

3

One Good Set is Worth Many Inferior Ones

Radio Company Guarantees Efficiency

Complete Crystal Receivers ready to attach Aerial and Earth:

RADIO C1 £4 0 0

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Capable of receiving from all over the World

We specialise in all parts and accessories. Country orders specially catered for.

RADIO COMPANY

18 Elizabeth Street (near Hunter Street)

MAKE TUNING ELEMENTS SIMPLE.

In radio frequency amplification you are using what is practically a tuned circuit between each tube, and to an extent this is equivalent to a multiple tuned circuit, because transformers will refuse a pathway to any wave length that does not come within their range. This, in conjunction with the necessity of keeping the capacity as low as possible, makes it absolutely imperative that only the simplest form of tuner should be used.

In cases, where an aerial and ground are used in a radio frequency receiver, it is best to have a loose-coupled tuner to obtain the best selectivity and eliminate troublesome capacity effects. In my work recently with this form of amplification, my tuning element consisted solely of a short wave variome-

ter in the aerial circuit with a half inch lead from the aerial side of the variometer to the grid of the first tube, and another lead of the same length from the ground side of the variometer to the centre tap of the potentiometer. This arrangement, I found, gave me ample selectivity and great efficiency.

If you use a loop aerial with your radio frequency receiver, it is necessary to use a variable condenser in order to tune the loop to the wave length required. The condenser, however, should have as small a capacity as possible, and leads to and from it should be as short as the set will permit.

For radio frequency amplification, elaborate tuning apparatus is entirely unnecessary. Rheostats are not necessary either for radio or audio frequency tubes, although a rheostat is needed for the detector.

NEW RADIO BOOKS.

- Radio for Amateurs—How to Use, Make, and Install Wireless Telephone and Telegraph Instruments** by A. Verrill, 11/6, posted.
- Book of Wireless Telegraph and Telephone**, by A. F. Collins, 8/6, posted.
- Oscillation Valve**: Elementary Principles of its application to Wireless Telegraphy, by Rangay 9/6, posted.
- Radio Experimenter's Handbook**. By P. Coursey, 5/6, posted.
- Wireless Telegraphy and Hertzian Waves**, by S. Bottone, 4/10, posted.
- Wireless Telephone: What It Is and How It Works**. By P. Coursey, 5/6, posted.
- Making Wireless Outfits**. By N. Harrison, 4/6, posted.
- Calculations in Telegraphy and Telephony**. By H. Few, 3/6, posted.
- Experimental Wireless Construction**. By A. Morgan, 2/9, posted.
- Wireless Construction and Installation for Beginners**. By A. Morgan, 2/9.
- A.B.C. of Wireless: A Popular Explanation**. By P. Harris, 10d., posted.

N.S.W. Bookstall Co. Ltd

APATHETIC AMATEUR

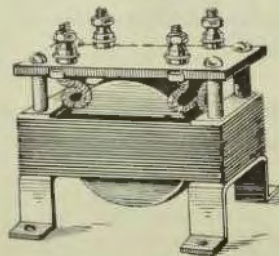
Mr. J. W. Robinson writes:
 At various times you have referred to the apathy which is displayed by Australian wireless amateurs towards matters which directly concern them. Your remarks have, unfortunately, been only too true and until the day arrives when more public interest is displayed by experimenters, wireless can hardly be expected to come into its own in this country. Dozens of Radio Clubs certainly do exist, but there seems to be a deplorable lack of organisation on the part of the managements of these institutions. Let me at this stage distinctly state that my object in writing to you is not to throw cold water on the efforts of the admirable gentlemen who hold office in the Wireless Clubs. I admire them too much to offend them in any way, and I hope that they will take my remarks in the right spirit. Let them consider my letter as constructive criticism, which cannot have any effect except to advance the cause for which they are laboring. A Radio Club is an admirable institution, particularly for the beginner who knows but little of wireless

and who has no means of learning its mysteries other than by the study of text books and the company of other experimenters. The clubs which already exist are doing valuable work in this direction but where is there any evidence of the existence of the slightest determined effort on their part to increase membership? Perhaps I should state at this stage that I do not belong to any club myself. This is because my evenings are fully occupied and I cannot possibly attend the meetings. Only one of my nights is free, and should I find a club the weekly meeting of which suits me, I will certainly join it. I am, however, a very keen experimenter, have been for the past three years, and in other directions I do my utmost to promote the welfare of the science. My own station has been the happy meeting ground for many amateurs, and knotty problems have been solved while "listening-in" on my own set. However, although I have been an experimenter for all this time I have never yet been approached by any club and asked to join. I am properly licensed, my call number and ad-

dress have been published in your paper, radio companies have secured it and have deluged me with circulars, yet at no time has any club or institution of any sort ever taken the trouble to inquire whether I was a member. Now I do not quote myself in order to be personal. I am not obsessed with the idea that I would be an acquisition to a Radio Club or anything of that nature. My case is typical of many. Surely one would imagine that the first step taken by any live club would be a systematic canvassing for members. More members mean better finance, and better finance means increased operations of the club. To return to the point you have stressed in several of your recent issues that of the disinterestedness on the part of amateurs, surely if this apathy is most marked on the part of the organisers of the various clubs it cannot but be reflected generally among the experimenters in New South Wales. Surely, Sir, the time has arrived for a vigorous organising effort on the part of each club to increase its membership. Once this is done a real live State committee could do much which would react to the benefit of the amateurs. I have heard of members joining clubs

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CLOSED CORE—FOR AUDIO FREQUENCY AMPLIFICATION.



This Transformer, which is scientifically constructed, is of the shell type. It is simple, reliable and compact. Maximum results are assured. The complete measurements of this Transformer are $2\frac{1}{2} \times 1\frac{1}{4} \times 1\frac{3}{4}$ in. It is provided with feet in order that it may be mounted in any desired position.

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 211 SWANSTON STREET

and resigning on the grounds that they were "mutual admiration societies." This is an appalling state of affairs. Amateurs have much to learn, and unity means strength. In conclusion, let me again state that perhaps it is a little out of place for me, a non-club member, to rush in and discuss this matter, but as I have already explained, I am not a club member simply owing to the fact that no meeting suits me. Furthermore, being outside of a club and away from the little undercurrents which exist, I can perhaps criticise and discuss the matter purely as a neutral.

TRUST THE POTENTIOMETER.

In radio frequency amplification the potentiometer, a variable resistance device, is the

stabilising element that keeps the entire set under control. The instrument consists of a fixed resistance placed squarely across the A battery. Its variable connection forms a third contact point with an arm that moves across the resistance, thus enabling the operator to take a voltage of any amount for use in the circuit with which it is connected.

In the case of radio frequency, this voltage is for the grid-filament circuit through the tuning coil connected with the radio frequency tube. The potentiometer permits us to put a voltage of any amount upon the grid of the radio frequency tube. This voltage may be but a few milli-volts.

Now to keep the entire set in a state of equilibrium it is necessary that the grids of the amplifying tubes be negative with respect to the filaments. The extent to which grid is negative

with respect to filament depend upon conditions in the set and must be determined by adjustment. That adjustment is just what the potentiometer is for. Consequently, the adjustable arm of the potentiometer will be on the side of the resistance element in such a position as to put the negative bias on the grid. Louder signals are obtained when the arm is on the positive side of the resistance element, but more stable results are obtained from the negative side.

Books for the Model Engineer

Dynamos for Lighting and Charging 30, 60 and 120 Watt. Ready to assemble List A 30.

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The Trimm "Professional" Head Set.

3000 Ohms.

A QUALITY PHONE AT QUANTITY PRICE.

Perfect Reproduction and Articulation at any Range.

Weight Only 10½ ozs.

Compare these specifications with any head set on the market at any price, and see why the TRIMM "Professional" is the biggest value in the Head Set Field: . . . Moulded Bakelite cases and ear caps, which will not warp or crack like cheap composition, no exposed metal parts to become tarnished; single bar Tungsten steel magnets formed to shape to insure uniform tempering and magnetizing; coils wound with maximum number of turns of No. 40 enamelled wire to full resistance of 3,000 ohms; reinforced terminals of stranded wire brought out from coil windings to solder clips coils covered with insulating cloth—no fine wires exposed; arrester gap across cord terminals; improved type head band covered with resilient tubing—comfortable, light weight and distinctive in appearance.

PRICE 39/6 each.

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MAKE YOUR OWN

THE SWITCHING OF L.F. VALVES

By G. P. Kendal, B.Sc., in "The Wireless World."

When a set includes one or more stages of low frequency amplification it is extremely desirable to use just the necessary number of valves to produce the desired signal strength. The switching arrangements to permit of this

with the tubular part. The inner springs make contact through two pairs of platinum points with the corresponding outer ones when the plug is out of the jack. When the plug is inserted the outer springs are pushed apart and thus disconnected from the inner ones. If then, a jack is placed in the plate circuit of each valve, with one outer spring connected to the plate and the other to the H.T. positive, and the two inner ones to the intervalve transform-

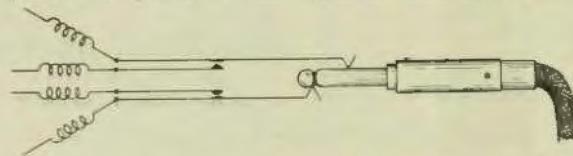


Fig. 1. L.F. Valves Four-point break jack and plug.

being done must be designed with some care to avoid loss of efficiency from dead-end effects and interaction between circuits. In most cases the best solution of the problem is the use of two-pole plug and four-spring break jack, provided that they are correctly used.

Fig. 1 shows the arrangement of plug and jack. The four spring-strips of which the jack is composed may be conveniently referred to as the outer and inner springs, two of each. The outer ones are of unequal length and have their ends bent in such a way as to facilitate the introduction of the plug, and to cause one of them to make contact with the ball, and the other

er primary, it is clear that if the phones are connected to a plug we have the desired system of switching. When the plug is inserted in a given jack the phones are connected into the plate circuit of the valve, while the intervalve transformer is disconnected, thus cutting off the succeeding (un-

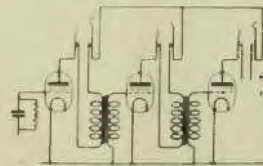


Fig. 2. Method of connecting jacks in L.F. Amplifier Circuit.

ed) valves. When the plug is withdrawn the intervalve transformer primary is brought

TO LISTEN IN

you require a radio outfit not only correct in construction, but made from the best and most suitable materials.

Western Electric HEAD RECEIVERS



ARE DESIGNED

to give maximum efficiency; they are also more comfortable than most makes, by reason of their lightweight and also far more hygienic. Your regular radio dealer will supply you or if unable you can obtain direct from

WESTERN ELECTRIC CO. (Australia) Ltd.
182 Castlereagh St., Sydney
(A few doors from Park St.)

back into the plate circuit and the next valve comes into action. This will be readily understood from Fig. 2.

March 2, 1923.

WIRELESS WEEKLY

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PLACE YOUR TRUST IN SHORT LEADS.

Just why should you avoid all unnecessary capacity in the use of radio frequency amplification? In explaining the reasons, let's consider the 360-meter wave length, since most of us are chiefly concerned with the reproduction of music and speech from broadcasting stations.

It is generally understood that there is a direct relationship between wave length and the frequencies of magnetic waves that surge through space. For a wave length of one meter, this relationship is 300,000,000 cycles a second; for a wave length of 3000 meters, it is 100,000 cycles a second. In other words, if we know the wave length, we can determine the frequency by dividing 300,000,000 by the wave length in meters. Thus, the 360-meter wave has a frequency of 833,333 cycles a second.

Now, to understand the importance of capacity in a circuit using the 833,333-cycle frequency, consider the nature of its action. If a condenser is joined in a circuit, and a direct current placed on the circuit, the moment the current is applied, a small charge will be placed on the condenser, after which further action will be stopped. Reversing the direction of the current will put an opposite charge on the condenser.

If we place an alternating current, instead of direct current, on the circuit where the condenser is used, this same charging and reversal will take place at the rate at which the current is alternating. In other words, with a 60-cycle current, there will be a current passage through the condenser 120 times every second, or once

for every alteration. For currents corresponding to those used on the broadcasting wave lengths where the frequency is 833,333 cycles a second, it will be readily seen how the condenser offers an easy path.

And, since two insulated wires close to each other act as a condenser, it is imperative that all connecting wires be kept as short as possible. Otherwise, the capacity will be increased. This cannot be emphasised too strongly, especially in the leads from the tuner to the vacuum tubes and the wires connected with the tube grids.

USE A BATTERY SWITCH.

Remember that because you are using a potentiometer across the A battery, you are

slowly discharging the battery. If this arrangement is allowed to remain when the set is not actually in use, the battery will soon run down.

Use a battery switch, therefore, and disconnect the storage battery when the receiver is not being used.

All amateur calls in Australasia up to December, 1922, will be found in back numbers of Wireless Weekly.

Get Your Wireless Gear at ELECTRICITY HOUSE

387 GEORGE STREET (OP. STRAND). TEL. 2961 CITY

Condenser Plates, 1/9 per doz.; Condenser Spindles, 2/9 per set; Condenser Ends, 1/9 pair; Honeycomb Coils, from 3/6; Honeycomb Mountings, 3/- each; Filament Resistances, 7/6 ea.; Calibrated Dials, 1/6 each; Knobs, 1/6, 2/-, 2/6 each; Contact Studs, 1/9 per doz.; Switcharms, 3/-, 4/6; Terminals, 6d. each; 'Phone Condensers, 1/6; Grid Condensers, 1/6; Variable Condensers, 25/-, 30/-.

Murdoch's 'Phones, 35/-; Myers' Valves, 35/-.

Catalogues, 9d. each including wiring and other diagrams. All makes of Telephones and Valves.

Crystal Cups, 1/-; Detectors, 5/- each; Loose Couplers, 40/-;

Cabinets, Ebonite, Bakelite, and All-round Materials.

Complete Crystal Sets, £3/10/-, £6/10/-, £7/10/-; Valve Sets, from £9 to £35, 1, 2 or 3 valve; Radiotron Valves, 37/6; Vernier Rheostats, 15/-.

INTERVALVE TRANSFORMER, 40/-.
Closed Iron Core.

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SIGNAL RECTIFICATION

A Consideration of the Methods of Detection.

(By W. J. in Radio Review)

It is the purpose of these notes to discuss the possible methods of rectification, using the three-electrode valve.

The high frequency energy input to the detector is always modulated, that is, high frequency and audible frequency components are present together in the signal.

The function of the detector is to transform high frequency energy to low frequency energy; therefore the circuit connected to the input of the detecting apparatus is tuned to the wave length of the high frequency energy, and the output circuit is tuned to the low frequency energy. But the output power is not entirely in the signal. A high frequency component is present. The output circuit of the detecting valve must, then, contain a capacity which will carry this component of the signal. This capacity is present in all output circuits—sometimes in the form of self-capacity, but generally in the form of a shunt condenser which has reactance high to audible frequencies, but low to radio frequencies. A condenser of 0.001 mfd. is suitable. Its reactance at a frequency of 1,000,000 cycles per second, corresponding to a wave length of 300 metres, is 160 ohms, and its reactance to a frequency of 1,000 cycles per second is 160,000 ohms.

The method of rectification most easily understood makes use of the curvature of the

plate current curve. The grid potential is adjusted roughly by connecting small cells in the grid circuit, or a finer adjustment is made possible with the aid of a potentiometer. Arising from the fact that any appreciable grid current causes damping and a lowering of the input voltage, the grid is usually made negative, and adjustments of anode potential and filament current are made to bring the mean grid potential to the point on the bottom of the plate current grid voltage curve where a given signal impressed across the input circuit produces the greatest mean increase in the filament anode current. The rectifying action takes place because a given positive potential increment to the grid produces a larger increase in anode filament current, than an equal negative potential caused reduction, and it is this balance of energy which is available to operate the instrument connected in the anode circuit. It is to be expected that some types of valve will, for a given input voltage, produce a larger strength of signal than others. A suitable choice should be made.

Since the apparatus in the anode circuit is an energy operated device, its impedance at the signal frequency should approximate to that of the anode-filament circuit of the valve.

Sometimes, when damping is not objected to, the upper bend of the plate current grid voltage curve is used. The mean grid potential is fixed, and the filament current is changed until maximum response is secur-

ed. A low plate potential is necessary in this case.

Now that hard valves are easily procured, the method of rectification which employs a grid condenser and leak is used. In this method the grid voltage—grid current characteristic of the valve is made use of, and the input circuit is proportioned so that grid currents flow.

Considering the grid condenser connected to the grid without the leak resistance, the negative half wave of a signal will produce a positive potential on the plates of the condenser joined to the grid. A current will flow from the filament to the grid, and will charge the condenser plates negatively. The positive half cycle of the signal will further reduce the negative potential of the grid and succeeding pulses of energy will likewise increase the negative charge held on the condenser plates connected to the grid. This reduction of grid potential causes a reduction in the normal filament anode current at audio frequencies, and the instrument in the plate circuit responds. The grid condenser should, then, have a small capacity, in order that the energy which it receives may result in the largest possible voltage fluctuations, which in turn will give maximum signal energy in the anode circuit. On the other hand, it should not be so small that an appreciable radio-frequency voltage drop takes place across it. When "R" valves are used, 0.0003 mfd. is suitable. To restore the grid potential to its normal

value, a leak is provided which will allow the charge to leak away to the filament during intervals between signals. Obviously the leak should have no lower resistance than is necessary for it to perform its function properly.

Two methods of connection are available. The leak resistance may be joined directly across the grid condenser, or it may be joined from the grid directly with the filament. The latter method is preferable.

Several adjustments for maximum audible energy are possible. The grid potential should be adjusted so that input potentials will cause the largest possible filament grid current to flow, and the anode potential and filament current should be chosen so that the steepest portion of the anode current grid volt curve will be utilised. The latter adjustments may also be made to give a steep grid-current grid voltage curve. Maximum signal strength will then be secured.

Using hard valves, the grid leak and condenser method of

rectification gives results superior to any other.

TRANSATLANTIC TRANSMISSION WITH VACUUM TUBES

took place recently when an experimental high-power tube set at Radio Central, Rocky Point, L.I., was operated continuously for 16 hours, handling commercial traffic with Great Britain and Germany on a wave length of 19,000 meters. The set itself is for the time being composed of three 50-kilowatt, 15,000-volt, water-cooled, metal vacuum tubes, known in the engineering world as kenetrons, used as rectifiers, and six 15,000 volt, 20-kilowatt, water-cooled, metal pliotrons, used as high-frequency converters. For experimenting with tube set one of several radically arranged antennae, each more than 1½ miles long and supported by 6 towers, was employed. A current of 350 amperes was delivered at the antennae circuit.

The British Marconi Company have in their station at Carnovan, Wales, a tube set made up by parallel 60 air-cooled, fragile, glass vacuum tubes of approximately two kilowatt input capacity each. The American engineers have reduced the number of tubes necessary for a set from sixty to six, by increasing their individual capacity from two kilowatts each to twenty kilowatts each.

RADIO FOR BACKWARD SCHOLARS.

From beginning to end radio demands a certain amount of reasoning power, and therefore it will be of inestimable value to educational experts in developing the minds of abnormally backward children. The difficulty lies always in arousing their interest, but here, in many ways, it is radio to the rescue again, for it is impossible to "listen in" without curiosity as to how it is done, and thus the sleeping faculties are awakened and remain in a state of animation.

"BECO" WIRELESS PRODUCTS

QUALITY AND SERVICE IS OUR WATCHWORD.

"BECO" HONEY-COMB INDUCTANCE COILS, to cover all bands of wave lengths. These coils are a masterpiece of Australian production. You must see them to appreciate the excellent workmanship. Highly recommended for all wave lengths, also Super-Regenerative. "REMLER" PARTS, make an attractive and thoroughly efficient addition to your set. We have a full range of these parts. MULLARD, CUNNINGHAM and "R" Valves in stock. HEAD PHONES, of all makes. Brown's 8000 ohms, £5/5/-; Brandes, 16,000 ohms, A.C., £1; Mullard, 4000 ohms, D.C., £2/5/-; Stromberg Carlson, 2000 ohms, REDUCED TO £2/5/-; Murdock's, 3000 ohms 32/6, 2000 ohms 30/-.

DE FOREST RADIO EQUIPMENT, "THE" BEST PROCURABLE. Complete sets or panel type. Duo-lateral Inductance Coils, Variable Condensers, etc.

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Cut this out and Post Now
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Please send me a Price List
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Addr. _____
W.W.

MUSIC IN THE AIR.

SUNDAY CONCERTS.

At 10.30 a.m. on Sunday last the operator at Garden Island transmitted some tip-top gramophone music.

The only fault we have to find is that he does not transmit more often.

At 7.30 p.m. 2 C.M. was again testing and as usual his music was par-excellence. Nearly every amateur, also professional, will tell you that

the music transmitted by 2 C.M. is the best they have yet heard in Australasia.

PRECISION.

Have you ever set your watch on a Sunday night by Mr. MacLurean's carrier wave. We suggest that you try it. Tune on to 1400 metres about 7.29 and at exactly 7.30 you will hear his carrier wave. Set your watch and then ring up the telephone exchange for the correct time.

DRY CELL VACUUM TUBES.

The greatest change that has been brought about in radio of late is the growing popularity of the dry-cell vacuum tube known as the WD-11. This tube, which is now available on the open market, was formerly supplied only in connection with a well-known type of regeneration receiving set, the main feature of which was its vacuum tube operating on a single dry cell and a small "B" battery. The WD-11 eliminates the costly and troublesome storage battery and substitutes in its place the simple, inexpensive dry cell. This tube, contrary to widespread belief and unfounded claims, is available in only one model which, however, works quite well as a detector or an amplifier. Distances quite as great as those covered with the usual storage battery tubes are now being spanned with the WD-11. The filament of this little tube is of platinum wire, coated with an oxide for the production of a profuse flow of electrons with a minimum temperature. The filament, which should not glow brighter than a dull red, consumes about a quarter ampere. A single 224 volt battery unit will prove satisfactory in the plate circuit, but for amplification the potential may be raised to 80 volts if desired. The WD-11 enjoys remarkable freedom from tube noises. For detection, it should be used with a grid condenser of .00025 mfd., as well as a grid leak of 2 megohms.

RADIO SETS
and Parts to make your own



Send for Price List.

ELECTRICAL UTILITIES SUPPLY CO.,
RADIO HOUSE
605 GEORGE STREET, SYDNEY.



Clearance of Wireless Goods.

I am Overstocked with Wireless Goods
and I must reduce my stocks before
Stocktaking.

FOR ONE WEEK ONLY 10%

Discount on all goods purchased.

HOP IN EARLY FOR YOUR CUT

Sullivan's Electric Shop
296 Pitt St., Opp. W. & S. Board.

UNKNOWN CALLS

If you hear a call that you do not know, write to our Information Editor, giving call, and time of hearing, and he will tell you who it was.

March 2, 1923.

WIRELESS WEEKLY

11



NORTH SYDNEY RADIO CLUB.

A very interesting lecture upon "C.W. Receivers" was delivered by Mr. C. McClure, on Tuesday, the 13th inst.

Although only a young lecturer, Mr. McClure showed a very sound knowledge of the subject upon which he spoke, treating it very concisely, and in a manner which nobody could fail to understand.

The attendance did not altogether do the club credit, only a quarter of the members being present, although a goodly number of visitors were in attendance, which is the kind of thing to which our leading article of a week or so ago alluded.

The next meeting will be held next Tuesday night, when Mr. Raymond McIntosh will lecture upon "Amplification."

LEICHHARDT AND DISTRICT RADIO SOCIETY.

The usual weekly meeting of the Leichhardt and District Radio Society was held in the Club rooms, Victory Hall, rear of Methodist Church, Johnston Street, Annandale, on Tuesday, February 20th, when members had an informal evening at Morse practice, and a discussion on wireless matters generally.

Recognising that there is a social side to the question, it is the intention of the Society to form a club orchestra, and as the Society is particularly

rich in musical talent, there should be no difficulty in carrying this into effect.

The next meeting is to be held next Tuesday night, when all interested are invited to be present.

All inquiries relative to the activities of the Society should be addressed to the Hon. Secretary, Mr. W. J. Zech, 145 Booth Street, Annandale.

BALMAIN RADIO SOCIETY.

Our last meeting was devoted to Buzzer practice. Two classes are now in operation—one for beginners and one class for the more advanced members in sending and receiving. The committee and members will inspect the new site for our station on Saturday, 24th February. We have to thank our President, Dr. R. Stopford, for placing the site and building at our disposal.

We have added 7 new members to our list in the last fortnight. Will be pleased to hear from intending members, and any information will be gladly given by the Secretary, Mr. F. W. Riccord, 77 Grove St., Balmain.

KURING-GAI DISTRICT RADIO SOCIETY.

The above Society was favoured with a good attendance on Tuesday the 20th February when another successful meeting was recorded in the minute book. Messrs. Renshaw and Wilshire delegates pro tem to the Radio Association of Australia, N.S.W. Branch, reported their activities and advised the Society to affiliate with the above body, their recommendation being put before the meeting was carried unanimously. Mr. Toyer aided by a practical demonstra-

tion advised members on the various kinds of A.C. rectifiers and the most suitable type for amateur use. Amateurs will welcome the news that M. O. F. Mingay hopes to start transmitting shortly.

Enquiries relative to the Society's activities will be readily acknowledged by the Hon. Sec., R. Wilshire, Heep St., Chatswood.

NORTH SYDNEY RADIO CLUB.

The usual fortnightly business meeting of the North Sydney Radio Club was held on Tuesday night, the 20th February, when general business was discussed.

The new Constitution of the Radio Association and the report of the Club's delegate (Mr. J. O'Brien) was read and adopted without comment.

Mr. Evans, who has been spending his holidays at Katoomba, returned last week and was welcomed at the Club upon resuming his secretarial duties.

The next meeting will be held on Tuesday night.

RADIO AT TAMWORTH.

Though you do not hear much about us we are forging ahead, said a well known amateur, Mr. Todd, of Tamworth. Numbers of amateurs are building sets, not only those in the township but many enthusiasts are miles away in the country. Tamworth will soon be a big amateur Wireless centre.

Mr. Todd intends entering for Trans-Pacific tests and it is probable that Mr. G. C. Arnold of the same district will also be a competitor.

QUESTIONS

Accompanied by the coupon below will receive a prompt reply. Please understand that 2 questions only can be answered with each coupon.—Editor.

Question Coupon

To Information Editor

AVAILABLE TILL 6-3-23

NAME _____

Address _____

FOR 2 QUESTIONS ONLY

Aerial Trouble.—You must send in your correct name before we can answer your questions.

V.V.G. (Middle Head): This will be found in Baucher's Wireless Manual. We will be publishing particulars in a few weeks.

H.C.H. (Victoria): 1. Formula has been given in previous issues (see Baucher's Wireless Manual also); 2. No, you will find 5 feet would be more suitable.

S.N.W. (Leichhardt): Send us a diagram of your circuit. We do not quite understand whether you are using crystal or valve, or both.

Sale and Exchange

FOR SALE.—Complete Crystal Set. Price, 45/- (including 'phones); also 1 Loose Coupler, Range 4000 Metres, 35/-. Letter only to C. J. Gray, 36 George Street, Marrickville.

FOR SALE.—46 Gauge Silk-covered Copper Wire, per 2000 ohms, 2/10; 1500 ohms, 2/3. Post free. R.L.B., c/o "Bute Villa," Enoggera Tree, Red Hill, Brisbane.

are designed to give maximum efficiency; they are also more comfortable than most makes, by reason of their lightweight and also far more hygienic.

RADIO AND WIRE TELEPHONE.

The operation of the ordinary wire telephone is compared with the operation of the radio telephone in a recent issue of the "General Electric Review," by way of explaining in easy stages the meaning of radio communication. It is brought out clearly that the two systems have four primary units in common—some sort of energy conductor between stations, some form of energy capable of being modulated to conform with sound waves, a transmitter and a receiver. Since the type of radio equipment discussed utilises primarily the vacuum tube, a section of the article is devoted to a description of the principles and characteristics of this device. The rest of the article shows how the transmitter modulates the radio-frequency carrier wave that it broadcasts, how the receiver by rectification of the otherwise inaudible incoming wave reproduces the sound wave and how amplification is accomplished. The article is well worth reading, if one would obtain a good elementary knowledge of radio.

STATION CALLS

U.S.A.

Captain Clarence M. Condon WYBY; Capulin KUZR; Captain Edwin C. Long WYBO; Caracas KDB; Captain Fred L. Perry WYBN; Gardoula KUVV; Captain Samuel C. Cardwell WYBM; Carib KJIU; Captain Edward P. Nones WYBP; Carenco KDDM; Carib KUZX; Caribbean KGUE; Caribon WSIA; Carillo KDE; Carl D. Bradley WGN; Carlton KDDK; Carolina WFE; Carolyn RZG; Carolinian KJF; Carpelka KDES; Carr NEXP; Cartago KDD; Cartona KUFL; Cascade WPUO; Casco WCF; Case NUNX; Casey KOQJ; Casiana KYE; Casimira WSH; C. A. Smith WEL; C. A. Sailer KRR; Casper KIRX; Cassimir KDDZ; Castana KDFP; Castle Point KESD; Castle Town KOF; Castle Wood KEKQ; Catahoula KDFG; Catawba KVEE; Catherine KTOI; Catherine D. KMAI; Cathlamet KOLP; Cathwood KURC; Cauto KWF; Cawker KECF; Cayo Mambi KZZZ; Casuga KDJQ; Cebu KDQC; Cedar NLW; Cedarhurst KDIQ; Cedar Spring WTEE; Ceilo WMF; Centaurus KOPZ; Centennial State KDRL; Central American WKOU; Cervino WTEI; Cerosco WTEG; Cerrito WFIU; Cerro-Azul KDQY; Cerro-Ebano KDQS; Cerro Gordo KEFK; Cethana KORG; Chalmersba KORG; Challenger WNH; Chalmette KKC; Chamberino KEFL; Chamblee KEGG; Chandler KEGK; Chaparel KEGJ; Chappagua KURF; Chappell KEUS; Charles Ausberne NURP; Charles Braley KVP; Charles E. Harwood WID; Charles H. Cramp KDHH; Charles Pratt KSG; Charles L. Hutchinson WMHU; Charles M. Everest WPOU; Charles WMUI; Charles O. Jenkins WFT; Charlie Watson KDLA; Charlton Hall KLU; Chateau Thierry KDRE; Chautauque KIDN; Chalmont KDLI; Chautauqua KIFK; Chocoma KJAA; Chepadon KOPL; Cherokee KCK; Cheron KNH; Chester Kiwanis KDBP; Chester Sim WAS; Chester Valley KOST.

RADIO COLLEGE

Applications are now being received for forming the next class.

23 LANG STREET

F. B. COOKE,
Principal

Published by W. J. MacIardy "Truro," Powell Street, Neutral Bay; at the offices of W. M. MacIardy, 240 Castlereagh Street, Sydney.

March 2, 1923.

WIRELESS WEEKLY

WIRELESS RECEIVING SETS.

Apparatus of 100% guaranteed Efficiency.

SINGLE VALVE RECEIVING SET, Panel mounted in polished Maple Cabinet, constructed of the absolute best materials procurable and having a reception range of Music and Speech of 200 miles and Morse Signals 1000 miles. Triple Honey-Combe Coil, 2 Variable Condensers, Phones, Accumulator, High-Tension Battery, Aerial Etc.

The one Set that's worth more, yet, costs less
£16 nett.

Our stock of Wireless Sundries is Worthy of Inspection

The Colville-Moore Wireless Supplies

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Just a Real Good Car
AUTOMOBILES LIMITED
207 Castlereagh Street, Sydney.

QUALITY RADIO SUPPLIES

All our Radio Apparatus is made by skilled Radio Engineers and carries our usual guarantee.

Complete Crystal and Valve Sets, or all parts to build your own.

Head Sets 2000 to 8000 ohms. Radiotron, Myers, Expanse (2 Filament), and Marconi Valves. Everything for the Amateur.

New Apparatus arriving regularly.

SEND FOR PRICE LISTS.

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Wireless Experimenters!



Thousands of Amateur electrical experimenters prefer to build their own Wireless Sets—and it is the Universal policy to offer to the Amateur, the highest grade parts and material for the lowest possible outlay. **BUILD YOUR OWN Wireless Receiving Set—but build it RIGHT.** By using Universal parts, material and simplified instruction—you will build it **RIGHT**—and it will work **RIGHT**.



The following items are a few of the numerous lines of special interest we are offering to the amateur:—

VARIABLE CONDENSERS, .0005 Mfd. 18/6.

VARIABLE CONDENSERS, .001, Mfd., 23/6.

Special Finish, Genuine BAKELITE KNOB AND DIAL, 5/6.

ROTARY SWITCH ARMS, 1½ in., 1½ in. radius, highly nickelled, 2/9.

CONTACT STUDS, nickel, with nuts, 1/9 per dozen.

OUR SPECIAL:—

HIGH - GRADE, NICKEL - PLATED TERMINALS—An ornament to any panel—exceptional value—as illustrated 6d. each.

VALVES:—

RADIOTRONS, U.V. 200, £2; U.V., 201, £2/5/-; Cunningham, C-300 detector, £2; C-301, £2/5/-.

GENUINE 2 FILAMENT AUDIOTRONS 38/6 each; limited supply.

TELEPHONE HEADSETS:—Murdoch's, Stromberg - Carlson's, Brown's, Western Electric, Baldwin's, mica diaphragm amplifying telephones.

Special Attention Given to All Country Orders.

NOTE.—For the convenience of our customers, we have opened a Central Sales Depot at **244 PITT STREET (Opposite School of Arts).**

Our Experts will be pleased to assist the Amateur with his Radio Problems. Bring them along. Nothing a trouble.

It will pay you—to pay us a visit.

THE UNIVERSAL ELECTRIC COMPANY.
244 PITT STREET—58 WENTWORTH AVENUE.
SYDNEY.