WIRELESS WEEKLY

THE HUNDRED PER CENT AUSTRALIAN RADIO JOURNAL

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SPECIAL FEATURE THIS WEEK:

The "Sealed Set"

THE WIRELESS WEEKLY

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

OFFICIAL ORGAN OF THE AUSTRALASIAN RADIO RELAY LEAGUE.

Vol. 2. September 21, 1923. No. 38

THE NIGGER IN THE WOOD PILE.

Can the Postmaster-General alter the regulations which were proposed at the Broadcasting Conference, accepted by him and gazetted as Statutory Rules 97 of 1923 on 1st August, unless he first calls the Conference together again. Evidently the Postmaster-General is of the opinion that he can, and has don so as far as Victoria is concerned, by allowing an open band of wave lengths from 0 to 550 meters.

There is no doubt that the sealed set has many faults, but yet it has its advantages and should at least be given fair trial.

We feel certain a very different style of regulations would have been proposed at the Conference had those present seen the "Nigger in the Wood Pile," but the said nigger very carefully hid himself, and has only lately made his appearance in N.S.W.

Now we suggest to those interested in wireless in Australia to leave the "wood pile" alone, but if they form themselves into a Federal body they will be in a position to show a bold face to the "nigger."

Roster for Week ending 26th Sept., 1923

	7.30 to 8.0	8.0 to 8.30	8.30 to 9.0	9.0 to 9.30	9.30 to 10
Thursday, 20		2 GR 390	2 FA 270		
Friday, 21.....	2 DS 237	2 WV 375	2 FA 270	2 CI 252	2 ZG 240
Saturday, 22..	2 GR 390	2 JM 236	2 FA 270	2 CI 252	2 ZG 240
Sunday, 23...	7 2 GR	7-45 390	7.45 to 9.15 2 CM 240		9.15 to 10 2 JM 236
Monday, 24 ..		2 WV 375	2 GR 390	2 CI 252	2 ZG 240
Tuesday, 25..	2 JM 236	2 GR 390	2 FA 270	2 CI 252	
Wednes., 26...		2 WV 375	2 FA 270	2 CI 252	2 ZG 240

Transmitters are requested to ring Redfern 732 (during day) and North 226 (at night) to book Roster Times, or call 2 H.P. (330) by Radio Phone return 7 a.m. and 7.30 p.m. daily.

The figures shown beside call sign denote wave length

FRAME AERIALS.

By OSWALD J. RANKIN.

The numerous types illustrated and described in this article are all essentially practical and can be constructed with very few tools at little cost.

A frame aerial, like most other things, has its advantages and disadvantages. Its most admirable features are, first and foremost, its directional qualities which tend to minimise interference or jamming by other stations working on nearby selectivity and consequent sharpness of tuning, and compactness and wave lengths; a very high degree of portability.

Its chief disadvantages is the loss of signal strength. It should be remembered that the strength of the signals received on any frame aerial, however efficient, will only equal about 35 per cent. of the signal strength obtained from an outdoor aerial, using the same type of receiver. It is obvious therefore that wherever circumstances permit the use of an outdoor aerial it is, generally speaking, always better to employ this in preference to the frame.

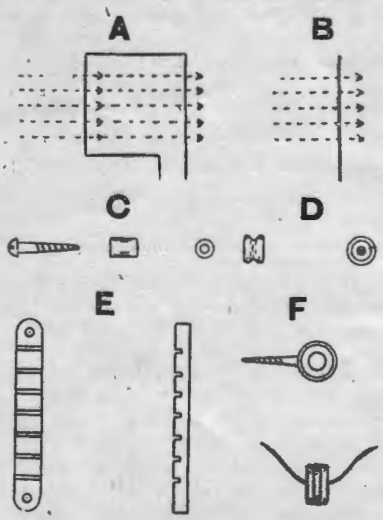


Fig. 1.

Some experimenters prefer to use a fixed loop aerial, usually carried around the walls of the room. The very fact that it is fixed, however, is a great disadvantage.

Before proceeding with constructional details it may be well to first explain briefly the exact difference between the outdoor and the indoor aerial. An ordinary outdoor aerial may be described as an aerial with an open end, and an indoor or frame aerial as a loop, having both ends joined to the receiver and thus closed.

If a length of thin steel strip is held out in a horizontal position it may be made to vibrate freely. If the other end is also held it will still vibrate, although not quite so freely as before. Similarly an outdoor aerial having a free or open end will respond more readily to the incoming electrical vibrations than a frame aerial having no free end. Where the open end aerial will effectively operate a simple receiver the frame aerial will require a certain amount of boosting up—one or more stages of amplification—before it will perform the same duties.

The frame aerial can be made directional to any point of the compass, and in order to receive signals from any particular station one side of the frame must point in the direction of that station. It may be more clearly understood if we call the side the edge. If the frame is not pointing in this direction no signals will be heard. This fact is due to the difference in phase produced in the opposite sides of the frame. When the frame is pointing "edge on" to the transmitting station the incoming waves will strike one edge before they reach the other, and this alternate striking or cutting results in the production of high-frequency alternating currents as in the case of an outdoor aerial.

If the frame is now rotated through an angle of 90 degrees so that it is squarely facing the transmitting station, no signals will be heard, because the waves will then strike both sides of the frame at the same time, thus producing an equal and opposite potential which results in neutrality. This is clearly illustrated in Fig. 1, where the dotted lines represent the incoming waves. "A" shows the loop "edge on" in the correct position in relation to the waves, and "B" shows the incorrect position.

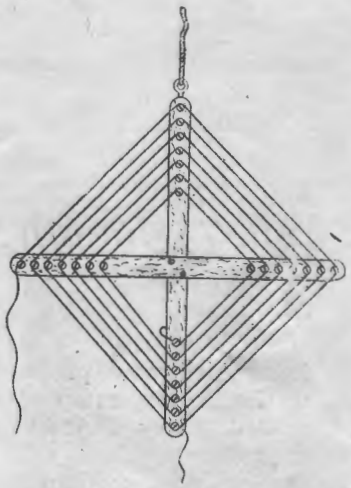


Fig. 2.

In a very simple form the frame may consist of two pieces of ½ in. board, each 4 feet long by 2 in. wide, screwed together in the form of a simple cross. A number of small insulated eyelets are screwed into the ends of the arms, allowing a distance of about ½ in. between each one. The winding may consist of 7 turns of single 16 or 18 bare or cotton-covered copper wire wound on as shown in Fig. 2, to form a continuous series of squares of decreasing size. This amount of wire will cover the broadcasting wave lengths. If desired, two terminals may be attached to any convenient part of one of the arms and the ends of the winding connected to these or direct to a large capacity variable condenser, preferably not less than .00075 mfds. The leads to the receiver are taken from the condenser terminal, this usually being the only tuning device required providing the frame is wound correctly. It is more convenient to commence the winding from one of the innermost binding posts or eyelets and wind in an outward direction. A length of flexible wire should be soldered to each end of

Continued on Page 4

Famous Radio Personalities.

Brief histories of the worksof famous scientists who helped to make modern Radio what it is to-day.

Michael Faraday — the son of a blacksmith—was born at Newington, Surrey, in 1791. As a young man in the early twenties, good fortune brought him under the notice of Sir Humphrey Davy, through whose influence he was shortly afterwards given an appointment as assistant in the laboratory of the Royal Institution. Twelve years later he became Director of the la-

boratory, where he remained in control, at the very focus of the scientific life of the country, until his death in 1867.

Faraday penetrated with clear insight into the mysterious nature both of magnetism and electricity, and was in fact the first to realise the fundamental relation that exists between these two phenomena. To his researches in this field of science we owe the subsequent development of the dynamo, the alternator and the motor—in short, they form the basis of the whole structure of modern electrical engineering.

He discovered that electric currents could be produced in a closed wire circuit (a) by the movement of an adjacent magnet, or (b) by changing the value of the current flowing in a neighbouring closed circuit, or (c) by causing the second circuit, whilst carrying a steady current, to be moved nearer to, or farther away from, the first circuit.

All these effects involve the transfer of energy "across space." By showing that the energy of an electric current is not confined to the metallic path of the conducting wire, but that, on the contrary, it spreads outwards and is capable of manifesting itself "at a distance," Faraday laid the foundation of the science of electro-magnetism, from which in the course of time have arisen the present-day marvels of wireless telegraphy.

Thales of Miletus, one of the seven wise men of early Greece, knew that amber, when rubbed, would attract light particles of pith, etc. In fact, it is from the Greek name for amber (elektron) that we owe the word electricity. Thales also knew that a certain mineral, now called lodestone, possessed the curious property of attracting iron.

Neither he, however, nor any of his successors were aware that these two effects were closely akin to each other. It was left to Faraday to demonstrate the vital fact that a magnet could be made to yield an electrical current, and that, conversely, an electric current would serve to create an electro-magnet.

JAMES CLERK MAXWELL.

(Author of "The Electro-Magnetic Theory of Light," foretold the production of wireless waves.)

Faraday's genius was essentially practical. His discoveries were based upon experiments actually performed in the laboratory.

Maxwell, on the other hand, was the most brilliant theorist of his time. Taking the details of Faraday's experimental work, he clothed them in figures and symbols, and by an amazing flight through the intricacies of higher mathematics, guided throughout by an unerring instinct for generalisation, he succeeded in extracting truths of still deeper and wider significance.

Like Faraday, Maxwell detested the idea of "action at a distance." To explain the undoubted effects of electric and magnetic attraction and repulsion across an apparently empty "space," Faraday imagined the existence of material but invisible "tubes of force," which, by reason of their elasticity or resistance to change of shape, transferred "energy effects" from the magnet to the iron, and from the amber to the ball of pith.

Upon this basis Maxwell built up his hypothesis of an intangible but highly elastic fluid or ether which pervaded all space, and through which various energy effects could

be transferred in the form of "vibrations" or alternate stresses and strains.

James Clerk Maxwell was born in Edinburgh in 1831. His "Electro-magnetic Theory of Light," in which he foretold the possibility of "wireless" radiation, appeared first in 1867, and in completed form in 1873. He died in 1879, some years before the accuracy of this prophecy was confirmed by the work of Heinrich Hertz.

CROWD CONTROL.

In both England and America the loud speaker has superseded the megaphone for the motion picture directors' use when filming crowd scenes. The makers of throat pastilles, cures for hoarseness, etc., are thinking of organising a protest meeting. Directors do not have to even raise their voices, as the merest whisper is clearly heard all over the studios. Wallace Worsley, filming many mob scenes for "The Hunchback of Notre Dame," on a seven acre "set" found radio an ever-present help. His installation cost seven thousand dollars, but as it saves several hundreds every day besides much fatigue, he finds it worth its price. In a British film also, "Woman to Woman," the same device was utilised by Graham Cutts when making big ballroom scenes,

Frame Aerials

Continued from Page 2

the wiring if terminals are not provided.

A suitable method of mounting it is to attach a small screw eye to the end of the top arm and suspend it by means of a piece of cord from the ceiling.

Diagrams C to F (Fig. 1) show four different types of binding posts, either of which will be found quite suitable.

C is a short length of ebonite, fibre or glass tube large enough in internal diameter to take a round headed wood screw which secures same to arms; D is a miniature porcelain reel type insulator, made specially for frame aerial work, obtainable from almost any wireless store; E shows how a strip of 3-8 in. sheet ebonite may be slotted to take the wires, one strip being screwed to each arm; and F is the ordinary insulated eyelet or screw eye. Higher wave lengths may be obtained by winding on more turns of

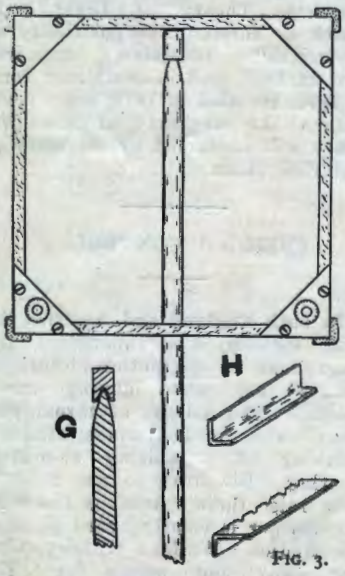


Fig. 3.

wire and providing a correspondingly extra number of binding posts, 14 turns tuning fairly accurately on 900 metres, 16 turns on 1,080 metres (Hague), 23 turns on 1,600 metres, and 34 turns on 2,600 metres. As pointed out, the wire is wound on in spiral formation.

In Fig. 3 the arrangement of the winding is somewhat modified, being wound in helix formation round

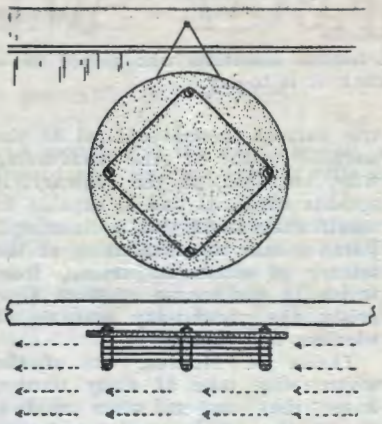
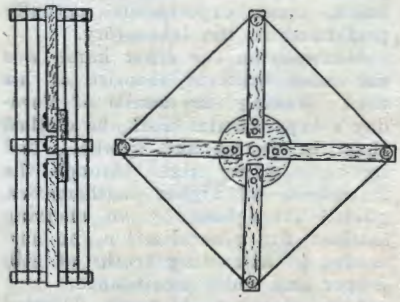


Fig. 4.

a flat box-like frame, provided at each corner with rubber or ebonite angle pieces H, having small nicks cut as shown to form pacing beds for the wire. Thin sheet ebonite may be bent in this way if it is heated. Each side should be 3 ft. 6 in. long, and the width will, of course, depend on the number of turns it is proposed to wind on.

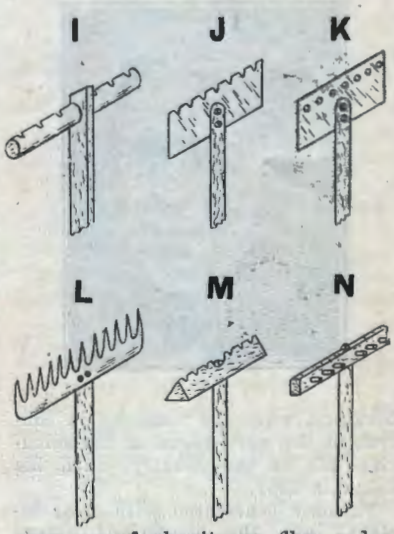
About 7 turns will be sufficient to cover the broadcasting wave lengths. Small pieces of 1-8 in. sheet ebonite or three-ply wood are cut to a triangular shape and screwed to the corners as shown, terminals being fitted in two of these as desired. An ordinary broom handle, pointed at one end, passes through a clearance hole in the centre of the bottom of the frame and engages a re-



cessed bearing block secured to the inside of the top of the frame as shown. (See also sectional view G.) This arrangement provides a simple means of swivelling the frame on its own axis. The lower end of the broom handle is secured to any suitable base.

If one of the walls of the operator's room should be in a direct line with the broadcasting station a frame aerial of this type may be wound round four insulated binding posts attached to a large disc of treated cardboard or three-ply wood and hung as high up as possible on the wall as shown in Fig. 4. The lower illustration represents a top view showing the correct position of the wall and frame in relation to the incoming waves.

Fig. 5 is a modification of Fig. 3, where four arms are employed in place of the box-like frame, these being attached to a central hub and provided at the outer ends with insulated spreaders on which the wire is wound. These spreaders may consist of short lengths of round hard wood well soaked in melted paraffin



wax, or of ebonite or fibre rod or tube. A selection of different types is given in Fig. 6. Diagram I shows a piece of round ebonite rod provided with small nicks and fitted firmly into a hole bored through the outer end of the wooden arm. This can also be made of wood and bound round with rubber tape. J and K show two ways of utilising a piece of thin sheet ebonite which is preferably fitted into a slot cut in the end of the arm. L is an ordinary bone or vulcanite comb screwed to the end of the arm, M a piece of diagonal cross section hard wood, and N a series of short lengths of insulated sleeving pushed through holes in a wooden cross piece.

The arrangement of the central hub, too, may be varied to suit individual tastes and various degrees of advancement in mechanical skill. A very simple method is to provide

Continued on Page 8

MAKE YOUR OWN

Practical Radio Slide Rule

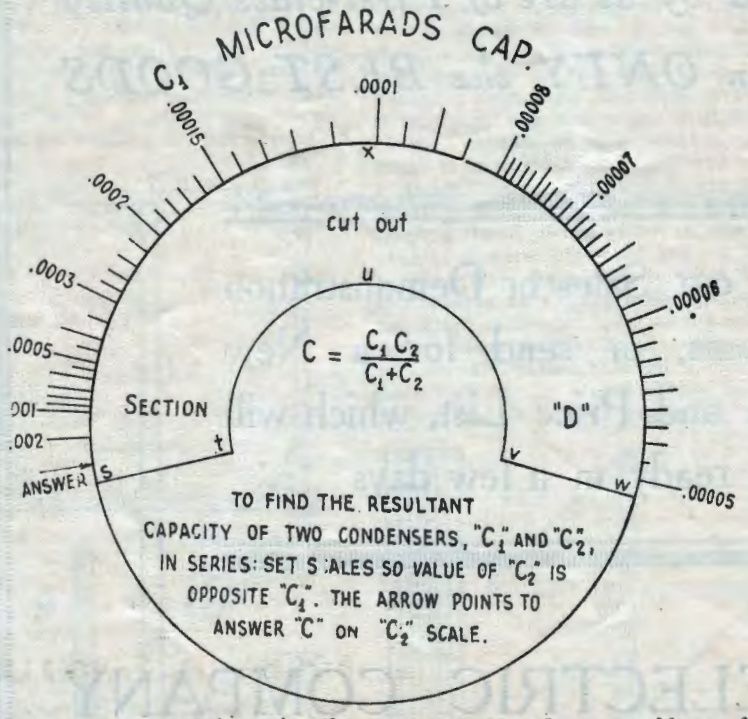
By RALPH BATCHER.

This article will disclose an instrument that will indicate the capacity of a variable condenser of the semi-circular type with air dielectric.

On the reverse side of the computer, other scales give the solution of the problem of two or more condensers in series. When two condensers are connected in series the resulting capacity is always less than that of either condenser alone, the exact value being ordinarily determined with the formula appearing at the centre of the scale section C. This slide rule gives the answer to this formula directly.

In cases where three condensers are in series, determine the effective capacity of two of them in series and then determine the resultant capacity when the third condenser is connected in series with an imaginary condenser having a capacity equal to the answer obtained with the first two.

The scales have ranges greater than those required for ordinary radio frequency circuits. If, however, it is desired to use the chart for series condenser problems, for other ranges, multiply the three scales C1, C2 and C by .001, .01, and 10 or 100, or any other factor desired, and use as before. The only rule necessary to follow is to multiply each scale by the same factor.



CONSTRUCTIONAL DETAILS.

Procure two smooth flat cards having their smaller dimensions somewhat larger than the largest of the accompanying scales. For convenience the four scales will be called sections A. B, C and D. First cut out sections B and D, in the form of a square, being careful not to trim away any of the numbers. Paste these scales on opposite sides of one of the cards, taking care that the centres of the circles coincide. The best way of doing this is to punch small holes with a pin in the centre of each section B and D and another hole in the centre of the card. When these three holes are in line, the centres are together. A small dot in the centre of each section indicates where the hole should be punched. Dry the card after pasting, under pressure between flat surfaces to prevent warping. Then paste the sections A and C on opposite sides of the other card, getting the centres together in the same way, and dry flat. When dry, carefully trim off the edge around section A outside of the circle, leaving no margin. This leaves a round disc with the scales on each side. It will be found that section C is a little smaller, but this is intentional.

Returning to the square card with sections B and D, cut out the circular slot on section D indicated by the letters "s-t-u-v-w-x," cutting clear through the card. This operation is best done with a sharp knife. It is desirable to cut exactly on the lines and curves bounded by the above letters. The removal of this section will not affect the scales on section B on the other side, since the latter is somewhat larger.

Then lay the rectangular card on the table with section B up. On top of this place the circular card with face A up, and fasten the two together with a small rivet or paper fastener eyelet inserted through the centre holes. The smaller disc should be free to turn about the centre. When this is done the computer is complete. If it is constructed according to these plans, the outer diameter of section A should be even with the inner diameter of section B, and the scales of section

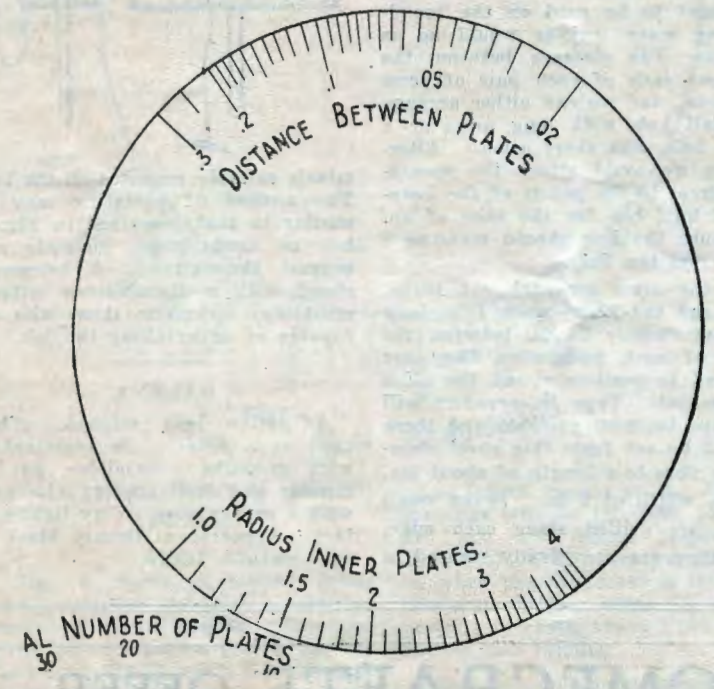
C will show through the window opposite the scales on section D.

DETERMINATION OF CONDENSER CAPACITY USING SPECIAL COMPUTER METHOD OF OPERATION.

A great many of the condensers available at the present time are rated according to the number of plates rather than by their capacities. The maximum capacity of such condensers may be determined by the aid of the special chart. Measure the radius of the plates (inner) and the distance between the plates, and determine the total number of plates. Set the disc so that the "spacing" value is opposite the total plates value. The capacity value may then be read directly opposite the value of the radius of the inner plates.

CAPACITY OF CONDENSERS IN SERIES, USING SPECIAL COMPUTER METHOD OF OPERATION.

The reverse side of this card is used to determine the effective capacity of two condensers in series. Set the disc so that the values of these capacities are opposite each other. The arrow (answer) will point directly to the effective or resultant capacity.



A BULB RECEIVER USING RECTIFIED ALTERNATING CURRENT.

(By Francis J. Andrews.)

This circuit has been designed for the full wave rectification of the usual alternating current with which homes are supplied.

The plate current for the detector tube is supplied by two element rectifying tubes.

A step down the transformer supplies the necessary voltages for these tubes and the filament of the detector tube.

The filament of the detector tube is shunted by a rheostat R-2 with a resistance of 20 ohms. By varying the slider, the characteristic hum of the alternating current will be reduced to a minimum.

The condenser C-5, is of rather large capacity; between two to six mfd. It is a good idea to have this condenser variable, that is, tapped.

L-1 and L-2 are the primary and secondary of the usual vario-coupler; L-2 is used as a tuning inductance with the variable condenser C-1. The secondary of the vario-coupler, L-2, is used as a tickler coil to provide regeneration. C-3 is a grid condenser of approximately .00025 mfd. capacity. C-2 is the second variable condenser to provide fine tuning of the coil L-1.

R-3 is a grid leak. The value of this leak varies with different tubes. A little experimenting is necessary to obtain the right values.

R-1 is a small rheostat for the control of the filament current of the detector tube. One with about 4 ohms resistance will be satisfactory. The rectifier bulbs, B-1 and B-2, are of the usual two-element type; Kenotrones are excellent for this circuit.

R-4 is a small rheostat to control the filament current of the rectifier tubes. Its resistance should be about 10 or 12 ohms.

Now for the transformer:

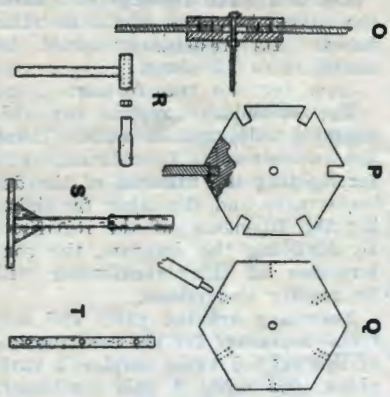
The secondary supplies two voltages; 6 volts and 60 volts. There are two six-volt secondaries, one for lighting the filament of the detector tube and the other for lighting the filaments of the rectifiers. By studying the diagram, the construction of this transformer will be readily understood.

Following are the parts and material necessary for the construction of this set:—1 vario coupler; 2 variables, .002 mfd.; 1 grid condenser, .00025 mfd; 1 grid leak and mount; 1 detector tube: 1 tube receptacle; 1 20-ohm rheostat; 3 2 mfd. condensers; 1 rheostat, 4 ohms; 2 rectifying tubes; 2 tube receptacles; 1 rheostat, 10 ohms.; 4 pounds No. 16 D.C.C. wire; magnet iron for core of transformer; taps, switches, etc.

A species of radio reveille conducted by the commanding officer of the 145th U.S.A. Infantry, at Cleveland, Ohio, was a pronounced success. It was tried for mobilising purposes and certainly "called them up" with great celerity. An emergency mobilisation order was issued and broadcasted.

Continued from page 4

two hubs as shown in the sectional diagram O, and after securing the arms in their correct positions on the face of one of the hubs, clamp both hubs together as shown by means of a long 3-8 in. Whitworth bolt, the protruding end of which is utilised as a manipulating device in the following manner: A distance piece, consisting of a short length of round hard wood is drilled through as indicated by the dotted lines at R and secured firmly to one



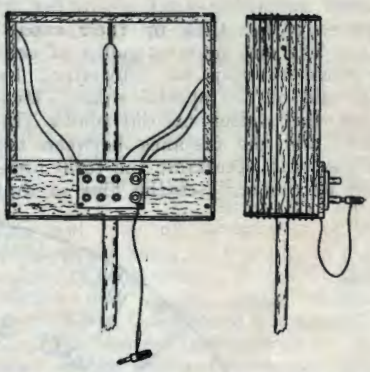
end of a piece of broom handle. The bolt passes through this and is tightened up by means of another nut, which should just clear the broom handle support. The lower support S may consist of another length of broom handle having a 6 in. length of round brass tubing secured to its upper end, as shown, so as to form a socket for the support attached to the frame.

Two other methods of arranging the central hub are shown at P and Q. In diagram P a hexagonal piece of board about ½ in. in thickness and measuring 9 in. across the points is provided with slots in which the lower ends of the arms are secured by means of long screws or nails as shown in part section. The hub Q is cut out from a piece of ¼ in. board and drilled in the centre of each flat as indicated by the dotted lines at Q and in the side view T. The lower ends of the arms are provided with fillets which are smeared over with a little glue and plugged into the holes.

Suitable dimensions of such an instrument to be used on the broadcasting wave lengths would be as follows: The distance between the extreme ends of each pair of arms is 24 in., and we can either arrange a small hub with long arms or a large hub with short arms. Alternately we could attach the spreaders direct to the points of the hexagonal hub, but for the sake of appearance the hub should measure 6 in. across the flats.

If the arms are each cut 10 in. long and the fillets made 1 in. long we get exactly 24 in. between the ends of each pair when they are secured in position round the sides of the hub. Type K spreaders will perhaps be most suitable and these should be cut from thin sheet ebonite or fibre to a length of about 4in. and a width of 2 in. Seven small holes are drilled along each edge, and they are then firmly secured in saw cuts in the ends of each arm.

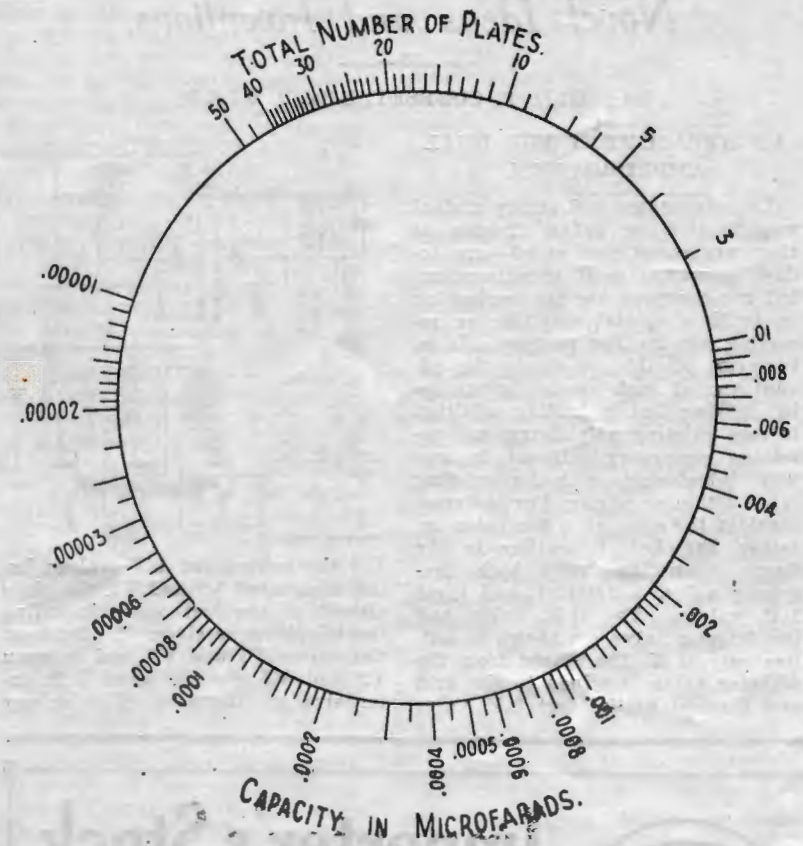
The position of these will of course be at right angles to the face of the hub. Seven turns of wire are now wound on, passing each turn carefully through the holes in the spreaders. The ends of the winding may be connected to the two ter-



minals suitably mounted on the hub. The method of mounting may be similar to that described in Fig. 7, but no doubt other methods will suggest themselves. A telescopic stand with a thumb-screw attachment may appeal to those who are capable of undertaking the job.

GALENA.

A native lead sulphide (PbS) used as a detector in combination with graphite. Sensitive, but irregular and easily upset. Also used with a copper wire. Very light contact. Appearance: Greasy black or grey metallic lustre.



AN EXPERIMENTER'S FRAME AERIAL.

Fig. 8 shows a tapped frame aerial designed to cover a selective range of wave lengths. The construction of frame is similar to that shown in Fig. 3, each side being 2 ft. long by 5 in. wide. A small ebonite panel containing six valve sockets is attached in any convenient manner to the frame, and a valve pin is converted into a wander plug and connected to one of the terminals with a piece of flexible wire. Twenty turns may be wound on the frame, commencing from the other terminal and connecting the end to No. 6 socket.

Tappings are taken off the winding at the 6th, 9th, 12th, 15th and 18th turn, each being connected in their proper order to the remaining sockets, Nos. 1 to 5. Two leads taken from the terminals are connected to the tuning condenser in the usual way. Using a .0005 mfds. variable condenser set at a few degrees off its minimum value, the wave length ranges at the different tappings will be 180, 300, 500, 600, 700 and 800 metres respectively. These values, of course, are increased when the condenser is set at its maximum value, when it is then possible to reach about 1,250 metres on the last tapping.

There are, of course, many different circuits which would be suitable for use in conjunction with a frame aerial. The one we are chiefly concerned with here must essentially be simple and at the same time efficient, capable of being built up and operated by the average reader, and suitable as a general purpose broadcast loop receiver. I unhesitatingly recommend the Flewelling super regenerator, and include a pictorial diagram of the circuit. I am confident that this will meet the requirements of those enthusiasts who are content to confine their ambitions to the reception of broadcasting.

The coils B and C may be of any suitable type, secondary coil C giving about two-thirds the inductance of the primary coil B. Here is scope for experimenting with various coils.

The variable condenser D should have a capacity of .0005 mfds., and this and the filament rheostat should be well shielded to prevent body capacity effects. E is a variable grid resistance from 1 to 1½ megohms, and G is a similar component, being continuously variable from a quarter to one megohm. H is an ordinary mica grid condenser connected in shunt with the variable resistance E. The fixed condensers H, I and J each have a capacity of .006 mfds., the exact value being rather critical.

The circuit is fairly easy to operate. Adjust the resistance E to the maximum value and vary the coupling of the two coils until a whistling noise is heard in the headphones, then vary the coupling and condenser continuously until the desired signals are heard, when it will be necessary to readjust both resistances. These are then left at the best positions while the signals are finally tuned in by making further adjustments of the coils and condenser. Sharper tuning is sometimes obtained by connecting a small vernier condenser across the terminals of the variable condenser. If the exact values of the variable resistances are known, these, of course, may be replaced by fixed resistances. K is a 2 mfds. Mansbridge type fixed condenser connected in shunt with the high-tension battery, this being desirable, although not essential. A few experiments should be tried with telephone condensers of different values.

THE VARIO-AERIAL.

A recent development in frame aerials is shown in Fig. 10, comprising two shallow cylindrical coils connected in series and arranged on similar lines to a variometer. Although this is yet in the experimental stages, it can be safely assumed that it will eventually gain favour amongst frame aerial enthusiasts. One of the advantages of the ordinary frame aerial is the fact that in most cases the large capacity variable condenser is the only tuning device required.

With the vario-aerial even the condenser may be dispensed with, the leads being taken direct to the rectifying circuit. The construction of the instrument is a very simple matter. Two wooden hoops are obtained from a toyshop, each 2 ft. in diameter. One of these is

opened at the joint and made smaller so that when one is placed inside the other there will be a space of ½ in. all round between the outer edge of the inner hoop, and the inner edge of outer hoop. Both hoops are "tyred" with strips of treated cardboard about 1½ in. wide. No. 26 D.C.C. wire is used for the winding, 8½ turns being placed on the largest hoop and 9 turns on the smallest.

This amount will cover the broadcasting wave lengths. The turns are not spaced but wound in the same way as an ordinary cylindrical inductance. The end of the outer winding is connected to the beginning of the inner winding by a length of flexible wire.

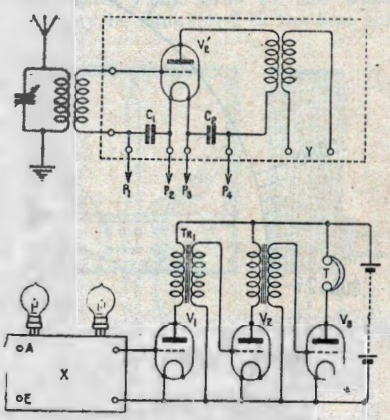
The other two ends form the connections for the circuit. Tuning is accomplished by simultaneously moving both coils to the best position and adjusting the inner coil in a similar manner to the secondary coil or rotor of a variometer. A suitable device for adjustments, similar to that shown in the diagram, can be easily made by the average experimenter.

Novel Ideas and Inventions.

By PHILIP R. COURSEY, B.Sc., A.M.I.E.E.

AN ATTACHMENT FOR DUAL AMPLIFICATION.

The advantages and utility of dual amplification—or reflex circuits as they are sometimes called—are today known to most experimenters, but not everyone has the inclination to build a special amplifier or receiving set for the purpose. It is, however, possible to obtain the advantages of such special apparatus by making but a trifling addition to any existing amplifying and receiving apparatus, without in any way interfering with its existing construction or wiring. For instance, consider the case of a five-valve receiver sketched in outline in the figure consisting of a high frequency valve, a detector, and three L.F. valves. The H.F. valve and the detector valve are shown in outline only at X. The output from the detector valve is joined to the grid and filament of the first L.F. valve

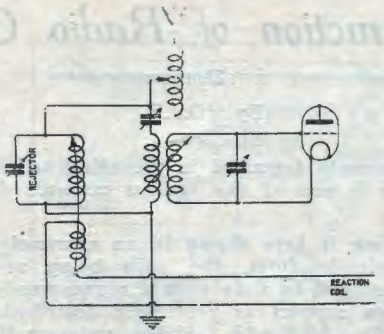


V1, the subsequent L.F. valves being designated V2 and V3, the plate circuit of the last valve including the telephone receivers T. Between the valves V1 and V2, and between V2 and V3 are the usual L.F. intervalve transformers. This or any

similar arrangement may be converted so that one of the L.F. valves acts as a high-frequency amplifying valve as well by a simple addition such as is sketched in the upper part of this figure. This addition consists of a valve with input terminals to which the aerial circuit can be connected or coupled, instead of joining it directly to the A and E terminals of the two-valve unit X, and with a H.F. coupling (shown as a H.F. transformer in the diagram) in its output circuit. In the grid circuit of this valve is a bypass condenser C1, connected across two leads P1P2. In the plate circuit of this valve is a similar bypass condenser C2, connected across two similar leads P3 P4. These four leads, P1P2P3P4, can be plugged into the socket of say the valve V2, so that the filament supply of the valve V2 serves to light this extra valve V2, while lead P1 plugs into grid socket of the valve V2 and P4. into the plate socket. The two leads Y should also be poined to the A and E terminals of the first two-valve unit X. Thus when this is done the aerial circuit is first coupled to this valve V2 (which is still really the middle valve of the L.F. amplifier, V1V2V3), which acts as a high-frequency amplifying valve. The output of this valve, through the leads Y, passes to the first valve in the unit X (which may be a high-frequency valve), thence to the second valve, the detector, thence to the first L.F. valve V1 in the normal manner. From the output of this valve V1, the energy passes through the L.F. intervalve transformer T1, thence out through the connecting leads P1P2 to the outside valve V2, which replaces the valve V2, thence back into the L.F. amplifier again through the leads P3P4.

A REJECTOR SYSTEM.

It is well known that protection from a disturbing signal may be obtained by including in the tuning circuits a separate tuned circuit comprising a coil and a condenser. One method of connection consists in joining the rejector circuit across the ordinary tuning circuit. Signals with the frequency of the aerial circuit will pass through the ordinary tuning device, and little will pass through the rejector. Signals of different frequency, however, will find an easier path through the rejector circuit, and only a small current will be sent through the ordinary tuned circuit.



The smaller the damping of the rejector circuit, the better it will perform, but it is difficult to construct coils and condensers with small losses without considerable expense, and without them having considerable dimensions. Thus, to reduce the coil losses, the coil is constructed with turns of large diameter of stranded wire, and with the turns spaced. The difficulty experienced is that the large coils themselves act as collectors of energy, and further, where several such rejectors are employed, it is difficult to so place them that they do not interact.

It is known that a valve amplifier may be connected to an oscillatory circuit to reduce its damping. It can therefore be arranged that the rejector circuit may be connected so that the valves used in the receiver may operate to reduce the damping. The rejector coil may therefore be constructed of fine wire, and further, no great precautions need be taken to keep the condenser losses low. The small size of the coil makes it easily possible to provide screens, such as metal boxes, which will serve to prevent interaction with other rejectors or other portions of the receiver.

Thus in a particular case, instead of employing a coil 100 millimetres in diameter by 9 millimetres long, a coil 10 millimetres internal diameter and 30 millimetres external diameter by 1.5 millimetres long is satisfactory.

FREQUENCY.

In alternating current work of all kinds, the number of "cycles," or double reversals per second. Generally, the number occurring per second of any regularly repeated event.

FREQUENCY, LOW.

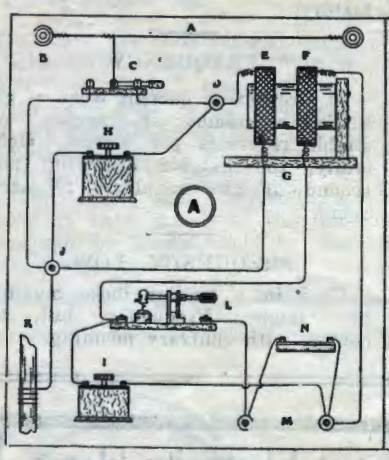
Used in a similar loose manner to "High" Frequency, but, of course, with contrary meaning.

The Construction of Radio Components.

(By "O.J.R.")

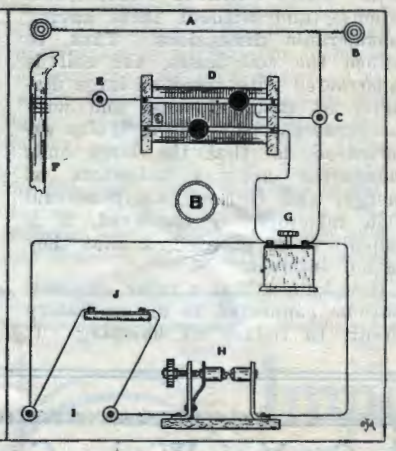
Having constructed the components described in preceding articles, you may now connect up the receiver in one of the various methods detailed below.

This month's instalment is confined to that very interesting procedure—connecting up. The various components already described once again appear as the essential apparatus in a selection of receiving circuits specially drawn in simple pictorial fashion. Each of these circuit diagrams represents a complete receiving unit from aerial to earth. For the benefit of new readers who have missed the preceding chapters of these articles a text is included with each diagram briefly describing each component. It should not be necessary for older readers to refer to these texts since they will easily recognise the components previously dealt with. The method of connecting up each unit is explained below.



A. Aerial; B. Insulators; C. S.P.D.T. Switch; D. Aerial terminal; E. Primary coil; F. Secondary coil; G. Coil support; H. .0005 Mfd. variable condenser; I. .0003 Mfd. variable condenser; J. Earth terminal; K. Earth; L. Crystal detector; M. Telephone terminals; N. .002 or .003 Mfd. Fixed condenser.

Diagram A represents a crystal receiving circuit employing two honeycomb coils (or basket coils if desired) mounted in such a way as to be in variable inductive relation to each other. The method of mounting is here shown in an extremely simple form, the coils being arranged to slide over a round wooden support as previously described. The .0005 mfd. variable condenser H is connected in parallel or "shunt" with the primary coil E, but it may also be placed in series, in which case the wave-length of the coil would be reduced. This is often a desirable feature when the coil contains an excess of winding and it is not possible to tune low enough to the required wave length.



A. Aerial; B. Insulators; C. Aerial terminal; D. Two-slide tuning inductance; E. Earth terminal; F. Earth; G. .0003 Mfd. variable condenser; H. Perikon detector; I. 'Phone terminals; J. 'Phone condenser.

To effect this alteration, remove the wire connecting the switch C to the aerial terminal D, disconnect the left hand condenser lead from the earth terminal J and connect it to the clip on the switch previously occupied by the removed wire. The same remarks apply to any variable condenser connected to a tuning coil and as it is often desirable to try the condenser both in shunt and series, a double pole change over switch is usually employed and connected up as shown in diagram G.

The other variable condenser is in shunt with the secondary coil and should have a maximum capacity of not less than .0003 mfds. The crystal detector shown is of the well-known ball socket type, and a piece of "Hertzite" crystal with a fine gold or copper wire cat's whisker is undoubtedly the best combination to use with this. The general utility of the simple S.P.D.T. switch is here clearly indicated. The aerial lead-in wire, which of course should be soldered to the aerial, is connected at the other end to the centre clips. The right hand clips represent the continuation of the lead-in to receiver and the left hand clips are connected to the earth terminal J or direct to earth K. When the arm is in position shown the circuit is switched on ready for use and when thrown over to the left hand clips the circuit is entirely cut off from the aerial and the aerial is connected direct to earth. This switch may be used in either of the circuits, connected as shown in diagram A.

TUNING.

The tuning of this circuit will require a certain amount of skill. It will only be necessary to move one of the coils. Place both condensers at zero, tune in to maximum strength by adjusting the coil F, then adjust the primary condenser H until signals are still louder and finally tone down the signals by adjusting the secondary condenser I. It is assumed that the proper adjustments of the detector have been previously attended to. The small fixed condenser in shunt with the telephone terminals may have a capacity of .002 or .003 mfds. This applies to any 'phone condenser.

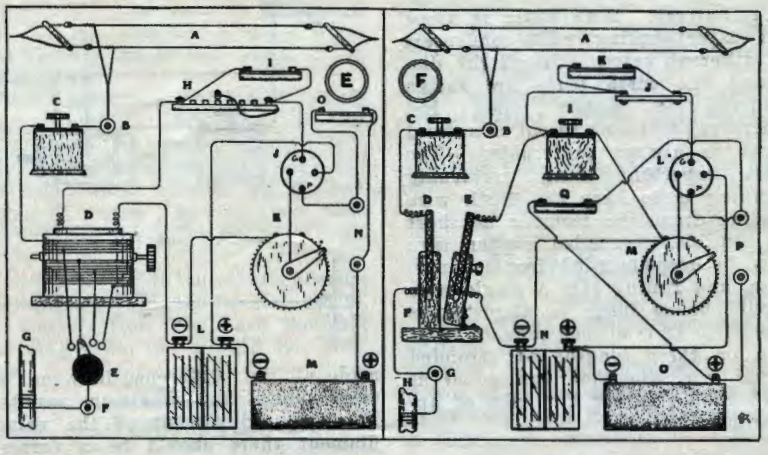
A TWO-SLIDE INDUCTANCE CRYSTAL SET.

Diagram B shows a crystal circuit employing a two-slide inductance with a .0003 mfd. variable condenser connected in shunt with the "secondary." This gives selective tuning and very efficient results. The aerial-coil-earth forms the pri-

mary circuit, and the coil-variable condenser forms the secondary. Both circuits are adjusted to the same tuning by manipulating the inductance sliders and condenser.

This operation will call for a little patience, but let it be said at once that unless an enthusiast possesses a fair share of patience he will never develop into a successful operator. Experience in this as in most other things is only acquired by cultivating the gentle art of 'sticking it.' The difficulties which must inevitably be faced by the beginner are eventually overcome by a fixed determination to discover and cure any little fault and to find out things for himself. An ounce of practice is worth a pound of theory, and so is one actual tune-in worth a dozen lectures.

The Perikon detector H may be replaced by the ball socket detector and vice-versa. When a crystal set is not in use the crystal should be well protected from dust, as this is its natural enemy. Crystals may be cleaned in methylated spirit.



A. Aerial; B. Aerial Terminal; C. .0005 Mfd. variable condenser; D. Vario-coupler; E. Multiple switch; F. Earth Terminal; G. Earth; H. Variable grid leak; I. Grid condenser; J. Valve; K. Filament rheostat; L. Accumulator or low tension battery; M. High tension battery; N. 'Phone terminals; O. 'Phone condenser.

A. Aerial; B. Aerial terminal; C. .0005 Mfd. variable condenser; D. Primary coil; E. Secondary coil; F. Coil mount; G. Earth terminal; H. Earth; I. .0003 Mfd. Variable condenser; J. Grid Leak; K. Grid condenser; L. Valve; M. Filament rheostat; N. Accumulator; O. H. T. Battery; P. 'Phone terminals; Q. 'Phone condenser.

SINGLE VALVE SET WITH VARIO-COUPLER.

In diagram E the vario-coupler is brought into service. A few tappings are taken off the primary coil to the studs of a multiple switch E, which is suitably mounted on an ebonite panel. A short piece of flexible wire connects the switch arm to the earth terminal F, thus making the primary coil winding selective. The beginning of this winding is connected to the lead from the .0005 mfd. variable condenser C, which is here shown in series with the aerial, and the end is connected to the last stud on the switch. The beginning of the inner or secondary coil winding goes to the grid leak and the end to the negative terminal of the accumulator L.

The grid leak H may either be variable as shown, or fixed. A variable grid leak is always an advantage in any rectifying circuit and it is sometimes advisable to try several grid condensers of different values when making adjustments. The fixed condenser O should first be, tried connected as shown, and then across the H.T. battery as shown in diagram D. This means disconnecting the lead from the

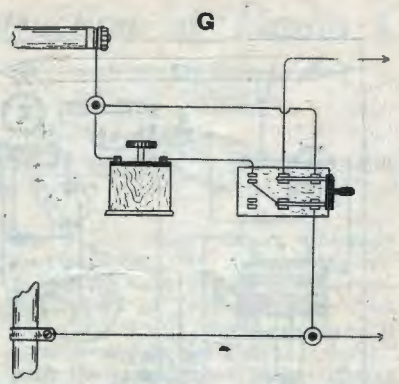
lower 'phone terminal and extending it to the negative side of the H.T. battery. Here again is scope for experimenting with condensers of different values. In all the diagrams the earth leads are shown soldered to water pipes, but wherever it is convenient a natural earth is always preferable. The most important thing concerning earthing is to keep the earth wire leading from the receiver as short as possible. Stranded copper wire may be recommended for this purpose, and failing this a single wire should be as large in diameter as possible. It is a good plan to twist two or three lengths of stranded aerial wire together and cover it with rubber tubing for sake of appearance.

VALVE RECEIVER WITH BASKET COILS.

In diagram F we have a similar tuning arrangement to that shown in diagram A, but here we employ a valve, instead of a crystal, for rectifying.

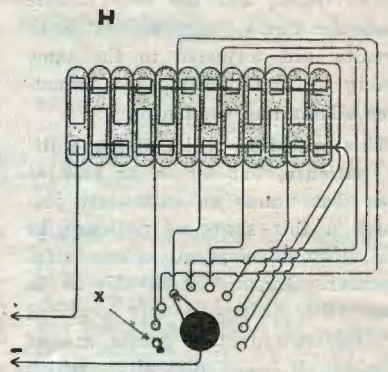
The .0005 mfd. variable condenser C is shown in series with the primary basket coil D, but this arrangement is subject to alteration as previously pointed out.

When operating a valve receiver, success will depend a great deal on experimenting. It is most disheartening to own a receiving set which will not function satisfactorily, but it is a grand feeling to discover that one simple little adjustment has made all the difference between a dead silence and maximum results. To every adjustment of the valve filament there should be a corresponding adjustment to the plate current. Many enthusiasts overlook this important fact. But it will soon be discovered that the most critical thing to contend with is the value of the grid leak and condenser.



G is a self-explanatory diagram showing the connections of a D.P. D.T. switch for switching the aerial tuning condenser either in series or shunt with the tuning inductance.

Diagram H shows how to connect up ordinary pocket lamp batteries to form a high tension unit for the plate circuit. When a number of these batteries are connected in series the total voltage will equal that of one battery multiplied by the number of batteries in circuit, so that if we have twelve 4.5 volt batteries we get a total E.M.F. of 4.5 x 12 equals 54 volts.



To obtain intermediate values it is only necessary to take off tappings at different junctions and connect each tapping to a contact stud of a multiple switch. It is best to have the battery as selective as possible and the first tapping should be taken off at fourth junction as shown and continued from each one onwards. The voltage of the first four batteries will be 4.5 x 4 equals 18, and a lower value than this is seldom required. Thus the first stud should be marked 18. The second stud which is connected to the second tapping will represent 18 plus another 4½ equals 22½ volts. The remaining studs are marked 27, 31½, and so on, adding another 4½ each tapping.

Continued on page 18

RAILWAY AND TRAMWAY RADIO ASSOCIATION.

Several highly successful meetings of the Railway and Tramway Radio Association have been held during the past month. The membership now stands at 30, and every effort is being made to induce every experimenter in the Railway and Tramway service to join up. The buzzer class is proceeding enthusiastically and every member is anxious to become proficient in operating. Several very interesting and instructive lectures have been delivered and some inter-club debates held.

The Club has been presented with an auditron valve by Mr. Gray, for its receiver and arrangements are in hand for the construction of same. At the last meeting the Secretary was instructed to purchase a copy of Wireless Weekly every week for the use of the Club members, and appreciation was expressed on the information contained in that paper. It was decided to make Wireless Weekly the official organ of the Association.

The Association meets every Wednesday night at 7.30 p.m., in the Telegraphy Instruction Room, Sydney Railway Station (top floor) and all members of the R. and T. Service interested in wireless telegraphy are cordially invited to attend.

Enquiries as to the Association's activities should be directed to W. L. Carter, Hon. Sec., c/o Solicitor for Railways, 139 Phillip St., Sydney.

THE CROYDON RADIO CLUB.

On Saturday, September 8th, the above club held their usual meeting at "Rockleigh," Lang Street, Croydon, at 7.30 p.m.

The secretary congratulated Mr. C. W. Slade upon his success in winning the receiving prize in the New Zealand tests, on behalf of the members of the Club. Mr. Slade made a suitable reply.

Mr. Charlesworth (2CI) gave a most interesting lecture to members, The lecturer gave valuable hints to those present, and pointed out the advantages of using an accumulator "B" battery for reception, and gave advice as to the best way to construct and charge one.

The members showed their appreciation to the lecturer by loud applause.

Buzzer practice was given as usual.

COASTAL RADIO SERVICE STAFF CHANGES.

Mr. R. C. Anderson, Radio-telegraphist, Perth Radio transferred to Adelaide Radio.

Mr. A. R. Finch, Rigger, on completion of overhaul of mast and aerial at Cooktown Radio, is returning to Melbourne; en route he will inspect the masts and aerials at Townsville, Rockhampton and Brisbane.

FREE WIRLESS CONCERTS IN ADELAIDE.

On Monday, (September 3rd) the first of a series of free wireless concerts conducted by the Central Traders' Association was given at

Moores, New Adelaide, a large aerial having been fitted up on the roof of their large buildings.

The demonstration was opened by a speech from the Lord Mayor (Mr. Lewis Cohen) transmitted from the station of Mr. H. L. Austin, 5BN, of Parade, Norwood; selections by Mr. Jack Fewster and his orchestra; and solos by Mrs. F. H. Walquist and Mr. H. Nankervil were features of the afternoon's transmissions.

The receiving set was one constructed by Mr. E. N. Sagar, who had the supervision of the whole series of concerts, the music and speeches being made audible by means of a pair of magnavox loud speakers. The transmitting was all carried out by Mr. Austin.

These concerts were continued every day until Friday, when a last final concert was given during the evening, orchestral selections, and gramophone records being transmitted between 6.30 and 7 p.m.

The demonstrations were given by special permission of the Chief Manager of Telegraphs and Wireless (Mr. J. Malone).

A WIRELESS EVENING.

Wednesday, August 29th, was indeed a very pleasant and profitable evening to the members of the Electric Supply Workers' Educational Association when Mr. J. M. Honnor, A.S.A.S.M., one of the Vice-Presidents of the South Australian Division of the Wireless Institute, gave a lecture and demonstration on "Wireless Telegraphy and Telephony." The lecturer in a very lucid and instructive manner explained how wireless waves were transmitted and received; a detailed description of how certain crystals had special properties for receiving wireless signals was given. He also explained the valve of Professor Fleming and the three electrode, valve of Le De Forest, the circuits of the valve and the complete receiving circuit of a valve receiving set. During the evening several items of music, speech, and Morse signals were received from Mr. H. L. Austin's 5BN Station at Norwood. By means of a magnavox which was kindly lent by Mr. L. C. Jones, of Adelaide Radio Co. Ltd., the music and signals were made audible to all present.

On the motion of Mr. T. E. Murrin, seconded by Mr. F. C. Scanlan, a hearty vote of thanks was accord-

ed the lecturer, who in responding, thanked the various firms and friends for the use of various instruments to aid him in his lecture.

The demonstration was given by special permission of the Chief Manager of Telegraphs and Wireless.

WIRELESS INSTITUTE OF AUSTRALIA.

SOUTH AUSTRALIAN DIVISION.

The fifth annual meeting of the South Australian Division of the Wireless Institute, was held in the University, North Terrace, Adelaide, on Wednesday, September 5th.

There was a large attendance, presided over by Mr. Hambly Clark, the retiring President.

The following officers were elected for the ensuing year:—President, Mr. R. B. Caldwell; Vice-Presidents, Messrs. J. M. Honnor and H. L. Austin; Hon. Treasurer, Mr. K. Milne; Hon. Secretary, Mr. C. E. Ames; Hon. Assistant Secretary, Mr. F. E. Earle; Hon. Librarian, Mr. H. Hawke; Council, Messrs. L. C. Jones, G. A. Miller Randle, T. Morris, and W. J. Bland.

Ten applications for membership were received and approved.

A letter from the Radio Inspector (Melbourne) was read by the Secretary, dealing with the use of regenerative circuits, which use was to be discouraged by experimenters operating within a range of ten miles of a commercial, defence or broadcasting station. The practice will, however, be allowed in the case of experimenters whose capabilities of operating were approved by the inspectors.

A motion in favour of forming a branch of the Australian Radio Relay League was carried, and the Secretary was instructed to call a meeting of all experimenters holding transmitting licenses, with a view to forming a branch in this State.

A motion was carried that an entrance fee of 2/6 for full members and 1/- for probationary members under 16 years of age, be charged in future, all applications to the Institute for membership must be accompanied by the entrance fee.

HON. RADIO INSPECTOR FOR NEWCASTLE.

Mr. J. E. Stewart has been appointed to the position of Hon. Radio Inspector for Newcastle District.

Mr. C. Maclurcan, 2CM, is once more in the aether again. His wave length is now 240 meters, and experimenters may look forward to hearing him again next Sunday evening. See Roster, page 1.

Mr. Marsden, 2JM, is now on 236 meters and is anxious to hear from experimenters who hear him on his 3-coil set.

2CM is carrying out C.W. tests, using 100 watts, and will be pleased to hear from country listeners-in.

2HP will be carrying out extensive tests on about 350 meters early next week, both afternoon and evening, and requests all experimenters who hear the transmissions to drop him a line to Box 378, G.P.O.

FOR SCHOOL BOYS ONLY.

2CM, Mr. Chas. Maclurcan, of Agnes Street, Strathfield, has a quantity of aerial wire which he will be pleased to hand over to school boys who are just starting wireless.

TO EXPERIMENTAL TRANSMITTERS.

Now that most of the N.S.W. experimenters are on the 200 meter band, there is likely to be chaos again unless Roster times are strictly adhered to.

There is room on the Roster for every transmitter, even if the period of 30 minutes now taken by each applicant has to be reduced. Not only does the Roster prevent interference, but it also notifies listeners-in when to listen for the respective stations, which should and will mean more reports to those stations.

Time may be applied for every day by ringing Red. 732 between 9 a.m. and 5 p.m.; North 226 after 7 p.m. (next week), or by calling 2HP by Radiophone 7 to 7.30 p.m. and 10 to 10.30 p.m. every evening.

MISSING MAN FOUND THROUGH RADIO BROADCAST DESCRIPTION.

First Time in History of this New Scientific Force.

The value of the radio broadcasting station in its relation to locating missing persons and articles was fully demonstrated when WLW, of the Crosley Manufacturing Company, Cincinnatti, located Herbert Weber with a day after his description had been sent into the air. This marks the first recovery of a person by radio although thousands of messages and descriptions have been sent to all parts of the world by radio.

Immediately after the church services by radio, WLW broadcast a description of Herbert Weber, a deaf and dumb man whose wife had not been able to locate him. He had wandered off and so the wife turned to the new agency, radio, to help her in her search. She gave a full description of him and then trusted to the modern miracle to do the rest.

Now, T. Paul Jordan, of Newtonsville, Ohio, a radio listener to the church services, heard this message of distress and began a search for the missing man. It was not until the next afternoon that the deaf and udmb man was found wander-

A PARALYSING "STRIKE."

One of the half-dozen lines which comprise the antenna of the Eiffel Tower Station was recently cut by lightning striking it. Insulators and all, it crashed down from the top of the great tower and buried itself deeply in the ground. Besides this, four other insulators were damaged and five or six of the cables. For the first time in many years radiophans and others listened in vain for the schedule transmissions from FL, for the service was entirely disorganised. Tours, a nearby station, deputised until the necessary repairs were completed. Eiffel Tower's cables, which stretch from the top of the tower to the ground, were said to be lightning proof. Although the elements are fond of playing unexpected pranks, electric discharges such as the one causing the damage are infrequent in that part of the country.

Continued from page 14

The extra contact stud X is left disconnected. This acts as a switch for cutting off the current when the set is not in use. This stud should be marked "OFF."

It is hoped that the reader will now have sufficient work in hand to last until next month, when it is proposed to describe some practical high and low frequency amplifying circuits.

THE CHARLIE CHAPLIN OF RADIO.

"The best known man in France to-day, not excluding President Millerand, is M. Radiolo, the official announcer of France's single wireless broadcasting firm," states "The Sun," New York. "Six months ago he was discovered working in a railroad accountant's office. Manufacturers of a wireless apparatus offered him a contract at a salary of 1,000 francs a week to talk into the transmitter for three hours daily, his voice being considered to have a greater resonance than that of either Caruso or Jean de Rezke at the height of their careers.

"But Radiolo is finding his fame irksome, as he can no longer attend theatres without having the audience rise and applaud just as if he were the President entering the official loge.

"The performance at a suburban theatre was stopped in the middle of the first act last week until Radiolo, who had entered, satisfied the radio fans by repeating without a smile the phrase which introduces all French wireless programmes: 'Bon soir, mesdames, bon soir, messieurs.'"

LEARNING LANGUAGES BY THE ETHER METHOD.

One of the most important factors in learning a new language is to have plenty of practice in hearing it spoken. A broadcasting station located in Sheffield, England, has realised this and is making an experiment in sending out French lessons by radio. As a matter of fact all that the European radio fan who wishes to learn a new language need to do is to pick his headphones, tune in some broadcasting station of a foreign country, and listen in.

Amateur Receiving Stations.

WESTERN AUSTRALIA.

Wireless Licenses for experimental purposes have been issued to the following:—

CALL SIGN.	NAME.	ADDRESS.
6 C X	Edgeberg, H.	204 St. George's Terrace, Perth. R.
6 C Y	Sinclair, B. S. C.	Solomon Street, Cottesloe Beach. R.
6 C Z	Saar, A.	35 Cleaver Street, West Perth. R.
6 D B	Starr, W. A.	10 Bulwar Street, Perth R.
6 D C	Rutledge, C.	81 Smith Street, Highgate Hill. R.
6 D D	Bishop, C. E.	South Street, Albany. R.
6 D E	Nicholson, K. G.	22 King's Park Road, Perth. R.
6 D F	Seeligson, N. E.	14 Outram Street, West Perth. R.
6 D G	Harding, C. H. V.	South Street, Albany. R.
6 D H	Benrose, G. S.	Margaret Street, Cottesloe. R.
6 D I	Woodhead, H. E.	Balbarup Road, Bridgetown. R.
6 D J	Stockall, H.	Central Avenue, Maylands. R.
6 D K	Stewart, J.	34 Hill Street, Perth. R.
6 D L	Vincent, J.	124 Varden Street, Kalgoorlie. R.
6 D M	Thomas, L. H.	76 Kimberley Street, West Leederville. R.
6 D N	McDonald, G. A.	Smythe Road, West Subiaco. R.
6 D O	Eaton, R. T.	41 Claremont Avenue, Claremont. R.
6 D P	Kirkpatrick, J.	43 View Street, Perth. R.
6 D Q	Marsh, J. W.	Taylor's Well, West Pingelly. R.
6 D R	Alexander, J. D.	34 Queen's Cresent, Perth. R.
6 A M	Kennedy, F.	210 Walcott Street, Mount Lawley. T.
6 D A	Saw, F. W.	C/r. Bedfordale and Bunbury Rds, Armidale. T.
	The following has removed to the addresses indicated:—	
6 B V	Wilson, J. H.	Johnston Street, Peppermint Grove. R.
6 C J	Darley, E. J.	Darley Street, South Perth. T.
6 A Q	Mathews, V. J.	Beechbora Road, Bayswater. T.
6 C H	Hammond, H. A.	Palmerston Street, Cottesloe Beach. R.
6 C I	Forster, J. C.	"Jesmond," Kerbel. R.
6 C K	Mills, G. J.	C/r. Redfern St., and Derby Road, Subiaco. R.
6 C L	Downing, E. F.	160 Surburban Road, South Perth. R.
6 C M	Ashford, H. H.	2 Charles Street, West Subiaco. R.
6 C N	Dewar, R. A.	1 Perth Street, Bassendean. R.
6 C O	Tiller, W. E. R.	Woodbridge School, East Guildford. R.
6 C P	Wallace, G. W.	McKenzie Street, West Leederville. R.
6 C Q	Mais, S. J. L.	5th Avenue, Chester Park. R.
6 C R	Watson, John	Balmoral Street, Victoria Park. R.
6 C S	Wallace, W. H.	Goldfield Weir Hotel, Mundaring Weir. R.
6 C T	Prout, G. E.	Leake Street, Cottesloe. R.
6 C U	Birt, Wm.	15 Vincent Street, Perth. R.
6 C V	Werner, A. J.	587 William Street, Mount Lawley. R.
6 C W	Selby, R. H.	1072 Hay Street, Perth. R.

TASMANIA.

Wireless Licenses for experimental purposes have been issued to the following:—

CALL SIGN.	NAME.	ADDRESS.
7 B O	Watt, A.	Prince of Wales Bay, via Moonah. R.
7 B P	MacMillan, J. C.	7 Harrington Street, Hobart. R.
7 B Q	Oakes, W. A.	17 Gilbert Avenue, New Town. R.
7 B R	Monks, C. W.	36 De Witt Street, Hobart. R.
7 B S	Morris, A. W.	38 Lochner Street, West Hobart. R.
7 B T	Walker, R. G.	321 Davey Street, Hobart. R.
7 B U	Tongs, L. M.	North Motton. R.
7 B V	Graham, W. T.	Gray Road, St. Mary's. R.
C	Richards, G. F.	Charles Street, Moonah. R.
C	Omay, J. W.	Cambridge Road, Bellerive, Hobart. R.

INDIA A ONE COMPANY AFFAIR.

A recent report of the Delhi conference on Broadcasting says that only one company will be allowed to operate in India. This will be composed of British and Indian firms only. Whether non-British companies will be allowed to take part later remains to be seen. At present they are prohibited, according to the statement of Vice-Consul Shantz, of Calcutta.

AS GOOD AS THE A.A.

An unusual occurrence on the high seas was that which transpired when the S.S. Jangvar's oil supply ran short suddenly, out in the Atlantic. The ship carries Diesel engines, which take only a specially light oil, and the fuel tanks threatening to run completely dry, gave the engineer a troublesome problem to face. Wireless inquiries elicited the fact that the only oil to be obtained was at Port Ponta Delgada, Azores, and a heavy variety at that. So the wireless operator sent out a diagnosis of their engines and their trouble, which was picked up by the Diesel Department of the Morse Drydock & Repair Co. They quickly sent back instructions to use the heavier fuel, and the Jangvar managed to struggle into Ponta Delgada, re-fuel with the new oil and finish her journey to New York under her own power.

FROM A GLASGOW STATION.

An Ethophone four valve B.B.C. set has recently been fixed on a waggon and tried, first at the pit shaft, where reception was poor, then at various points lower and lower in the shaft. Signals grew louder and better as the cage descended, but after 180 feet weakened again. At the bottom the set, still on the waggon, was placed in a fairly dry spot, and a single wire aerial put along the gallery roof. The earth connection was tried first on the rails along which the carriers run, but the effect of the unusual surroundings, the masses of minerals on all sides, etc., there was great oscillation, and the sounds though loud were distorted.

The following has been cancelled:—

7 A C	Dowding, P.	Charles Street, Moonah. R.

CALL SIGN.	NAME.	ADDRESS.
7 A K	Deegan, S. E.	St. Virgil's College, Hobart. T.
7 B K	Preston, T. A. C.	Railway Row, Queenstown. T.
7 B L	Jensen, L. R. H.	Middle Road, West Devonport. R.
7 B M	Jenner, J. H.	Premaydena, Tasman Peninsula. R.
7 B N	Smith, A. C.	21 High Street, Launceston. R.

SOUTH AUSTRALIA.

NATURE OF LICENCE.	NAME.	ADDRESS.
C	Adamson, H. M.	180 Fisher Street, Malvern. R.
V	Rhodes, H.	Power House, Kadina. R.
C	Mudge, J.	Rowe Street, Cobdogla. R.
V	Sullivan, L. R.	Liverpool Street, Port Lincoln. R.
C	Somer, D.	86 Beulah Road, Norwood. R.
V	Green, C. H.	16 Wallsall Street, Kensington Park. R.
C	Hodder, C. W.	72 Porter Street, Parkside. R.
C	Skene, C. M.	Krongart Station, Kalangadoo. R.
C	Thomas, V. L.	17 Alexander Street, Port Pirie. R.
C	King, E. S.	Clarion Cottage, Carlyle Street, Camden. R.
C	Terrill, S. E.	19 Weller Street, Goodwood Park. R.
C	Farrow, P. D.	48 Park Terrace, Gilberton. R.
C	Fidge, H. W.	49 Maesbury Place, Kensington. R.
C	Berry, H. A.	171 Gilbert Street, Aledaide. R.
C	Miller, K. J.	3 John Street, Eastwood. R.
C	Mullen, B. A.	4 Edmund Avenue, Unley. R.
C	Watts, N. J. A.	56 Eton Street, Malvern. R.
C	Stephen, A. G.	Ralston Street, Largs Bay. R.
C	Maley, G.	45 Asquith Street, Prospect. R.
C	Goodwin, L. C.	21 Eastwood Terrace, Eastwood. R.
C	Allen, R. G. G.	27 Tait Terrace, Croydon. R.
C	Winterbottom, K.	12 Edward Street, Norwood. R.
C	Watts, N. J. A.	56 Eton Street, Malvern. R.
C	Ogilvy, A. E.	Bute. R.
C	Mann, T. W.	62 Esmond Street, Hyde Park. R.
C	Ramsay, G. C.	19 Oxford Terrace, Adelaide. R.
V	Caldicott, C. L.	Cambridge Street, Jamestown. R.
C	Chenoweth, L.	14 Colliver Street, Norwood. R.

The following has been cancelled:—

	Shearne, H. T.	Brighton Road, Brighton. R.

The following have removed to the addresses indicated:—

	Fotheringham, H.	Melbourne Street, North Adelaide. R.

5 B N	Austin, H. L.	8 Parade, Norwood. T.
5 B O	Caldwell, W. A.	53 Hughes Street, Unley North. T.
5 C U	Anders, H. M.	39 Arthur Street, Unley. R.
5 C V	Burden, C. H.	124 Beulah Road, Norwood. R.
5 C W	Turner, E. R.	54 Fifth Avenue, St. Peters. R.
5 C X	Scott, R. P.	David Terrace, Murray Bridge. R.
5 C Y	Richards, M. E.	86 Park Street, Hyde Park. R.
5 C Z	Gurner, R. C.	21 Victoria Terrace, New Parkside. R.
5 D A	Buckenfield, S. R.	4 Regent Street, Parkside. R.
5 D B	McKenzie, L. D.	Monmouth Road, Hawthorn. R.
5 D C	Ayres, R. F.	Margate Street, Brighton. R.
5 D D	Trewenack, W. H.	31 Gladstone Road, Adelaide. R.
5 D E	Somerset, H. St.J.	West Terrace, Port Pirie. R.
5 D F	Ware, W. E.	62 Brigalow Avenue, Kensington Gardens. R.
5 D G	Freak, J.	Gladys Street, Edwardstown. R.
5 D H	Sawford, L. F.	157 Commercial Road, Port Adelaide. R.
5 D I	Caldwell, W. A.	2 Northgate Street, Unley Park. R.
5 D J	Bagshaw, T. S.	49 Kensington Road, Kensington Park. R.

The following has removed to the address indicated:—

5 B L	Stearne, H. T.	Brighton Road, Brighton. R.

MARRICKVILLE DISTRICT RADIO CLUB.

At the School of Arts, Illawarra Road, Marrickville, the weekly meeting of the above club was held on Monday, the 10th inst. The President, Mr. W. L. Hamilton, occupied the chair.

The main business of the evening was that pertaining to erection of aerials. It was decided to push on with this work and a working bee was formed for this purpose.

On the 24th inst., Mr. Malcolm Perry, of The New Systems' Telephone Co., will be present at the club and deliver a lecture.

RESIGNATION OF MR. G. P. ATKINSON.

Mr. G. P. Atkinson, of Amalgamated Wireless Ltd., who is well known to experimenters, has resigned his position with that company.

Mr. Atkinson carries our best wishes wherever his activities may lead him.

BALMAIN DISTRICT RADIO SOCIETY.

During the past three weeks the regular meetings have been well attended. Several papers on crystal detectors have been read by Mr. Dickins and Mr. Wylie, the whole of which was greatly appreciated by members.

Next meeting should prove very interesting as a fine display of members' apparatus is expected. A test of each apparatus is to be carried out, the results to be logged and at another meeting an interesting debate on panel versus isolated apparatus will be opened, the results of previous tests will also be debated on.

Particulars re activities can be obtained from F. W. Riccord, Hon. Sec. (pro tem), 77 Grove St., Balmain.

ILLAWARRRA RADIO CLUB.

The 31st general meeting of the club held on 11th inst., proved to be one of the Club's best attended meetings to date, and was responsible for the addition of another new member to the Club's roll. The steady increase of membership has been a notable feature of the Club's progress for some time past, and the fact that the membership has in the space of a little over 12 months grown from 15 to the present number of 53 members, speaks well for the interest which the Club has created and the appeal it has to experimenters in the Illawarra suburbs. It is felt, however, that there are still a considerable number of experimenters in the district who should give the Club their support by becoming members, and it is hoped they will not be slow to see the advantage of being associated with a properly conducted society of experimenters, as this Club is. Apart from the personal element, however, the Controller of Wireless, has more than once expressed his strong approval of the formation and operation of experimental wireless bodies as co-ordinating and regulating experimenters, and thus assisting the Department, and in view of this every experimenter is under a moral obligation to give his practical support to his local club or society wherever it may be. It is only by this means that the Clubs can become truly representative of experimenters as a whole, and it is only by thorough organisation of this kind all round that the large body of experimenters in Australia can become a really united body, which can speak with one voice for the experimental movement and effectively deal with any situation which may arise in the future threatening to endanger the rights and liberties which those experimenters now enjoy.

At this meeting (there being no lecture) the chairman asked members to put forward any questions on which they required information. Numerous questions were taken up and dealt with one by one; some of the queries were:—"What was a permissible circuit using reaction for long wave reception;" "Best catwhiskers for various crystals"; "How did a valve detect and amplify"; "Construction and application of the Wavemeter"; "Best way of finishing woodwork for panels and cabinets"; "Easiest method of spacing studs on a panel," etc. Many of the more advanced members gave their views on the diverse subjects involved, and created an interesting discussion. This idea has been given effect to on various occasions in the Club and has always proved popular with the members, allowing, as it does, each member to bring forward his pet question of the moment and obtain direct information and explanation on the point involved, with the additional advantage of different opinions on the subject.

Arrangements were made to commence buzzer practice classes with next meeting, several expressing their intention of taking part.

The next meeting of the Club will be held at the Club-room, 75 Montgomery St., Kogarah, on Tuesday, 25th September at 8 p.m. Mr. S. V. Colville will give a talk on the Australasian Amateur Radio Relay League, and there will also be a demonstration of the principles of transmission and reception by Messrs. Kirkby and Atkinson. All interested are given a cordial invitation to attend.

Arrangements are under way for the Club members to visit the experimental studio of Amalgamated Wireless Ltd., and also to visit the Station at Pennant Hills. The first party for VIS will go up on Saturday, 22nd inst.

The Secretary, Mr. W. D. Graham, 44 Cameron St., Rockdale, will be pleased to receive applications for membership from local experimenters not already members, or to supply any information re the club on application.

Radio is the beginning of all things to humanity in general, and that is its special function. Against their will, sometimes, "fans" listen-in to music which is a little out of their usual beat. From jazz to part of a symphony is a far cry, but the intrinsic worth of the classics in music, as in other art forms, makes itself felt eventually. Thus taste and appreciation are unconsciously stimulated. Radio introduces the best to many who would not go out of their way to take a good thing when it is within their reach.

"ELECTRON—THE DRIVER."

The first man who heard the first "wireless" message probably felt like Christopher Columbus when he discovered America. Here, indeed, was a new world. True, also, he himself had nothing to do with the discovery; but what of that? He was there. And the sound was there, too, what there was of it, but in those early days, what there was, was certainly not good—at least, so decided the wireless experimenters.

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