

**THE
AUSTRALASIAN**

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Radio World

VOL. 5 NO. 1

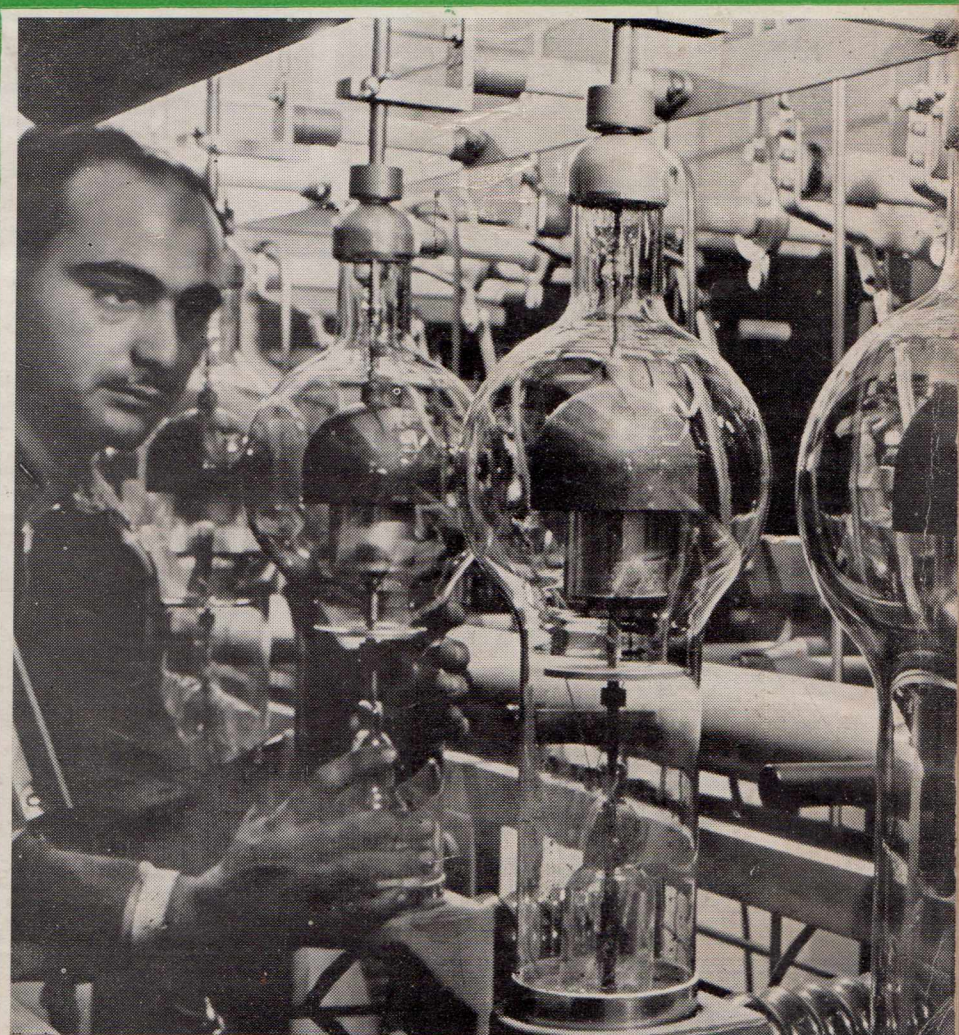
JUNE, 1940

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HOUR BY HOUR
S. W. SCHEDULE**

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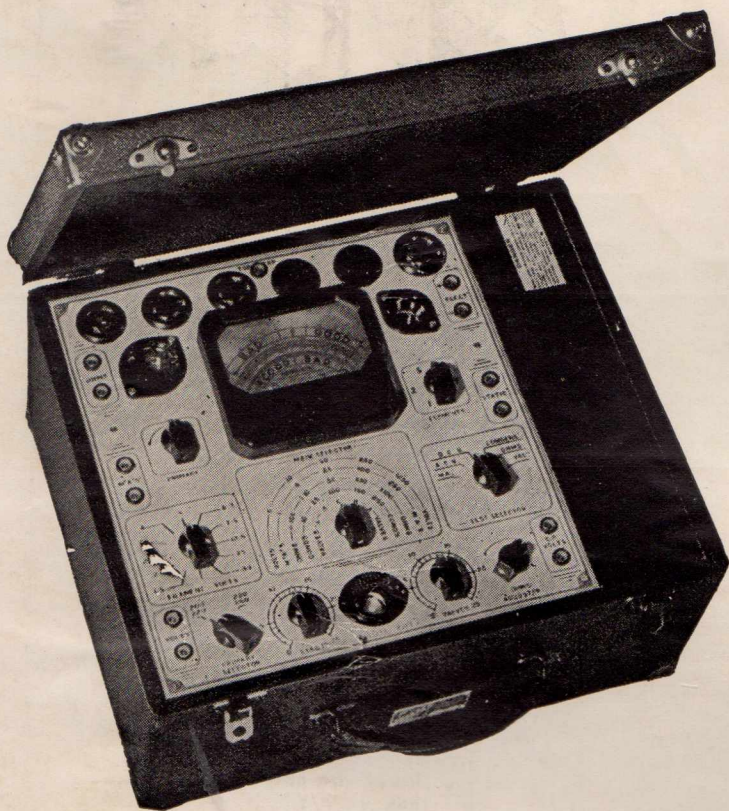
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The Australasian
RADIO WORLD

Incorporating the
ALL-WAVE ALL-WORLD DX NEWS

Vol. 5. JUNE, 1940. No. 1.

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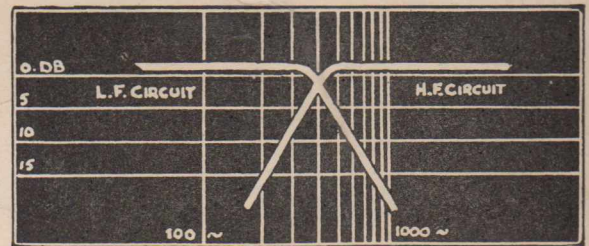
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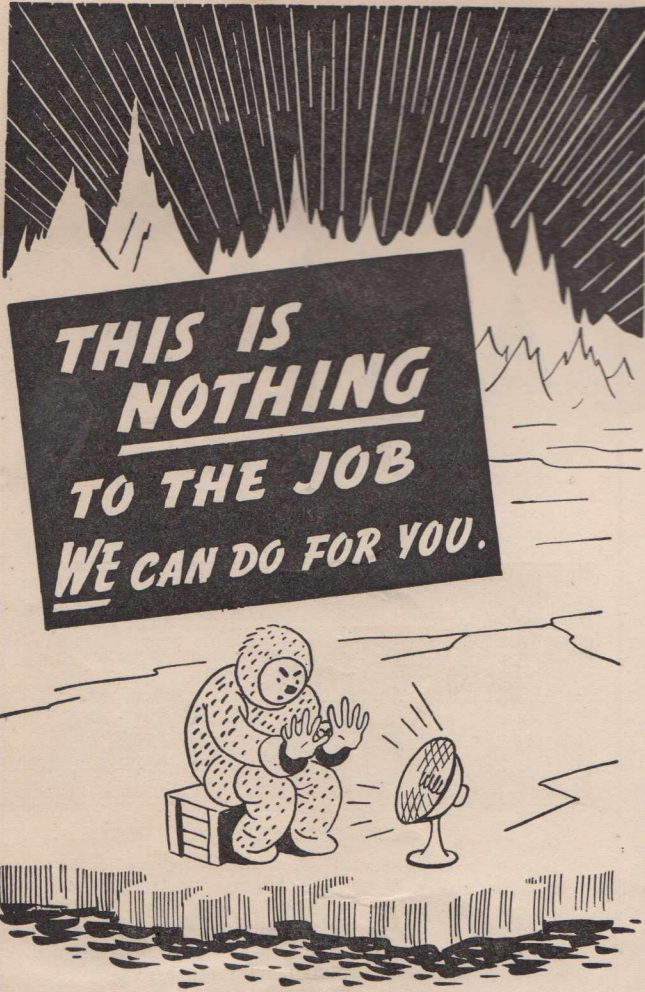
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EDITORIAL . . .

Should an Editor tell?

Should an Editor admit the mistakes which always seem to happen in circuit diagrams and wiring layouts, no matter how doubly they are checked and re-checked?

When the mistake is noticed should the Editor lie low, say nothing and hope that the majority of his readers have not noticed the mistake, and retain their impression that the diagrams are always one hundred per cent. perfect?

Or should the error be noted in the following issue so that those who are in trouble will see the correction and solve their problem without further worry?

Judging by technical journals from all over the world there seems to be a definite hesitancy about the admission of errors, but we feel that our readers are of a standard much higher than the average intelligence, and we don't think that they are going to consider our technical articles completely unreliable just because an occasional slip happens.

Just how these slips do occur is fairly easy to explain, when the normal procedure is considered.

First the design of the set is considered, and a rough circuit drawn up.

From this rough circuit two copies are made, one for the man building up the chassis and the other for the artist who is draughting the final circuit schematic.

When the set is being built and tested there are often minor changes made necessary to allow parts on hand to be used, or to cure unforeseen troubles which arise when the chassis is being given a thorough test on the air.

When the chassis has been finally passed as O.K. it goes to the artist who draughts the picture diagrams from it.

Later the diagrams are checked and re-checked, but every now and then there is an error or a substitution drawn into the diagrams which is not discovered.

In most cases it is merely a matter of two alternative values being given, both equally suitable in practice and either value can be used without affecting results in any way. But they are different, and to the average set-builder such substitutions are confusing and worrying.

We fully appreciate how well off we would be without them.

But if they do happen then we feel that it is up to us to admit them in the next issue, even if the majority of other technical journals are not so candid with their readers.

A. G. HULL.

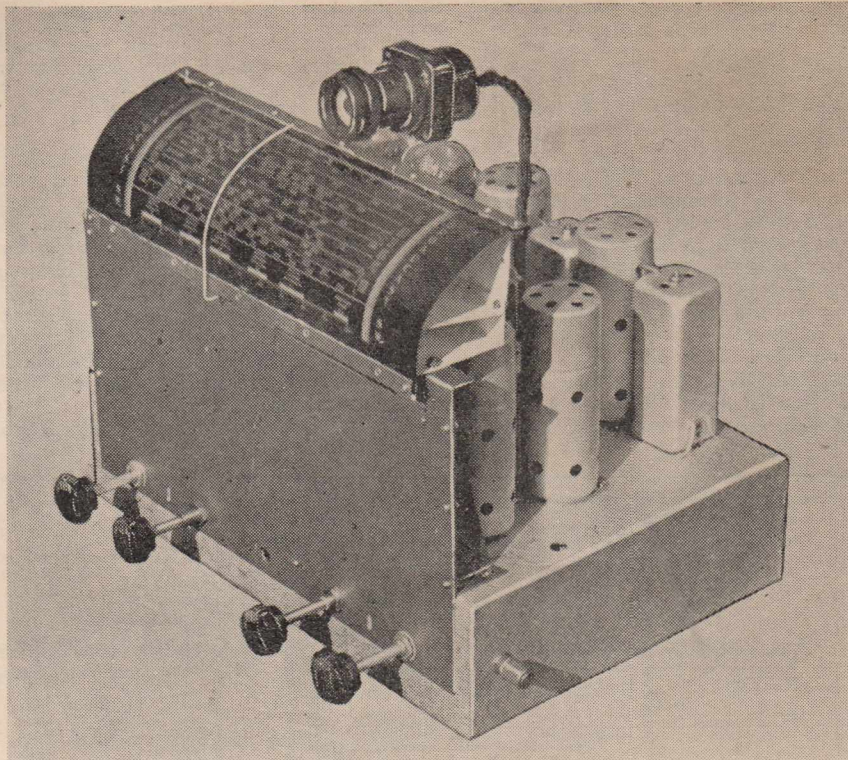
FIDELITY SIX

—tone
—range
—value

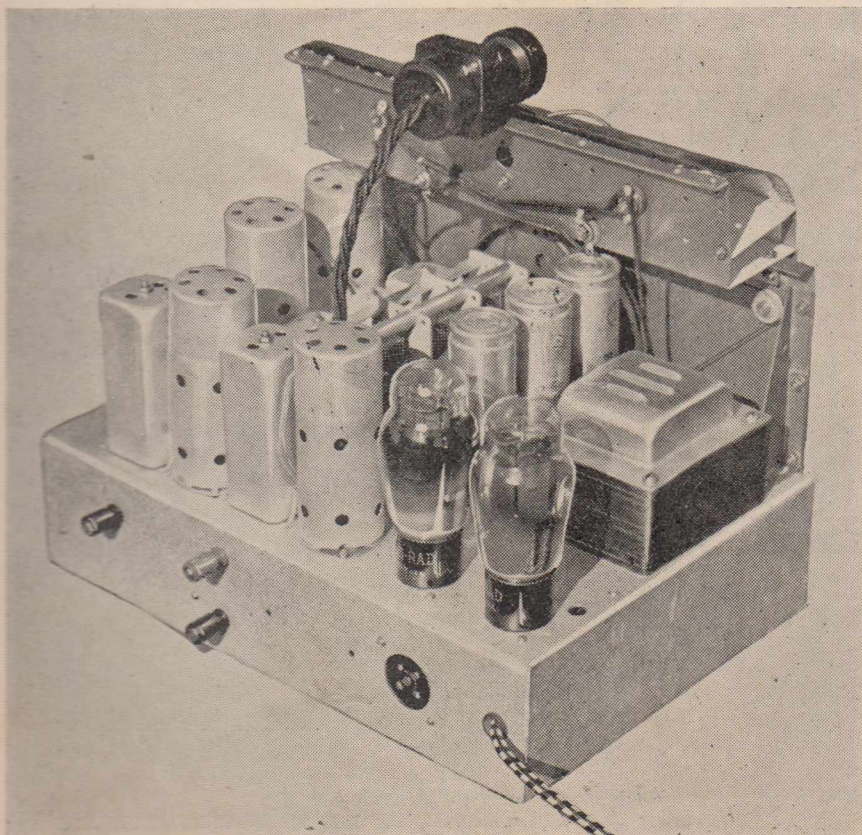
by

R. LACKEY

*A.M.I.R.E. (Aust.) Dip.
W.I.A., Chief Instructor
Australian Radio College.*



Front view of chassis, showing the Magic Eye tuning indicator above the dial, which is the latest "roll-top" design.



This photograph clearly shows the layout of the chassis. The two terminals in the centre are for connecting a pick-up.

At some time or another we have all envied the tone quality or sensitivity of some receiver we have heard. Here is the opportunity for you to construct for yourself, a receiver which will provide almost unpassable tone quality at the same time possessing a high degree of sensitivity. You can obtain a complete kit of best quality parts, right down to the last nut and bolt, to enable you to build either a dual wave model, for the reception of both Australian and overseas stations, or a broadcast model for the reception of Australian stations only.

The set employs a 6U7G tube as an R.F. amplifier, a 6K8G as the frequency changer tube, a 6G8G as a combined intermediate frequency amplifier, 2nd detector and A.V.C. rectifier, a 6J7G high gain pentode stage as a first audio frequency amplifier, and a 2A3 triode tube in the output stage.

A triode output tube was selected because of the much smaller percentage of harmonic distortion produced by this type compared with tetrode or pentode valves. The circuit itself is capable of extremely wide frequency range, together with a low percentage of harmonic distortion, so that when used in conjunction with a high fidelity 12in. speaker and a heavily built cabinet, the tone quality is the closest approach to perfect.

FIDELITY SIX

(continued)

Two soldering lugs mounted on short pieces of bakelite should be mounted on the chassis in the approximate position indicated in the wiring diagram. These will be required for holding connections during the wiring of the receiver.

Wiring

Before commencing the wiring, it will be necessary to tin all the sol-

dering lugs on the various components in the set. This is carried out by placing a very small quantity of a good quality non corrosive flux on each soldering lug to which a connection is to be made and coating each soldering lug with a very thin film of solder by means of a hot soldering iron.

The long wiper lugs which fit into grooves on the tuning condenser shaft and project through holes provided in the chassis should be soldered together securely and a piece of braided wire should be used for join-

FIDELITY SIX

List of Parts

- 1—Steel base (Acorn, Arcadian)
- 1—Power transformer (100 m.a.)
- 1—Dual-wave coil unit with r.f. stage (R.C.S., Radiokes)
- 2—Intermediate transformers, 465 k.c. (Radiokes, R.C.S.)
- 1—3-gang condenser to suit (Stromberg-Carlson)
- 1—Dial to suit (Efco)
- 1—250,000 ohm potentiometer (I.R.C., E.T.C.)
- 1—50,000 ohm volume control (I.R.C., E.T.C.)
- 1—15,000 ohm voltage divider (R.C.S., Radiokes)
- 1—100 milliamp filter choke (R.C.S.)

RESISTORS:

- 1—30 ohm wire wound (R.C.S.)
- 1—475 ohm wire wound (R.C.S.)
- 1—2000 ohm 1-watt (I.R.C., Bradley)
- 1—15,000 ohm 1-watt (I.R.C., Bradley)
- 3—50,000 ohm 1-watt (I.R.C., Bradley)
- 1—100,000 ohm 1-watt (I.R.C., Bradley)
- 1—250,000 ohm 1-watt (I.R.C., Bradley)
- 2—500,000 ohm 1-watt (I.R.C., Bradley)
- 2—1 megohm 1-watt (I.R.C., Bradley)
- 2—1.5 megohm 1-watt (I.R.C., Bradley)
- 2—2 megohm 1-watt (I.R.C., Bradley)

FIXED CONDENSERS:

- 1—00025 mfd. mica (E.T.C., T.C.C.)
- 4—0001 mfd. mica (E.T.C., T.C.C.)
- 1—004 mfd. mica (E.T.C., T.C.C.)
- 1—004 mfd. mica (E.T.C., T.C.C.)
- 1—01 mfd. tubular condenser (Solar, T.C.C.)
- 1—02 mfd. tubular condenser (Solar, T.C.C.)
- 3—05 mfd. tubular condenser (Solar, T.C.C.)
- 4—1 mfd. tubular condenser (Solar, T.C.C.)
- 2—5 mfd. tubular condenser (Solar, T.C.C.)
- 1—25 mfd. electrolytic (T.C.C., Solar)
- 3—8 mfd. electrolytic (T.C.C., Solar)

SPEAKER:

- 1—12" dynamic, 1500 field, 2500 load

VALVES:

- 1—6U7G, 1—6K8G, 1—6G8G, 1—6J7G, 1—2A3, 1—EM1, 1—5U4G

SUNDRIES:

- 5—knobs, 5—octal sockets, 2—4-pin sockets, terminals, clips, etc.



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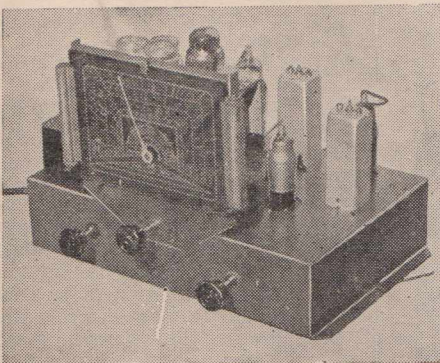
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ing these lugs together and also for connecting to the soldering lugs which were mounted under the long bolts that hold the condenser gang in place. The metal braiding used on screened wire has an extremely low resistance and consequently the use of this for connecting the earth lugs of the condenser together will ensure a connection of low resistance. 18 gauge bare wire should be used to connect together all the points which are indicated by an earth symbol in the circuit diagram, excepting for those that are already joined by the metal braiding. The actual position of the earth wiring can be followed from the wiring diagram.

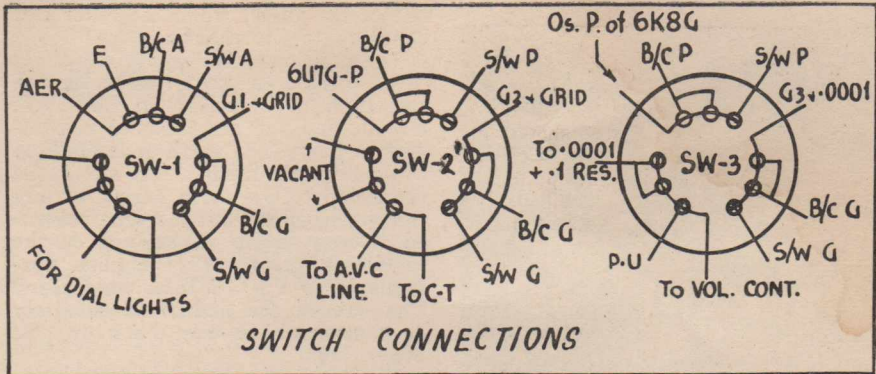
The remainder of the wiring between various points on the chassis is carried out with insulated hook-up wire. The leads for the grid caps of the first two tubes, should be taken from the uppermost lugs on the side of the two front condenser gang sec-

tions and should be kept as short as possible.

Firstly, connect together the heaters of all the tubes excepting the 2A3 and 5U4G. The heaters of all the 6 volt tubes should connect to the 6 volt winding on the power transformer, the 2A3 connected to the 2.5 volt winding, and the filament of the 5U4G connected to the 5 volt winding. After completing the filament and heater circuits, you should proceed to carry out as much of the wiring as possible without installing any of the loose resistors or condensers. Shielded wire should be used for connecting together the two points marked "X," also the points marked "Y" and those marked "Z." The metal braid on the outside of the wire should be soldered to the earth wiring.

After carrying out as much of the base wiring as possible, the wave change switch and the short wave coils should be mounted in position and wired.

The pilot lamps which illuminate the top section of the dial should be grouped together and connected by means of the wave change switch to the power transformer, so that these lamps only light when the switch is turned to the broadcast position or



to the gramophone pick-up position. The lamps which illuminate the bottom section of the dial should be wired together and to the switch so that they only light up when the switch is turned to receive overseas stations.

Resistors and Condensers.

The small resistors and condensers should next be wired into the circuit. In connecting these, cut the "pigtail" wire as short as possible so that the resistors and condensers are mounted as close to the part to which they connect as possible. Cover the bare pig-

tails with pieces of the spaghetti tubing supplied so that there will be no chance of short circuits to other objects.

At one end of the tubular condensers you will find the wording "outside foil" or on some makes "Shielded end—connect to earth." This end should always connect to the earth side of a circuit and correspond to the end marked "E" in the wiring diagram. The 25 mfd. electrolytic condenser in the cathode circuit of the 6J7G valve will have one end labeled positive. Care should be taken to see that this end connects to the cath-

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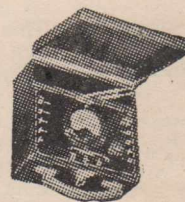
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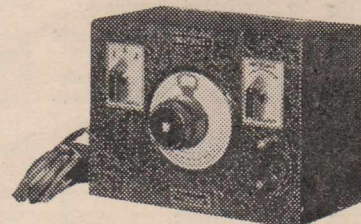
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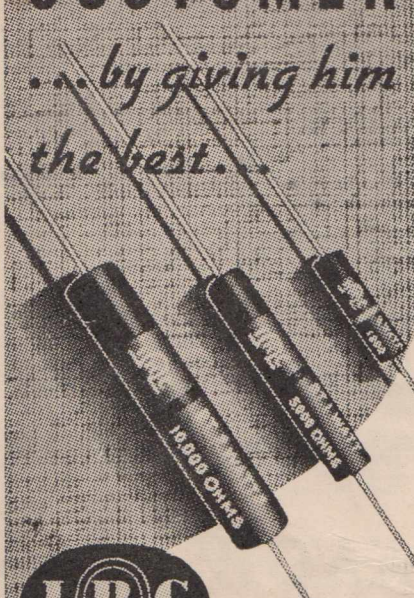
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ode of the valve, while the other end connects to the chassis.

There is one very important point to be considered when connecting the two .05 mfd. condensers in the A.V.C. circuit, and the six trimmer condensers in place. The earth ends of these condensers should not just simply be connected to the earth wiring at any convenient point, but must be returned directly to the wiper lugs on the condenser gang. This applies particularly to the .05 mfd. condensers. The outside foil end must definitely be connected directly back to the wiper lugs.

The type of volume control potentiometer supplied with this kit of parts is somewhat unusual, in that it is provided with a tapping part of the way along the resistance element. By connecting a condenser from this tapping to earth, an even balance of treble and bass notes can be maintained even when the volume control is turned down to provide soft reproduction.

The Magic Eye

The socket for the EM1 indicating tube is mounted inside the bakelite assembly and the 2 meg resistor which connects the plate to the target on this tube is also mounted inside the bakelite case. The wires for the magic eye tube should be passed through a rubber grommet fitted in a hole in the chassis at the rear of the condenser gang and should be left long enough to permit the magic eye to be mounted in a position just behind the tuning dial. For use in the metropolitan area or in any districts which are close to a powerful station, the end of the 2 meg resistor connecting to the grid of the magic eye tube should be taken to the tapping on the volume control potentiometer. This connection is shown in the circuit diagram. If the receiver is to be operated in a district where there are no powerful stations nearby, better indication of tuning will be obtained by connecting this end of the 2 meg resistor marked A in the circuit diagram to the end of the .1 meg resistor marked B.

Testing.

After the wiring is completed, check it over thoroughly from the circuit diagram.

When you feel quite confident that the whole of the wiring is correct and that there are no loose pieces of solder or small pieces of wire which could short circuit any of the wiring, insert the speaker plug and valves and switch on the power. If you have a voltmeter, adjust the tapplings on the voltage divider to provide 200 volts for the magic eye tube and 100 volts for the screens of the other tubes. If you have no voltmeter, set the tapplings for the screens of the tubes about half way along the re-

sistor and the tapplings which provide voltage for the magic eye approximately three quarters of the way along towards the B plus end.

The next step is to align the I.F. transformers to exactly 455 K.C. by connecting an oscillator to the grid cap of the 6K8G tube. If no oscillator is available, tune in a station and adjust the I.F. transformers for best reception. It should not be necessary to move the screws more than about $\frac{1}{4}$ of a turn in either direction as they are normally set to approximately the correct position.

After aligning the I.F. transformers, the trimmers should be adjusted at 1,400 K.C. and the padder at 600 K.C. in the usual manner. The dial pointer can then be set to indicate accurately, stations at the low frequency end of the band, and readjustments made to the two trimming condensers together to make the indications correct on high frequency stations.

The short wave band should be aligned at a position midway between the 13 and 16 metre indications on the dial scale. As the padding condenser for the short wave section is not adjustable, it is only necessary to carry out the one adjustment, when aligning the short wave section.

OUR FRONT COVER.

The picture on our front cover gives a good impression of the big "bottles" used in a modern transmitting station.

It was taken in the station of the American super-power transmitter of KDKA, located near Pittsburgh, in the United States.

The valves shown are actually a section of a huge bank of rectifiers, and in the background are automatic relays to allow the changing of valves without interrupting the transmission.

The performance of a set of this nature depends to a tremendous extent on the accuracy with which the I.F. transformers and trimmer condensers are aligned. I would strongly urge that the alignment be carefully and accurately carried out by means of efficient testing equipment such as a modulated oscillator and output meter.

The wiring of the wave change switch should be arranged so that when turned to the left, short wave stations are received, in the centre position broadcast stations should be received, and when turned to the right the gramophone pick-up terminals should be connected to the grid of the 6J7G tube to provide phonograph reproduction if desired.

What Made the SAVAGE SAVAGE

?



NO wonder! He'd just started to invite the boys over, when bang went his message drum. Even in civilisation things go phut like that . . . especially "bargain" valves.

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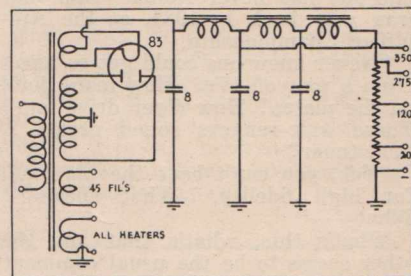
(Continued from Page 9)

dition is not in the interests of high fidelity.

Another point: The speaker opening and speaker are tilted upwards at an angle of about sixty degrees, and the sound is therefore projected in the most effective direction. If you ever go up to A.G.'s you'll see what I mean. The punch he gets from a single 2A3 is amazing and where's his speaker? On a thumping big baffle board perched high on a table and one gets it smack-bang!

Rectifiers.

Wherever possible, I use an 83 rectifier in preference to the usual 80 or 5Z3. The mercury vapour tube costs little more and delivers much greater output. The hum problem is always with us, especially in multi-stage transformer coupled jobs. You'll



The Power Supply.

notice in the circuit plenty of filtering for the early stages. Yes, a separate power supply was tried without benefit. The whole caboodle is built on the one pan, which is made from 16-gauge motor-body steel and cadmium plated.

Pick-up.

Mind you, "Old Reliable" was designed to take phono from a low-output magnetic pick-up. Crystal pick-ups were a novelty in those days. Merely the 27 driver would be ample for one of these units.

Radio input is taken from two t.r.f. stages—the simpler the tuner the less are the audio freqs. to be lopped off. All the locals are separated and we don't bother with interstate.

You must take Ripley's well-known ultimatum with these two concluding stories. In the first place the joke was on me—

Late one evening I tuned "Old Reliable" to a well-known local and was both thrilled and amazed to hear, as I thought, "Dance of the Hours" played by the finest orchestra I'd heard. A pat on the back for that engineer I thought as I reached for the 'phone.

"The orchestra—oh, no! We're trying out our new wide-range recordings!"

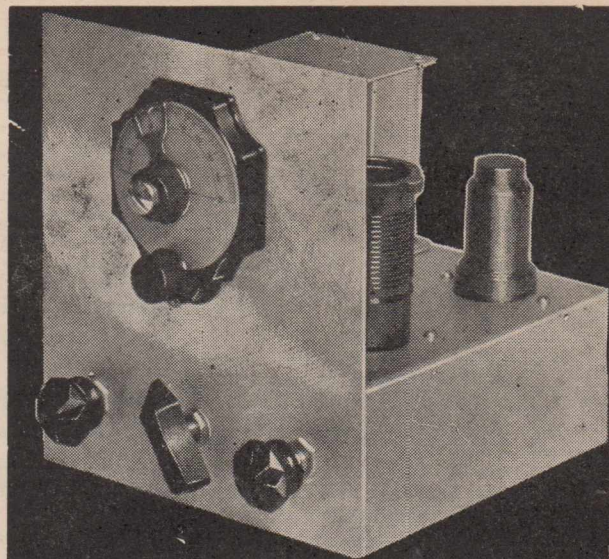
Again, one evening a chap, complete with sax and clarinet, called, "I'd like to join in," says he. "I believe you run a bit of a band here!"

For the Modern Youth

Set Building as a Hobby

This instructive article by one of Sydney's foremost radio technicians explains the art of set-building from A to Z.

It comes from the pen of the principal of the Australian Radio College, an organisation that is doing wonderful work in training radio engineers.



The set pictured above is ideal for the beginner. It provides world-wide reception on the short-waves. This set was featured in "Radio World" for June and July, 1937. Ample stocks of these issues are available at this office, price, 6d. each.

I AM sure that at some time or other all of us have felt the thrill of pride and achievement which results from the successful creation of some object. What better way is there of satisfying this creative instinct and at the same time producing a useful article, which can either be retained for our personal use or for resale at a handsome profit, than by the construction of a radio receiver.

The availability of efficiently engineered circuit diagrams and complete kits of parts together with ready stamped steel chassis for the construction of a set, simplifies the building of kit sets considerably, and places their construction well within the capability of even those who only have a very limited knowledge of radio.

Layout.

One of the most important things in the design of a radio receiver is the layout of the various parts on the metal chassis. Fortunately for the builder of a receiver from a complete kit of parts, the chassis layout is usually taken care of by the designers of the kit and a ready stamped steel chassis is usually provided. Should it ever be necessary for you to lay out a receiver yourself, one of the most important features to bear in mind is the fact that the grid and plate wires



isolated from all other circuits as possible.

Another point which should be watched is the location of the electrolytic condensers in A.C. operated receivers. These condensers contain a liquid and if they are placed very close to the power valve or rectifier valve, the excessive heat from these tubes will rapidly dry up the liquid and shorten the life of the condenser. Electrolytic condensers should be placed in a position where they will not receive any excessive heat from some nearby object.

Where a ready built steel chassis is supplied, the constructor cannot readily change the layout, but in all probability very careful consideration will have been given to the layout of the chassis in the original design and generally speaking, standard chassis are quite efficient.

Assembling.

In assembling a receiver, the parts should all be placed in their correct positions on the chassis and securely

really necessary as long as all bolts are securely tightened.

In fitting the tuning condenser gang in position, be sure to see that the condenser is placed in such a way that there is room for the tuning dial at the front of the chassis. Frequently it is necessary to mount the tuning condenser above the surface of the chassis by about an inch or so on long bolts. For this reason, it is wise to mount the condenser gang in place first of all, and to make sure that it is at such a height that its shaft fits the hole provided in the tuning dial.

Tuning Dials.

Most modern tuning dials are fitted with a glass scale, and to prevent possible damage to this, it is usually wise to remove the tuning dial after the condenser gang is mounted in place. The tuning dial can then be left off until all the wiring is completed, and fitted last of all, to reduce the possibility of damage to a minimum. In mounting I.F. transformers and coils be sure to turn them around so that the leads connected to them are made as short as possible. Similarly when mounting valve sockets, they should be rotated so that the plate lug on the socket is as close as possible to the following I.F. transformer or point to which it is to be connected. Similarly, the oscillator connections to the socket for the first detector tube should be as near as possible to the oscillator coil.

In some A.C. operated receivers it is necessary to insulate the metal can of one of the electrolytic condensers from the chassis. This is usually ac-

By

LANCE GRAHAM PRINCIPAL
Australian Radio College.

of all tubes must be kept to an absolute minimum of length. This also applies to the other wiring of the oscillator circuits in a superheterodyne receiver, and the whole layout of the set should be carried out with this object in view. The layout must be such that each circuit, as far as is possible, should be as compact and

bolted in position. In the case of car radio receivers or portable receivers, it is always wise to fit lock washers under the nuts of all bolts which secure parts in place. This prevents the bolts from loosening due to excessive vibration or carrying about. In the case of ordinary household receivers, this precaution is not

Set Building

(Continued)

complished by means of cardboard insulating bushings provided with the condenser. In mounting the condenser, be sure to see that the ridge on the cardboard bushing fits well down into the hole provided in the chassis so that there is no chance of the condenser moving sideways and the screw thread touching the side of the hole.

When bolting the coils and intermediate transformers in place, it is always wise to place a soldering lug under one of the bolts which secure the cans in position. By connecting all these soldering lugs together and to the earthing system, one can rely on the can of the coils and I.F. transformers being adequately earthed.

The shaft fitted to tuning condenser gangs are all of a standard length. In many sets it is necessary to cut a piece off the end of the tuning condenser gang shaft in order that the shaft fits into the dial properly without the condenser being moved too far back on the chassis.

Wiring.

The soldering iron should be well tinned and kept clean. A piece of rag, on which the iron can be wiped occasionally, facilitates this. The iron should be hot enough to melt solder quite easily, but not so hot that the solder runs like water, as it will not then stay on the iron in any quantity.

The first step in wiring is to tin every soldering lug in the set to which a connection is to be made. This is accomplished by placing a very small amount of a good quality, non corrosive flux on every soldering lug and then depositing a thin layer of solder by means of the hot iron. Care should

be taken to see that excessive soldering flux is not used. If a lot of flux is used this will melt when the iron comes in contact with it and run over other parts causing them to become dirty and sticky. Dust will adhere to melted flux and after a time this layer of dust may seriously upset the performance of the receiver. The very slightest smear of flux is all that is necessary.

A system which proves very convenient in wiring is as follows:—

1. Earth wiring.
2. Filament and dial light.
3. Power supply.
4. Plate and screen grid wiring.
5. Grid wiring and any other base wiring necessary.

The small components, such as loose resistors and condensers, should then be added, and finally the power flex or battery cable.

In any circuit diagram, a number of points are indicated as being connected to earth. Some people simply connect these points to the metal chassis and rely on the steel chassis joining them all together. As steel chassis are always covered with a thick coating of duco to prevent rust, it is often difficult to obtain a good connection to the steel chassis and consequently, it is wise to join together all points which are indicated as being earthed, on the circuit, by means of a piece of 18 gauge tinned copper wire.

To make this wire neat in appearance, one end should be attached to some fixed object and the other end stretched sufficiently to draw any kinks out of it. In carrying out the earth wiring keep the 18 gauge wire flat on the chassis and make all bends neatly at right angles. Start at one

point and follow around the whole chassis so that the wire joins together every point which is supposed to be earthed.

The filament or heater circuits of the valves and also the dial light wiring can be conveniently carried out with ordinary standard hook-up wire provided that the current in the circuit does not exceed about 4 amps.

In A.C. operated receivers the two strands of wire, which supply current to the filament or heaters of the tubes, should be twisted together so that the possibility of hum being radiated from these wires is minimised.

In a large receiver, employing many tubes, the total heater current may exceed 4 amperes and consequently it would be advisable to use two separate heater circuits, grouping one lot of tubes together and supplying them with current by means of one pair of wires and grouping the remaining tubes so that they are supplied by means of a second pair of wires.

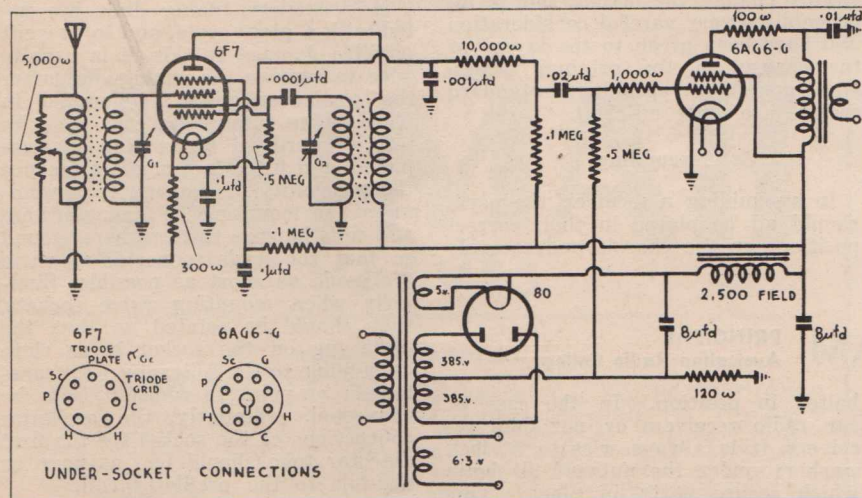
The dial lamps can be connected in parallel with the filaments or heaters of any of the ordinary tubes, but they should never be connected to the filaments of a rectifier tube in A.C. operated sets.

After completing the filament or heater wiring, the power supply, in A.C. operated receivers should be carried out. This consists of all the wiring to the power transformer, electrolytic condensers, rectifier tube and loudspeaker socket. Ordinary hook-up wire is suitable for this and also for the majority of other wiring in the receiver.

The next step is to start at the socket of the first valve in the set and complete all the wiring excepting for the small resistors and condensers which should be added later.

As mentioned previously, the plate connections, grid connections and also the connections to the oscillator section of the first detector valve should be kept as short as possible by running the wiring direct from point to point. The wiring of the screen grid, cathode and other circuits is not critical as far as length is concerned, and it is better to keep the wires parallel, with all bends neatly made at right angles, in order to improve the appearance of the set.

After carrying out as much wiring as possible to each of the sockets, and completing any other wiring on the base of the set, you should commence to fit in the small resistors, condensers and other loose parts. The "pigtail" wires which are fitted to these resistors and condensers should be cut as short as possible and the part placed as close to the points to which they connect as possible. Short



Study the schematic drawing of the circuit (above) very closely before attempting to commence building. Become familiar with each of the symbols and learn what they stand for, etc. This is the circuit of the 1940 Companionette Three, detailed in February, 1940, issue.

Circuits can be prevented by covering the bare wires with a small length of spaghetti tubing which is usually provided with the other parts of the set. One end of all tubular condensers is usually marked "earth end" or "outside foil." This end should be connected to the earth wiring of the set in the case of all ordinary bypass condensers.

Electrolytic type condensers have a positive and negative end, and care should always be taken to see that the end which is marked positive or is coloured red connects to the positive side of the circuit. If this precaution is not observed not only will the condenser be damaged, but other parts in the set may also be harmed.

Any remaining wiring should then be carried out and the power flex or battery cable should be added last of all.

Testing.

Turn on the power to an A.C. receiver or connect the batteries to a battery operated set and check the filament voltage at each socket before inserting any valve. These can easily be checked by means of an ordinary pilot lamp or by means of a voltmeter. The approximate voltage can easily be verified by the brilliance with which a pilot lamp lights. If the voltages appear to be in order, connect a loudspeaker and then plug in the valves.

If a voltmeter is available, the first thing to do is to check the voltage applied not only to the filaments but to the plate, screen and any other elements in the valve. If the set contains a voltage divider, the clips on this unit can easily be adjusted, to provide the correct voltages, by means of a voltmeter.

You can roughly align the receiver by adjusting the intermediate transformers, the gang trimmers and the padding condenser for maximum noise level or for loudest signals from a broadcasting station. This is of course, only a very rough method of alignment and to obtain maximum performance from the receiver it should be very carefully and accurately aligned by means of a modulated oscillator and output meter.

The matter of set alignment is far more important than most people realise. The slightest inaccuracy in alignment may reduce the sensitivity or upset the performance of a radio receiver considerably, so that the only way of making sure that the set is working efficiently is to have it carefully aligned by means of efficient instruments.

Faults.

If a receiver will not operate after it has been constructed, the trouble may be due either to a mistake in the wiring or to a faulty component. If

the circuit has been thoroughly checked and there are apparently no mistakes in the wiring, it is best to start and test each component individually until the defective one is found.

Oscillation which usually takes the form of squealing and whistling whenever a station is tuned in, is generally caused either by long wires, loose or missing shields or inefficient bypassing.

If your set oscillates, firstly carefully examine the layout of the set or wiring with the object of making the plate, grid and oscillator circuit wiring as short as possible. Sometimes

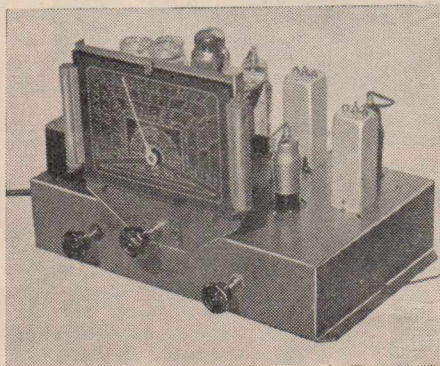
shortening one of the plate or grid wires by as much as an inch will completely cure oscillation.

In some circuits, the capacity of the condenser connected from the plate of the second detector tube to earth is insufficient, and a larger capacity in this position frequently effects an improvement.

If you obtain a good circuit and good quality parts in the first place, and observe the simple hints contained in this article you should be quite capable of building a really first class receiver.

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Complete down to the last lug and screw, JONMAR Kitsets always use parts recommended by the Technical Editor. Matched components are used throughout and all parts are tested before packing. Completely and carefully assembled by experts, JONMAR Kitsets NEVER LET YOU DOWN! Write for prices and details of the Kitsets for the circuits featured in this issue.

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"Fidelity Six," Type K-12	50/-
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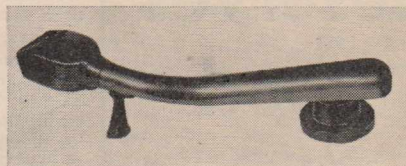
- MYSTERY DUAL-WAVER
- FIDELITY SIX
- "VIBRA" POWER AMPLIFIER
- WAR NEWS BOOSTER UNIT

"The Friendly Wholesale House" can supply you with all parts for these sets—as well as Kitsets. For everything radio and electrical, write to John Martin Pty. Ltd.

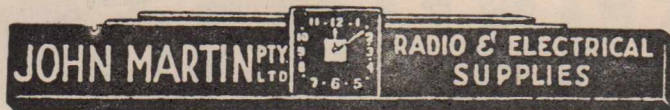
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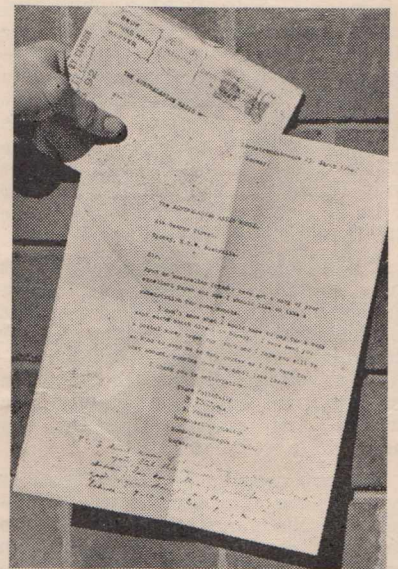
From Ill-Fated Oslo

Subscription order surprises

Having read of the fighting in Norway, we were quite surprised, the other day, to find a subscription order (complete with money order) from an engineer at one of the Norwegian broadcasting stations located at Nordstrandshoedga, near Oslo.

The order will be fulfilled, but we feel some doubt about the issues reaching their destination.

Imagination can conjure up all sorts of pictures of what might have



been the fate of a broadcasting engineer under such circumstances.

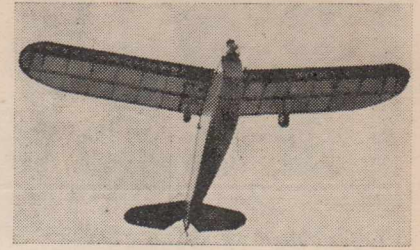
In his letter our Norwegian friend, Mr. B. Fauske, mentions that the Australian short-wave broadcasting stations come through in Norway with good strength on the 31-metre band, between 8 and 10 a.m. Central European Time.

Mr. Fauske also mentioned that he had first seen a copy of "Radio World" when an issue was posted to him by an Australian friend. Having become interested in this copy, he wanted to make sure of getting it posted to him regularly.

We hope that he is safe and that the issues will reach him, sooner or later.

Radio-Controlled Targets

Every possible application of modern science is being applied to warfare and the training of armies. An interesting development is the use of radio-controlled targets, especially aeroplanes.



REGINALD DENNY, a few years ago one of the idols of the movie screen, and still a consistent supporting actor, is now gaining world fame in a strange way.

A hobby that out-grew itself and is now big business to him is the build of model aeroplanes—not just toys, but big models about ten feet across and powered with real petrol motors.

These models are supplied to the United States Army for target practice for anti-aircraft guns.

Model aeroplanes with “real” motors are a favourite hobby with the growing boys of America, and the Reginald Denny Company also supplies their wants—specialised materials for the construction of the models, and the tiny, yet highly-efficient motors which drive them.

Radio Control.

Already the model aeroplane hobby is becoming big business, and thousands of spectators attend the contests, with anything up to a couple of hundred models competing.

The latest step in the development of the hobby is the co-operation between radio “hams” and model flyers

to build models which are controlled by radio.

The Equipment.

In the March issue of “Q.S.T.” a description was given of the equipment used by two brothers, who won the radio-controlled section of the National Championships for Model Aeroplanes.

These two brothers, one a radio

transmitter, operating the necessary relays by way of a one-valve super-regenerative receiver, carried by the ‘plane. Quite an amount of ingenuity had been put into the design of the job to keep the weight down to a couple of pounds, including batteries.

Local Experiments.

The description of the equipment was an interesting article to many of Australia’s “silent” hams, and doubtless when this war is over, considerable experimenting in this direction can be expected from local radio enthusiasts. There are plenty of model aeroplane builders who would be keen to co-operate.

The high-frequency transmitter and receiver and the associated control equipment does not appear to be at all difficult or expensive, and there should be a real thrill in flying an aeroplane by remote control.

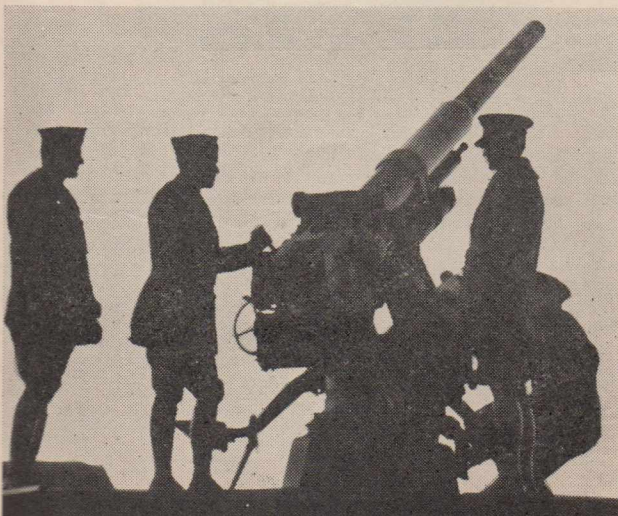
From the model aviator’s point of view it should be a comfort to know that when the model makes a dive for a telegraph post it is only a matter of throwing over the control lever a fraction in order to bring the model around to a clearer landing.

PLANE CONTEST

The model plane shown in the photograph at the top of this page is one of the models which will be competing at the contest for the State Championship for petrol-driven model planes, to be held at Dumbleton on June 16.

It was built by Stanley Ash, of the Bondi Black Hawks Club, and was the winner of the recent Marathon Contest.

“ham” and the other a keen model flyer, built an eight-foot model, which they controlled with a simple radio



DX CLUB MEMBERS. SPECIAL NOTICE.

Members of the All-Wave All-World DX Club are advised that they should make a point of replenishing their stock of stationery immediately, as all paper prices have risen, and we expect that within a few weeks it will be necessary to increase prices by at least 25%.

While stocks last the following stationery is available at the old prices, as shown.

REPORT FORMS.—Save time and make sure of supplying all the information required by using these official forms, which identify you with an established DX organisation.

Price 1/6 for 50, post free.

NOTEPAPER.—Headed Club notepaper for members’ correspondence is also available.

Price 1/6 for 50 sheets, post free.

DX CLUB STICKERS.—Enlarged two-colour replicas of the Club badge, in the form of gummed stickers, designed for attaching to envelopes, QSL cards, etc.

Price 5 dozen for 1/6, post free.

RADIOKES

NEW TROLITUL COMPONENTS ARE SPECIALLY RECOMMENDED for the "MYSTERY DUAL-WAVER"

You can't go wrong with the "Mystery Dual-waver" if you use the RADIOKES Trolitul Coil Kit around which the set was originally built! The DWU-1 Coil Unit is used with "H" Type Gang Condenser and gives keenly selective coverage from 13.7 to 50 metres.

RADIOKES Coil Kit, Type CK1004, D/W Unit £1 7 6
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The new RADIOKES Dual-wave Unit comprises Aerial, R.F. and Osc. Coils, Wave-change Switch, the required B/C and S/W Trimmers and Double Padder, strongly mounted, and easily installed. S/W 16 to 50 metres; Broadcast 1500 to 550 k.c. This unit will give you the best possible results when you construct the Fidelity Six.

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 1 RADIOKES Dial, Type DWD-2 £1/2/6

WAR NEWS BOOSTER UNIT

Type DWC D/W Coil Unit 14/-

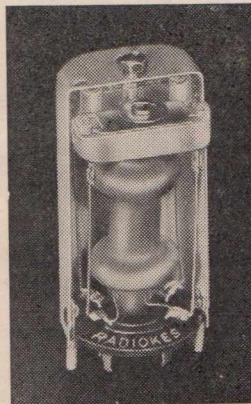
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RADIOKES Vibrator Unit £6/19/-

NEW RADIOKES 13.7 TO 50 METRES D/W UNIT

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NEW RADIOKES INTERMEDIATE TRANSFORMER

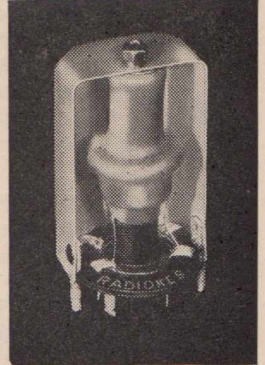


One-piece mechanically sound Trolitul formers and base—the highest standard I.F.'s available. A special feature is the round base suitable for round or square cans.

NEW RADIOKES DUAL-WAVE COIL



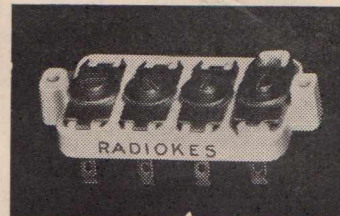
Litz wire windings, lugs already finned, short-wave range 16 to 50 metres or 13.7 to 50 metres. B.C. range 1500 to 550 k.c.



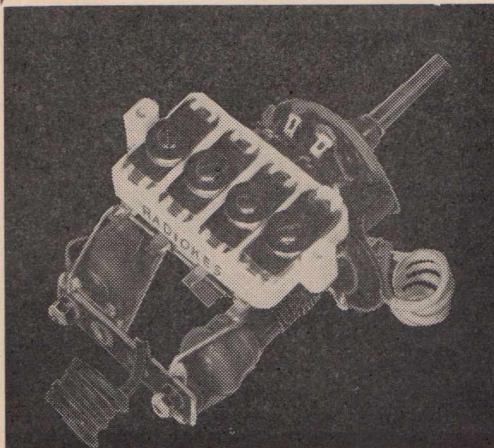
NEW RADIOKES BROADCAST COIL.

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NEW RADIOKES DOUBLE PADDER



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The physical dimensions of all RADIOKES Precision Products are standard, and, being "matched," they are thus interchangeable. Trolitul is used throughout; whether clear, white or colours does not affect efficiency. Other RADIOKES components due for early release include new trimmer bases, w.w. volume controls, and B.C. and S.W. Dials. Also Kit Dial for Portables.

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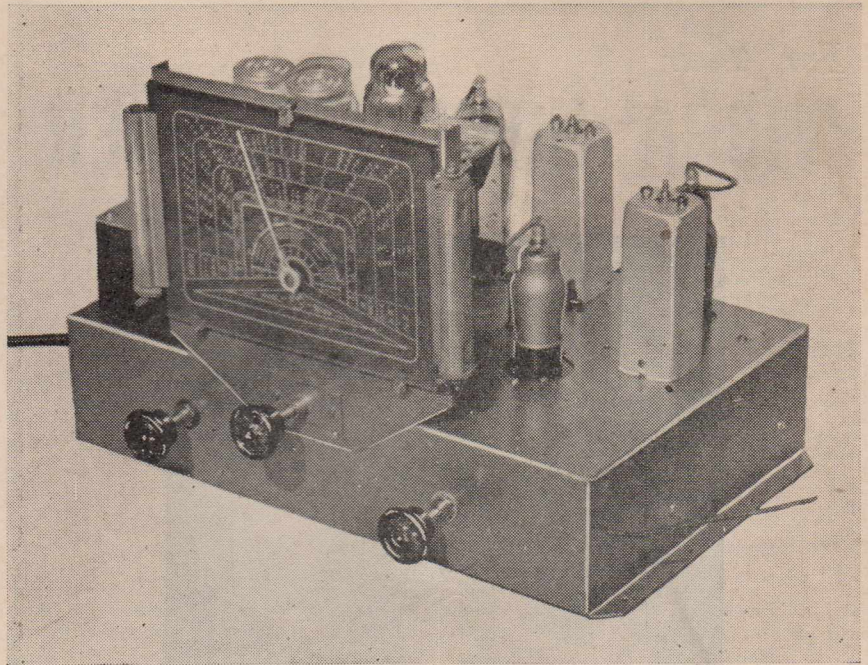
Please add my name to your mailing list for RADIOKES Technical Data, and send prices of the following lines:

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The Mystery Dual-Wave Receiver

Here is the full description of the dual-waver which was announced in last month's issue. Using all the latest components, it reveals the improvements in efficiency which have been made in recent months.



Front view of the chassis.

LAST month's issue carried the preliminary announcement and the circuit of a four-five valve dual-waver which we have recently designed and built to accommodate all the latest components available, especially

the first release from the new Radiokes factory, a dual-wave bracket, using Trolitul insulation and having extremely high efficiency.

On account of this improved efficiency, the short-wave band is covered

from 13 to 50 metres when used with the latest type "H" Stromberg-Carlson gang condenser.

It is only a few years since manufacturers considered that it was too much to expect to be able to tune under 20 metres on the short-wave band of a dual-waver or a'l-wave receiver.

Improved Condensers.

Yet to-day the improved condensers and coils make 13 metres easy.

Little matters such as this improvement in efficiency cannot be detected at a glance, but modern components, although they may appear similar, have actually benefited from considerable attention to detail, which results in vast superiority of performance.

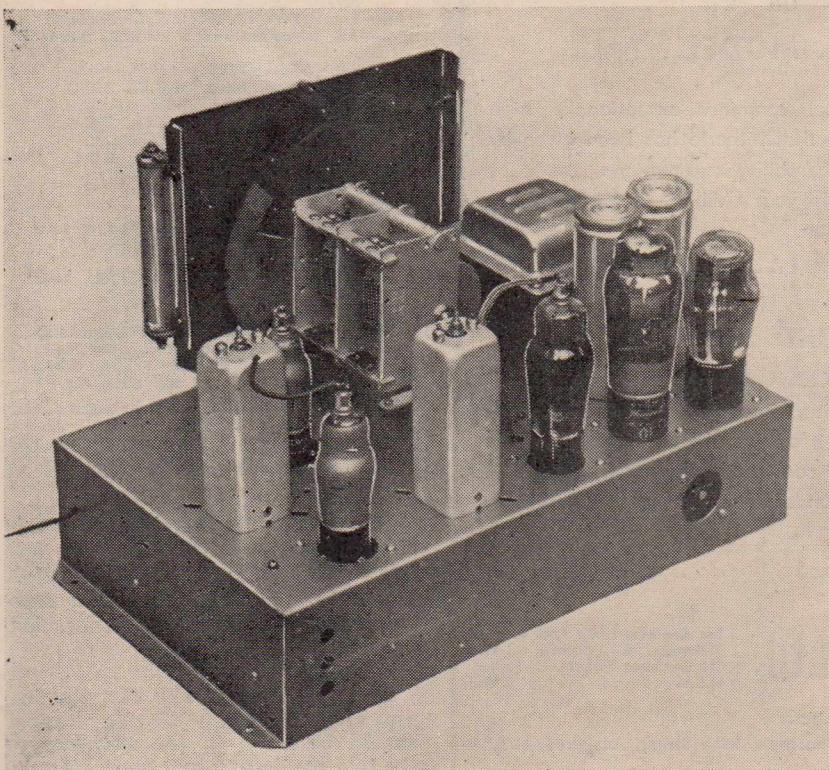
This dual-waver is a typical example.

The circuit itself does not contain any hidden tricks, yet when used with the latest components gives performance infinitely beyond that usually associated with ordinary dual-wave sets fitted with five valves.

The Valves.

It should also be pointed out that the valves used are also the latest types, just released from the Australian factory of the world-wide Philips organisation.

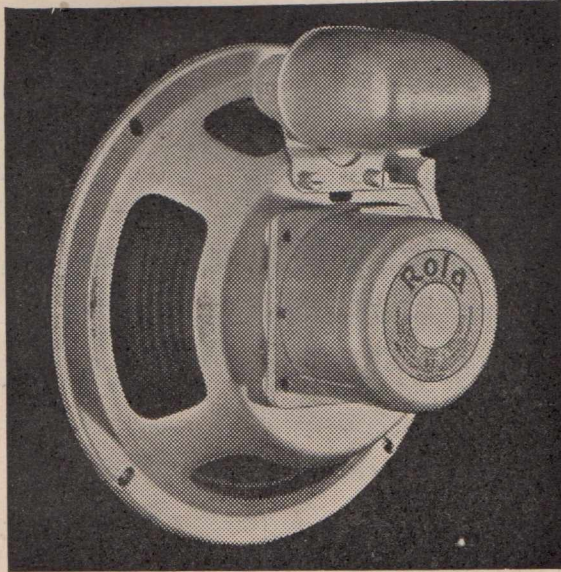
In passing, we might mention that the unfortunate fate of Holland is not they have Litz wire honeycomb wind-



A rear view of the chassis.

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'VIBRA' HOME AMPLIFIER



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ROLA 10-21 P.M. MODEL

The Rola 10-21 permanent magnet model combines exceptionally high efficiency with a richness and purity of tone that hitherto has been given by only the most expensive types. Power handling ability is exceptional, too . . . the 10-21 will accommodate full output from your "Vibra" Home Amplifier without distortion.

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Mystery dualwaver

(Continued)

affecting the supply of Philips valves, as originally the head office of Philips was in Eindhoven in Holland. Fortunately, the head office was shifted to London as soon as the prospect of invasion became imminent. Actually, it would not have made a great deal of difference to the Australian Company, even if the Philips head office had fallen into enemy hands, as the Philips valves on the Australian mar-

MYSTERY DUAL-WAVER

List of Parts

- 1—Base (Acorn, Arcadian)
- 1—Power transformer, 100 mill., 6.3-volt type
- 1—Dual-wave coil bracket (Radiokes, R.C.S.)
- 2—Intermediate transformers, 465 k.c. (R.C.S., Radiokes)
- 1—2-gang condenser* (Stromberg type H)
- 1—Dial to suit
- 1—500,000 ohm volume control (I.R.C., E.T.C.)
- 1—25,000 ohm voltage divider (R.C.S., Radiokes)
- FIXED RESISTORS:**
- 1—220 ohm 1-watt (I.R.C., Bradley)
- 2—250 ohm 1-watt (I.R.C., Bradley)
- 1—20,000 ohm 1-watt (I.R.C., Bradley)
- 2—50,000 ohm 1-watt (I.R.C., Bradley)
- 2—100,000 ohm 1-watt (I.R.C., Bradley)
- 2—500,000 ohm 1-watt (I.R.C., Bradley)
- 4—1 megohm 1-watt (I.R.C., Bradley)
- 1—1.5 megohm 1-watt (I.R.C., Bradley)
- FIXED CONDENSERS:**
- 4—.0001 mfd. mica (E.T.C., T.C.C.)
- 1—.02 mfd. tubular (E.T.C., T.C.C.)
- 3—.05 mfd. tubular (E.T.C., T.C.C.)
- 2—.1 mfd. tubular (E.T.C., T.C.C.)
- 5—.5 mfd. tubular (E.T.C., T.C.C.)
- 2—8 mfd. electrolytics
- 3—25 mfd. electrolytics
- SPEAKER:**
- 2,000 ohm field coil, with load to suit single pentode (Rola, Amplion)
- VALVES:**
- 1—EK2G, 1—EBF2G, 1—6J7G, 1—EL3G, 1—5Y3G
- SUNDRIES:**
- 3—knobs, dial lights, 5—octal sockets, 1—4-pin water socket, power lead, 3—screen grid cap clips, wire, solder lugs, screws and nuts, etc.

ket are nearly all produced in the local factory, which is situated at Camperdown, near Sydney.

One of the valves used by us in this circuit, the type EBF2G is a very late release and we fancy that this circuit is the first to be published in Australia in which this valve is specified.

Intermediates.

Due acknowledgment for the improved performance of this receiver should be made to the efficiency of the intermediate transformers. Again, these units make use of the new Tro-litul insulation, and what is more,

Specify

PIEZO

ASTATIC

CRYSTAL PICKUPS
for your entry in the

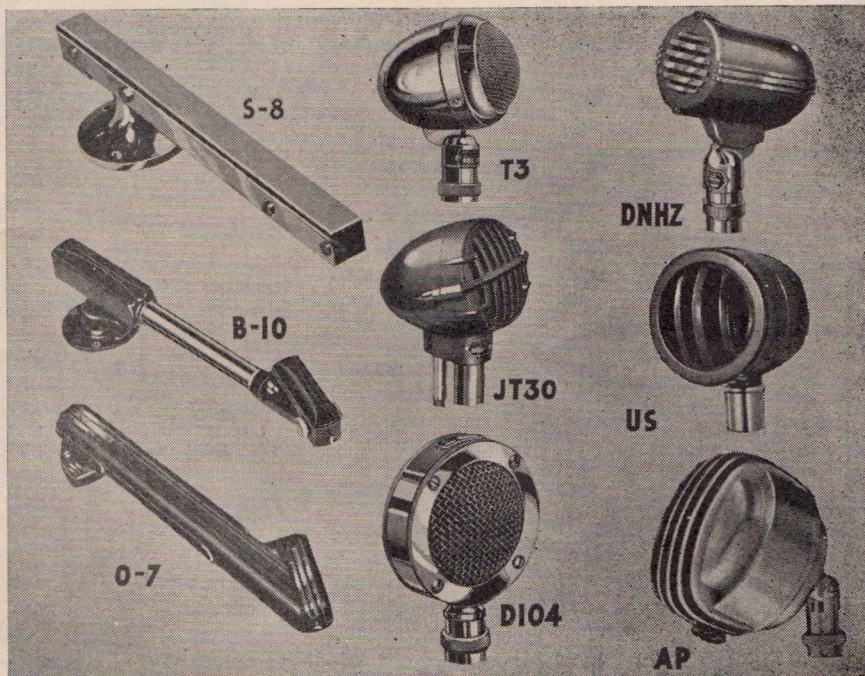
PIEZO

AMPLIFIER CHAMPIONSHIP

ASTATIC

CRYSTAL PICKUPS

MODEL S/8, Straight Arm	£4 10 0
MODEL S/8, Bent Arm, for use with 10" or 12" records	£4 10 0
MODEL S/12, Straight Arm	£5 5 0
MODEL O/7, for use with 10" or 12" records	£2 15 0
MODEL B/10, for use with 10" or 12" records	£7 7 0
MODEL B/16	£10 10 0
PIEZO ASTATIC	
CRYSTAL MICROPHONES	
MODEL D104	£8 5 0
MODEL D104, Hand type	£9 10 0
MODEL T/3	£9 5 0
MODEL JT30	£8 10 0
MODEL DNHZ-50	£9 12 0
BRUSH MICROPHONES	
MODEL US	£8 10 0
MODEL AP	£13 15 0



Favourably known for their all-round efficiency and general dependability, Piezo Astatic and Brush Microphones give ideal frequency response without pronounced peaks appearing throughout the audio range.

Factory Representatives:—

E. T. C. INDUSTRIES LTD.
SYDNEY AND MELBOURNE

The basis on which the entries in the "Australasian Radio World" Amplifier Championship will be judged will be, firstly, realism. For the highest standard of realistic reproduction you MUST use a crystal pickup—as recommended by the Editor.

Piezo Astatic Crystal Pickups give brilliant life-like reproduction with full bass and extended frequency range free from distortion. Needle weight of 2½ ozs. eliminates record wear, and tracking error is slight. Available in price range from £2/15/- to £10/10/-.

Available At All Leading Stores

VIBRA FIDELITY Amplifier for the Country Home

Powered by a vibrator unit, driven from an accumulator, this amplifier brings a new standard of quality reproduction to the man who does not have electric power available.

So much has been said lately about the reproduction of recordings with improved fidelity that the readers who live in country districts have had their appetites well and truly whetted. Several letters, written in almost threatening terms, brought us face to face with the problem of designing an amplifier for country use which can pull music out of records and deliver it in the ordinary room with something of the quality and general realism attained with amplifiers like "Baby Grand" and "Big Boy."

So we tackled the problem and we feel that we have it well and truly licked. We recognise that it is go-

ing to take some believing, and we can't blame anyone who feels a little doubtful about laying out quite a bit of ready cash with the object in view, but we feel certain that it will be realised, sooner or later, as the soundest investment ever made.

The Scheme.

In a nutshell our idea is to operate a similar amplifier to "Baby Grand," but powered from a six volt accumulator and a vibrator unit. Bias for

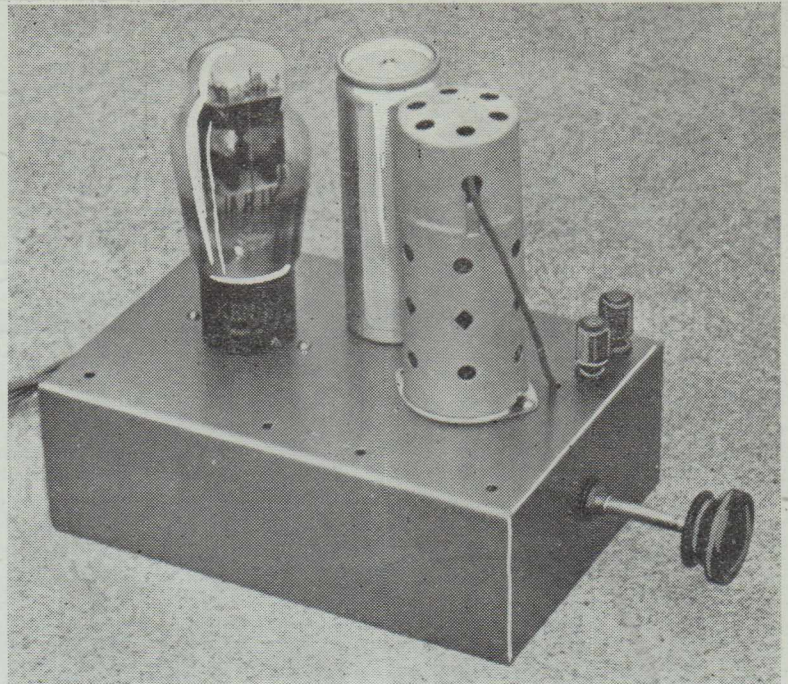
the output valve is obtained from a battery, so that every ounce of the high tension obtained from the vibrator unit is actually used to good purpose. By using one of the new Calstan high-powered vibrators a full 250 volts is applied to the output valve and three watts of power output is made available to work the permagnetic speaker to great effect.

The Drain.

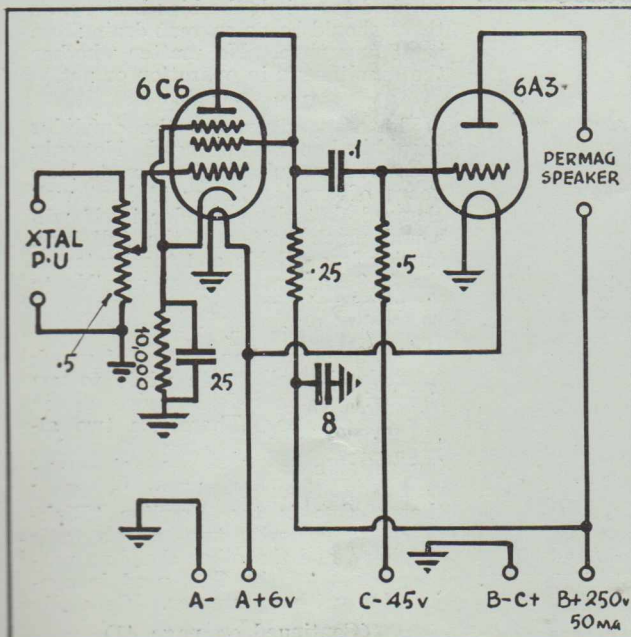
Power is hard to get for nothing, like many other things in this world, and if you want lots of punch and quality you have to pay for it somehow or other. With this job the drain on the battery is high. But high is only a comparative term; it is high compared to what you would expect for a battery-operated radio set. You won't be using the amplifier all day and night like you might a radio set. You'll be more likely to run it for about two hours at a stretch at the outside, and only three or four nights a week. Worked on this basis you should get at least four weeks running from each recharge. This is pretty hard we know, but not a real stumbling block to anybody who has an appreciation of good music, well reproduced. In figures the actual current drain is between three and four amperes at six volts.

The Cost.

The cost of the actual amplifier is negligible, but there is a certain amount of outlay essential when it comes to the associated components. You can't possibly do things cheap



The original "Baby Grand" amplifier, shown here, has been adapted for use from a vibrator unit.



The circuit diagram reveals the simplicity of the design. A careful selection of component valves ensures maximum performance.

Amplifier Championship

THE world being involved in such serious business these days, perhaps it is the centre of thought with most of us, so that mere things like Amplifier Championships do not have the same chance of arousing our keen interest as they would in normal times. Or perhaps the reason is simply that we rushed things a little and did not give our readers a chance to fully appreciate what the Amplifier Championship means.

At any rate the support given to the contest by competitors is a little on the disappointing side.

We expected at least a hundred entries and we hoped that the amplifiers being entered would bristle with novelties.

As it worked out, on the due date, there were only about thirty-five entries in hand, and these seemed to be nothing exceptional, mostly set down as 2A3 type triodes in push-pull.

About the only novelty is one entered by W. Carter, of Marrickville, who appears to be a brother or other relative of Harry Carter, winner of the last Championship.

This particular amplifier uses four valves and is powered from an accumulator.

(Continued on page 26.)

SPECIAL AMPLIFIER SECTION APPLICATION FOR SEAT RESERVATIONS.

To The Organiser,
Amplifier Championship,
117 Reservoir Street,
Sydney.

Please reserve me.....seats for one of the auditions of the judging heats of the Amplifier Championship.

I would prefer to attend on a Sunday/Tuesday evening.

I enclose a 2d. stamp for postage.

NAME

ADDRESS

**THIS APPLICATION MUST BE IN THE HANDS OF THE
ORGANISER BEFORE JUNE 30.**



QUALITY • PERFORMANCE • VALUE

WAR NEWS AROUND THE CLOCK

This list was compiled by L. J. Keast, Short-wave Editor "Radio World," on an Ultimate All-wave Eight.

All of the stations listed have actually been heard in Sydney giving news sessions in English on the wave-lengths given at the times mentioned.

Conditions vary from day to day and time to time, and it is not possible to guarantee that all of the stations listed can be heard every day, but the list should be a valuable guide to those possessors of powerful dual-wave receivers who want to know when and where to listen for best results.

MIDNIGHT

M/N.	Manila	48.46	
	Kweiyang	42.98	
	Szechwan	31.1	
	Berlin	19.63	
	New York	16.82, 16.87, 19.57	
	Pittsburg	19.72	
12.05	Formosa	30.95	
12.15	Shanghai	25.27	
	Berlin	19.56	
12.30	'Frisco	31.48	
	Rangoon	49.94	
1.00	Vatican City	25.55 (Wed. only)	
1.30	'Frisco	31.48	
1.40	Rome	16.87, 19.7, 25.40, 25.51	
1.45	Paris	19.68, 25.33	
	Saigon	25.47	
1.50	Delhi	25.25, 31.28	
2.00	London	16.86, 19.82, 25.53	
	New York	16.82, 16.87, 19.56	
	Pittsburg	19.72	
2.15	Berlin	19.74	
2.30	Nairobi	49.33	
3.00	Delhi	25.25, 31.28	
	'Frisco	31.48	

EARLY MORNING

3.15	Berlin	31.38	
3.30	New York	25.36	
4.00	London	19.66, 25.53, 19.82, 30.96, 49.59	
	Nairobi	49.32	
4.15	Berlin	31.38	
4.28	Rome	31.15	
5.00	Berlin	25.49, 31.1, 49.83	
	Vatican	48.47 (Wed. & Sat.)	
5.15	Rome	19.61, 25.4	
	Turkey	31.70	
5.30	Paris	19.68, 25.24, 25.33	
	New York	25.36	
	Boston	19.83, 25.45, 31.35	
	Belgrade	49.18, 31.56	
5.50	Lourenco Marques.	31.12, 48.80	
6.00	Moscow	31.51, 37.17, 49.75	
	Tokyo	19.79, 25.42	
6.15	Berlin	19.74, 31.22	
	Pretoria	49.94	
6.50	London	19.60, 19.82, 25.53, 31.32, 31.55	
6.55	New York	19.56, 31.48	
7.00	New York	31.01, 31.35	
7.10	Berlin	19.85, 25.49, 31.01, 49.83	
7.15	Berlin	31.22, 19.74	
	Rome	31.15	
7.25	Belgrade	31.56, 49.18	
	New York	31.48	
7.30	Moscow	31.51, 49.75	
7.35	Rome	19.61, 31.15	
7.45	London	19.60, 19.82, 25.53, 31.32, 31.55	
	Stockholm	31.46, 49.50	
7.50	New York	25.36	
	London	30.96, 49.59	
8.00	Manila	31.12	
	Moscow	31.51, 49.75	

THE NEW B.B.C. SCHEDULE

AS FROM MAY 26.

Trans. 1:	4.15 p.m.	Full news bulletin—25.53, 19.66, 31.55.
	6.00 p.m.	News summary—19.60, 25.43, 31.55.
Trans. 2:	9.30 p.m.	F.N.B.—13.93, 16.86, 19.82.
	11.15 p.m.	N.S.—13.93, 16.86, 19.82.
Trans. 3:	2.00 a.m.	F.N.B.—16.86, 19.82, 25.53.
Trans. 4:	4.00 a.m.	F.N.B.—19.66, 25.53, 19.82, 30.96, 49.59.
	6.50 a.m.	N.S.—19.60, 19.82, 25.53, 31.32, 31.55.
	7.45 a.m.	F.N.B.—Same as 6.50.
Trans. 5:	10.30 a.m.	F.N.B.—19.82, 25.29, 25.53, 31.32, 31.55.
Trans. 6:	12.45 p.m.	N.S.—25.53, 31.32, 31.55.
	2.00 p.m.	F.N.B.—25.53, 31.32, 31.55.

ALL TIMES ARE AUSTRALIAN EASTERN STANDARD and were correct at time of going to press.

—a handy guide for the short-wave listener

MORNING

8.15	New York	31.41
8.25	New York	31.48
8.30	Manila	31.35
8.45	Pittsburg	25.27
	Philadelphia	31.28
9.00	Boston	25.45
	Berlin	19.74
9.30	London	30.96, 49.59, 41.49
	Rome	31.02
10.00	Moscow	19.76, 24.81
10.30	London	19.82, 25.29, 25.53
		31.32, 31.55
10.45	'Frisco	19.56
11.15	Tokyo	16.81, 19.79
	Berlin	19.74, 25.49

AFTERNOON

12.45	London	25.53, 31.32, 31.55
12.50	Szechwan	19.75
1.00	Rome	19.61, 25.40, 31.15
1.20	Delhi	19.62
1.30	Berlin	19.74, 25.49, 31.22
2.00	London	25.53, 31.32, 31.55
2.45	Paris	25.33, 25.60, 31.51
3.00	Tokyo	25.42
	Berlin	19.74, 31.22
3.55	Boston	31.35
	New York	48.62
	Philadelphia	31.28 (Tues., Fri., Sun.)
4.00	'Frisco	31.48
4.15	London	19.66, 25.53, 31.55
4.25	Cincinnati	49.5
4.30	Paris	31.51
4.35	Rome	19.61, 31.15
5.00	Berlin	19.63, 19.74, 31.09, 31.38
6.00	London	19.60, 25.53, 31.55
	Moscow	19.76

EARLY EVENING

6.15	Paris	19.83, 25.24
6.45	Manila	31.12
7.55	Tokyo	25.6
8.30	Manila	31.35
	Szechwan	25.2
8.45	Saigon	25.47
9.00	Paris	16.88
9.15	Rome	16.83, 19.61
9.30	London	13.93, 16.86, 19.82
9.30	Singapore	30.94 (relays B.B.C.)
10.00	Berlin	16.81, 19.63, 19.74
	New York	13.95, 16.81



Mr. L. J. Keast, our Short-wave Editor is one of Australia's most ardent short-wave listeners. For several years past Mr. Keast has spent long hours logging and listening to the hundreds of short-wave stations which he has heard at his receiving post at Randwick, near Sydney. Mr. Keast is recognised as one of the authorities on the subject of identifying short-wave signals and he is always eager to help "Radio World" readers who are in difficulty in this matter. Mr. Keast uses an "Ultimate" for his all-wave loggings.

NIGHT

10.15	Finland	19.75
10.30	Delhi	25.26, 31.28
	'Frisco	31.48
	Szechwan	25.21
	Tokyo	19.79, 25.42
10.45	Manila	31.35
11.00	Berlin	19.85
	Shanghai	24.83
11.10	Rangoon	49.94
	Canton	25.75
11.15	London	13.93, 16.86, 19.82
	Berlin	19.85
	Singapore	30.94 (relays B.B.C.)
	Hongkong	31.49 (relays B.B.C.)
11.30	Berlin	19.85
	Manila	31.58
	Vatican	25.55 (Tues. only)
11.45	Manila	31.12
	Bangkok	37.65 (except Monday)
	Penang	49.3

ENTRY FORM

To The Organiser,
 Amplifier Championship.
 117 Reservoir Street,
 Sydney.

Please accept my entry for the Amplifier Championship.
 I will be using an amplifier as follows:—

Valves used.....Number.....Types.....
 Circuit
 Coupling
 Pick-up
 Speaker
 Other details.....

Should I be successful in the contest, I agree to supply full details of the equipment for publication in "The Australasian Radio World," inclusive of all copyright.

I agree to accept the Judges' decisions as final.

NAME

ADDRESS

THIS FORM MUST BE IN THE HANDS OF THE ORGANISER BEFORE JUNE 30.

Amplifier Championship

(Continued from page 23)

Mr. Carter mentions that it will work equally well from 240 volts alternating current or a 12-volt accumulator.

It will also charge its own battery up to 20 amperes.

This is made possible by a new

type of power unit which costs 30/- to build, and uses no vibrator, generator or converter. It will supply, without overloading, 120 watts, or 500 volts at 250 milliamperes from a current consumption of 150 watts, 12 volts at 12½ amperes, indicating an efficiency of 80%, which is exceptional for this type of work.

Mr. Carter concludes that this

equipment, including a good pick-up and speaker, should not cost more than £15.

From what Mr. Carter says it would appear to be something quite out of the box and we look forward to hearing it and seeing the arrangement. We feel sure that our readers, too, will want to know more about this amplifier and its power supply unit.

However, to return to the subject of the contest arrangements, it is our intention to go straight ahead with the heats, drafting up about eight competitors and thirty listeners for each Tuesday night, but to leave the contest open, accepting further entries for the Championship and further applications for seat reservations, and the two forms are repeated in this issue. They should be filled in and returned immediately by those wishing to take part in the contest.

To save individual acknowledgment, the following entries have been received and drafted as follows:—

To be heard on Tuesday, June 11:
 W. Carter, Marrickville; H. J. Carter, Marrickville; A. R. Taylor, Cammeray; C. F. Cameron, Maroubra Bay; J. Crawford, Mount Lewis; J. Ogilvie, Strathfield; and W. Balzen, Manly.

To be heard on Tuesday, June 18:
 P. Elsworth, Allawah; F. C. Barron, Granville West; H. T. Davis, Como West; P. A. Reed, Coogee; H. Brown, Chatswood; A. E. Hughes, Marrickville; L. S. C. Tanner, Canley Vale; and F. S. Field, Randwick.

To be heard on June 25: E. A. Nethery, Wollongong; J. C. Lynam, Paddington; H. Reid, Undercliffe; S. Gambling, Chatswood; R. C. Weeland, Ashfield; D. Turner, Cremorne; G. Bridges, Concord; S. Tyler, Hurstville.

Competitors drafted for the later heats will be announced in our next issue and also notified by letter.

MAKE SURE OF MAXIMUM EFFICIENCY AND LONGEST LIFE
 ADOPT AS YOUR STANDARD

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MULLARD-AUSTRALIA PTY. LTD. 367-371 KENT STREET, SYDNEY. Telephone: MJ4688

CHOOSE MULLARD FOR THAT PRIZE-WINNING AMPLIFIER!

Chosen the valves for that prize-winning amplifier yet? If not, you'll be interested to know that MULLARD offer an exceptionally wide range of output valves, in both American and Continental types.

There's a MULLARD valve for every purpose . . . over 300 types are listed in the 1940 MULLARD VALVE CHARACTERISTICS BOOK.

WRITE NOW

(mentioning "Radio World") to the address given below, for your FREE copy of this valuable publication. (Please enclose a 1d. stamp for postage).

ELIMINATION of DISTORTION

Some further notes about Diphonic Speakers

by

NORMAN HEAD

Engineer, Amplion (A/sia.) Pty. Ltd.



Norman Head.

THE publication last month of Amplion Diphonic Speaker Data has aroused considerable interest in the system because of its inherent high-fidelity characteristics. Quite apart from the straighter overall response curve resulting from the smoothing out of cone and suspension resonances by the filter networks, the elimination of bass modulation of high frequencies (by the individual sound channels) is audibly discernible and has been favourably commented on.

Although many listeners to the system have noted the improvement over single speaker reproduction the cause of the effect has not always been appreciated.

Any single cone which is required simultaneously to reproduce low and high frequencies introduces the distortion. Combination of frequencies widely separated in a single radiator introduces foreign frequencies of considerable magnitude.

Cone Movement.

Imagine a cone's half-cycle movement at 50 c/s, which is smoothly unidirectional. If now a 1,000 c/s frequency is superimposed a new condition is established; there will be 10 complete cycles of the higher note

contained in the original half-cycle i.f. cone movement.

The cone's main movement, the greater and slower excursion, is unidirectional and the 1,000 c/s note being not so, will be distorted in waveform. If the main movement is backwards, the backward part of the 1,000 c/s oscillation will be accelerated and the forward portion slowed down. Thus the higher frequency waveform will depart from sinusoidal characteristic and will assume more sawtooth shape.

It can be readily seen that this condition will introduce distortion so that the steady 1,000 c/s note originally injected will have not sustained its original purity. The distortion thus introduced is of the order of the second harmonic of the lower frequency, in the example given above 100 c/s.

The audible reaction is an "edge" or flutter in the reproduction which is un-natural, with a foreign frequency added. The magnitude of the foreign content will be proportional to the lower frequency and this often over-rides the high frequency purity.

The Solution.

There is one logical means of eliminating this modulation and that is by the complete separation of the "lows" from the "highs." Such results may be obtained with specific high-pass and low-pass filter circuits so designed that their attenuation is symmetrical about a fixed and pre-determined frequency. The rate of attenuation should be carefully calculated to avoid any objectionable phase angle distortion at the cross-over point. The intersection of the drooping ends (the cross-over) of the filters when interlocked electrically should not introduce any great loss at that point; that is the dip in the combined characteristic of the filter should be relatively small.

In designing the Amplion Type A and AP Diphonic systems, 400 c/s has been selected as the most suitable cross-over point for the filters to eliminate bass modulation, and

negligible distortion arising from this source will be found in either circuit.

Theatre Practice.

High fidelity sound systems such as those employed in the better wide-range theatre reproducers have long utilised dual speaker channels such as this. Indeed some extending to higher than 12,000 c/s have considered it wise to make use of three frequency channels and three speakers. Amplion's design of Diphonic (meaning "divided sound") Reproducers marks the first development of the system in this hemisphere for use in high quality radio, phonograph or small amplifier equipment at an economic figure.

Demonstrations of the system may be obtained at the Amplion Company's offices or from Distributors.

★ ★ ★

EIGHT YEARS' RECORD.

With the issue of No. 104, Radioelectronics Bulletins have now been published for nearly eight years.

It was realised, even with the first numbers, that standardisation would be essential if their full value as a reference was to be obtained and, with this in view, the size and punching has been consistently maintained.

The circulation now runs into many thousands.

In addition to the Bulletin itself, many supplements are issued in the form of valve data sheets, characteristics charts and classification tables.

Diphonic Speakers

Special Condensers Now Available.

Amplion (Australasia) Pty. Limited, 382 Kent Street, Sydney, advise that they have arranged for the manufacture of special condenser packs to suit the requirements of Amplion Diphonic Speaker systems at a special price. Two condensers are required for use with the Diphonic Kit, one pack of 33 mfd. and another of 20 mfd. These will be available from distributors, or the head office of the Company at the following prices:— Special Amplion Diphonic Condenser pack, 33 mfd., 30/- list price; and the 20 mfd. pack at 17/9 list price, and on which the usual discounts will apply to the trade.

The New ULTIMATE!

1940 - 41
8-Valve
All-wave
Standard
Receiver



Featuring:

Exclusive
LIGHT RAY TUNING
PHOTO PROCESS DIAL
WITH SELECTIVE ILLUMINATION
SPINNER TUNING
ELECTRIC EYE AND
OTHER IMPORTANT
IMPROVEMENTS

While retaining the outstanding features that have made "ULTIMATE" famous for performance and reliability the new model has several important improvements including the following:

LIGHT RAY TUNING: Similar to the well-known ULTIMATE Logging Pointer in operation, but more conspicuous, more attractive and more efficient.

BAND COVERAGE: Broadcast Band: 1600 to 550 kilocycles (including projected extension of Broadcast Fre-

quencies from 1500 to 1600 kilocycles; Medium Wave Band: 40 to 100 metres; Short Wave Band 16 to 50 metres.

PERFORMANCE: Particular attention has been given to Short Wave Reception on account of War activities. A high gain stage of Radio Frequency amplification is used on all three wave bands and Short Wave programmes are particularly free from "surge."

Fullest particulars obtainable on application.

ULTIMATE

Champion Radio

GEORGE BROWN & CO. PTY. LTD.,
267 Clarence Street, Sydney.

Please send me without obligation particulars of the 1940/41 ULTIMATE Receivers.

NAME

ADDRESS

Shortwave Review

CONDUCTED BY

L. J. KEAST

Reports Wanted ★ Notes from My Diary ★ News of Holland Invasion from KGEI ★ OQ2AA Belgian Congo. Have You Heard This One? ★ Full List of Month's Loggings.

Reports Wanted.

While I am ever on the alert for new stations, and continually watching for changes in schedules or wavelengths, and short-wave stations are notorious for making changes with little or no advance notice, I must confess that I have devoted quite a time to oversea news. Believing others are as equally interested, I have shown not all but most of the news times under the month's loggings.

Elsewhere in this issue I have compiled a round-the-clock schedule of News in English. To the best of my knowledge this was correct at time of going to press, but I would sincerely appreciate reports from readers who may find any discrepancy or know of any I have overlooked.

Observers in Camp.

That brings me to this thought. This month, I regret to say, only a few reports have come in. Several of our observers and regular reporters have been on vacation, while others have been in camp. But there must be a large number who either by persistence or accident hear stations either not listed by me or at extra or different times to our records, and we would appreciate information.

If you are doubtful of the correctness of what you think you have heard, send it along and I will do my utmost to try and elucidate same.

At this juncture I must express my sincere thanks to Dr. Keith Gaden for his voluminous report, and it is all the more appreciated when I know what a prolific writer he is regarding short waves.

The A.R.W. circulates right through the Commonwealth, and it is these distant reports that are so valuable to us.

News from West. Australia.

Listeners like myself have been moaning because of the erratic reception of late particularly in the early evening, yet I hear from my friend, Mr. S. C. Rosier, Editor of "The Broadcaster" (Perth), that some nights KGEI and VUD-2 are the only short-wave stations on the dial under 48 metres that can be heard in the West before midnight.

Short-wave listeners will no doubt be pleased and proud to hear that the Australian S.W. stations rode out of the recent magnetic storm in U.S.A.

remarkably well. In fact, in a number of publications they come in for a lot of praise.

But, getting back to where I started, do send in reports, because you may quite often just happen to hear something that will enable the correction of data believed to be correct.

Obituary.

I am sure all S.W. listeners will, with me, mourn the virtual death of PCJ-2.

Aptly termed the "Happiness Station," its consistently bright programmes gave many a delightful diversion from the wearisome war news.

Prince of Announcers.

Who will forget the special programmes to Australia put over by that prince of announcers, L. G. (Bob) Wybrands.

I happened to hear him in his farewell to his Australasian listeners on December 28 last year.

Just as he had radiated joy and happiness, he plainly showed how sad he was in discontinuing the Tuesday afternoon broadcasts.

But the station still gave us an evening session, and, while we lost an announcer, which so far has never been explained, as far as I know, we still had PCJ.

Events over the last few days, however, would indicate that PCJ, as we knew it, is no more.

In 1927 PCJ surprised the world by establishing a connection between Holland and the Netherland Indies with a power of about 20 kilowatts. Recently this was increased to 60 kilowatts, the most powerful short-wave transmitter in the world. With a rotatable beam aerial, the only one of its kind in the world, the station was able to switch its powerful beam from one end of the world to another in no time.

Notes from My Diary.

WPIT having adopted daylight saving time, brings Lowell Thomas in at 8.45 a.m. (25.27m.).

On Sunday, May 26, heard "The New British Station," as they style themselves, on an announced frequency of 11,950kc., 25.10m. Believe open again at 7.30 a.m. They closed at 7.5 a.m. (This is the same station as referred to in last issue on 50.63 metres).

"Information, Please" Quiz from KGEI.

Listeners who enjoy Radio Quiz from the local stations can, if they care to stay up till midnight on a Thursday, hear a variation of same under the title, "Information Please," which is given every Thursday night from KGEI, 31.48m.

Walter Winchell, well-known American columnist, who has appeared in several Fox films, can now be heard, providing conditions permit, through WPIT every Monday at 11 a.m.

New address of Paris Mondial is: 12 Rue Armand Moisant, Paris.

XMHA, 25.27 metres, is coming in quite well of a night round about 10 p.m., and a fine sporting session is given at 10.15. For a few nights these people seemed to move to 25.31 metres, but on May 29 were back on 25.27 metres.

B.B.C. News from ZHP.

By the way, if you find the B.B.C. news poor through the National stations at 9.30 p.m., tune in to ZHP, Singapore, 30.94 metres, who relay same at this hour. I have a suspicion this is the channel used by the A.B.C.

(Continued on page 37)



Mr. L. G. (Bob) Wybrands, world-famous announcer of PCJ before the invasion of Holland by Germany.

The Month's Loggings

Stations not listed last month are indicated by an asterisk.

ALL TIMES ARE AUSTRALIAN EASTERN STANDARD.

Australia and Oceania.

VQ-2, 11,870kc., 25.27m., Sydney: 3.30 a.m. to 5 a.m. for South and Central Europe, in Eng., Span. and Italian.

***VLR-3**, 11,830kc., 25.31m., Lyndhurst: Relays A.B.C. programmes 6.30 a.m. to 5.15 p.m. daily. From 6.45 a.m. Sundays.

VW-3, 11,850kc., 25.36m., Wanneroo: National programme from 8.30 a.m. to 12.15 p.m. and 2 p.m. to 8 p.m. Sundays from 9 a.m. Strong at 9.30 a.m. (Bantow). Good p.m. (Chapman). R8 (Washfold).

VQ-5, 9,680kc., 30.99m., Sydney: Department of Information prog. for N. America, 10 to 11 p.m. and 1.30 a.m. to 2.30 a.m. R8 (Washfold, Vic.).

VW-4, 9,665kc., 31.04m., Wanneroo: 2 to 3 a.m. in Eng. and Afrikaans for Sth. Africa.

VW-2, 9,650kc., 31.09m., Wanneroo: 8.15 p.m. to 1.30 a.m. (Sundays closes at 12.30 a.m.). Strong at 10.45 p.m. (Bantow, Washfold, Vic.). Very strong here.—Ed.

VQ, 9,615kc., 31.2m., Sydney: 5 to 7 p.m., for Europe in German, French, Dutch and English. 9.15-9.45 p.m. for South America, in Spanish and Eng. 11.15-11.45 p.m. for India in English. Strong at 5 p.m. in Vic. (Bantow). Very good here right through.—Ed.

VLR, 9,580kc., 31.32m., Lyndhurst: 5.30 to M/N. National prog. (Sundays till 11 p.m.). M/N to 12.30 in Dutch and English for D.E.I. Reported by Mr. Bantow as heard strongly in Melb.

Fiji.

VPD-2, 9,535kc., 31.47m., Suva: 7 to 8 p.m. Very strong signal (Dr. Gaden). Heard well here also.—Ed.

New Caledonia.

FK8AA, 6,122kc., 49.00m., Noumea: Wednesdays and Saturdays from 5.30 to 6.30 p.m. Opens strongly (Dr. Gaden). Signal here is strong, but zizzy. Have heard them on Sundays lately.—Ed.

AFRICA.

Algeria.

TPZ-2, 8,960kc., 33.48m., Algiers: According to advices is on the air on Wednesdays from 3.30 a.m. to 4.30 a.m.—Ed.

Ethiopia.

12AA, 9,650kc., 31.09m., Addis Ababa: 6.30 p.m. to 8 p.m., Sundays from 5 p.m. 11 p.m. to 5.30 a.m. Recently reported to be on the air till 7 a.m.

Kenya.

VQ7LO, 6,083kc., 49.31m., Nairobi: Heard fairly well at 4 a.m. when relaying B.B.C. (Cushen, N.Z.).

Madagascar.

Radio Tananarive, 9,870kc., 30.4m., Tananarive: Schedule, 6.30-7.30 a.m., 3.30-3.45 p.m., 1-2 a.m.

Mozambique.

CR7BE, 9,715kc., 30.88m., Lourenco Marques: Power has just been increased. Good signal. Closes at 7 a.m. (Dr. Gaden).

South Africa.

ZRO, 9,755kc., 30.75m., Durban: Latest advices give schedule as follows: Daily, except Mondays—2.40 to 3.50 p.m.; 6.30 to 10.30 p.m.; 11 p.m. to 6.40 a.m. Mondays—8.30 p.m. to 10 p.m.

Egypt.

***SUX**, 7,860kc., 38.15m., Cairo: 4.30 a.m. to 6.30 a.m. Reported by Mr. Cushen, N.Z., as heard opening at 4.30 a.m.

Egypt.

In view of the interest in this particular part of the globe at the moment, some details of the comparatively new transmitters at Cairo are given herewith. The transmitters at Abou Zabal are owned by the Marconi Radio Telegraph Company of Egypt, S.A.E. Radio House, Sharia Eloui, Cairo, P.O. Box 795. Allotted frequencies are: **SUX**, 7,860kc., 38.15m.; **SUV**, 10,055kc., 29.85m.; **SUZ**, 13,820kc., 21.70m.

English is given on Tuesdays at 6.15 to 6.40 a.m. Signs on at 4.30 a.m. with clock

striking. Off at 6.30 with National Anthem. Man announces, "This is Cairo Short-wave Station," and asks for reports. Chimes are used as interval signal.

AMERICA.

Central America.

Costa Rica.

TIPG, 9,625kc., 31.19m., San Jose: Good signal at 10 p.m. (Dr. Gaden). Fair 10 p.m. (Chapman). Excellent at my location.—Ed.

***TILS**, 6,165kc., 48.46m., Heredia: O.K., but not as good as **TIPG** (Dr. Gaden).

Guatemala.

TG-2, 6,190kc., 48.47m., Guatemala City: Heard well near 6 p.m. on Sundays (Dr. Gaden).

Panama.

HP5A, 11,700kc., 25.64m., Panama City: Heard at 9 a.m. and closing at 2 or 2.30 p.m. Gives information in English at 2 or 2.30 p.m. Heard again at 10 p.m. (Dr. Gaden).

HP5K, 6,005kc., 49.97m., Colon: Can be heard opening at 10 p.m., but is usually noisy.—Ed.

***EI Salvador**, 10,400kc., 28.85m., San Salvador: "Voz de Cuscatlan." 10 a.m. to 12.30 p.m.

WITH THE REPORTERS.

We acknowledge reports from our Official Observers:—

Wm. Bantow, Victoria.

A. T. Cushen, New Zealand.

W. M. Chapman, N.S.W.

also

O. G. Washfold, Victoria.

M. Rodgers, Hunter's Hill.

T. Smith, Bondi.

Dr. Keith Gaden, Thargomindah, Q.

K. J. Blight, Victoria.

These reports, together with our own observations, have allowed us again to compile a comprehensive list of loggings.

With events moving so quickly, it becomes increasingly difficult to keep track of all transmissions and, as mentioned elsewhere, reports from more listeners would show a grateful consideration to those who do forward particulars of their loggings.

NORTH AMERICA.

United States.

CENTRAL AMERICA.

***WCBX**, 17,830kc., 16.81m., New York: Heard with fair signal in N.Z. at 10 p.m. when giving news (Cushen). I heard them on April 29 (day after daylight saving commenced) at 10 p.m. in news.—Ed.

WNBI, 17,780kc., 16.87m., Bound Brook: Good till closing at 10.45 a.m. (Dr. Gaden). Often heard at Randwick till this hour.—Ed.

WGEA, 15,330kc., 19.56m., New York: Weak in morning (Chapman). Heard nicely at 9 a.m. (Dr. Gaden). Listeners please note: Daylight saving is now in operation in New York State, so schedule is now: 1.15 a.m. to 8 a.m.

KGFI, 15,330kc., 19.56m., San Francisco: O.K. after lunch time till closing at 2.15.—Ed.

WCBX, 15,270kc., 19.63m., New York: Fair (Chapman). R8 (Washfold).

WRUW, 15,130kc., 19.83m., Boston: Fair in mornings (Chapman).

WPIT, 11,870kc., 25.26m., Pittsburg: Strong at 9.30 a.m. (Bantow). Forenoon very good. Heard once 2 p.m. (Dr. Gaden). Closed 3 p.m. Good (Blight).

***WLWO**, 11,870kc., 25.27m., Cincinatti: Strong at 9.15 p.m., but bad heterodyne later (Bantow).

...**WCBX**, 11,830kc., 25.34m., New York: Weak in a.m. (Chapman). Forenoon good, when clear of Perth (Gaden).

***WRUL**, 11,790kc., 25.45m., Boston: Heard weakly at 9.15 a.m. (Bantow).

WRUW, 11,730kc., 25.58m., Boston: Heard testing with Guatemala between 3.30 and 5.30 p.m. Very strong signal (Bantow). Heard strongly here also.—Ed.

WRCA, 9,670kc., 31.02m., Bound Brook: Strong at 3.45 p.m., also in emergency prog. at 7 p.m. (Bantow). R7-8 (Washfold). Very good, closes at 4 p.m. (Gaden). Good 5-6 p.m. (Blight).

WCAB, 9,590kc., 31.28m., Philadelphia: Good till after 10 a.m., and also 4 to 5 p.m. (Dr. Gaden). Heard at Randwick most afternoons with very loud signal, although only given as weak in Vic. by Mr. Bantow.—Ed.

WLWO, 9,590kc., 31.28m., Cincinatti: R8 (Washfold). These people appear to be sharing this frequency on the days that **WCAB** are off the air. Splendid signal.—Ed. 9-10 p.m., good (Blight).

***WBOS**, 9,570kc., 31.35m., Boston: Best of the U.S.A. on 31m. band in forenoon. Good 4-5 p.m. (Dr. Gaden).

WGEA, 9,550kc., 31.41m., Schenectady: Fairly strong at 10 a.m. (Bantow). Good till after 10 p.m. (Dr. Gaden). Loud, 4 p.m. (Blight).

KGFI, 9,530kc., 31.48m., Frisco: Fair 10 p.m. (Chapman and Bantow). There has been a great improvement since these reports came in. **KGFI** can be heard well from opening at 3 p.m. right through till closing at 6. At 10 p.m. the session opens well, but later is splendid.—Ed.

***WGEA**, 9,530kc., 31.48m., Schenectady: Fair in mornings (Chapman). Fair till closing at 7.45 a.m. (Bantow). Note: Closes at 7.45 a.m. now.—Ed.

***WPIT**, 6,140kc., 48.86m., Pittsburg: Fair in late afternoon, but noise level generally bad. Heard on the fateful May 10 till 6 p.m. by Dr. Gaden.

WLWO, 6,060kc., 49.5m., Cincinatti: R6-7 (Washfold). Lately good till closing at 5 p.m. (Dr. Gaden).

Mexico.

XEQQ, 9,680kc., 30.99m., Mexico City: Good from 2 till 4 p.m. (Dr. Gaden).

XEWV, 9,503kc., 31.57m., Mexico City: Better than **QQ**. Heard till 4 p.m. Good (Dr. Gaden). On Sunday, May 19, was coming through at 2.20 p.m. as clearly as a local, when London closed. Have often wondered what speed a Mexican shorthand writer can do.—Ed.

SOUTH AMERICA.

Argentine.

LRX, 9,660kc., 31.06m., Buenos Aires: Fair at 8 a.m. (Chapman, Rodgers).

Chile.

***CD-1190**, 11,910kc., 25.19m., Valdivia: Heard from mid-day with improving signal (Dr. Gaden).

Colombia.

HJFK, 9,730kc., 30.83m., Pereira: Heard well at 10 p.m., but faded out soon after (Bantow). Still fairly good here at 10.30 p.m.—Ed.

Ecuador.

HCJB, 12,460kc., 24.08m., Quito: Still fair at night (Chapman). Very good (Rodgers).

Paraguay.

***ZP14**, 11,720kc., 25.6m., Villarica: Heard from 8 to 9.15 a.m. by Mr. Bantow (Vic.). According to particulars I have, the schedule is: Tues. to Sat., 7 a.m. to 11 a.m.; Sun. and Mon., 2 a.m. to 9 a.m.—Ed.

Peru.

OAX5C, 9,390kc., 31.95m., Ica: Heard from 2 p.m. with improving signal (Gaden).

OAX4J, 9,340kc., 32.12m., Lima: Signal getting better daily from 2 p.m. (Dr. Gaden). At times of typing these notes, was listening to this station, and reception would have been excellent had it not been for local interference in form of vacuum sweeper. May sound selfish, but I would have welcomed restrictions applying to this particular form of "current consumer."

***OAX1A**, 6,335kc., 47.33m., Ica: Fair signal, closes with a "Good night" melody at 3 p.m. (Cushen, N.Z.).

Uruguay.

CXA-8, 9,640kc., 31.12m., Colonia: Early mornings and late on Sunday afternoons (Rodgers).

Canada.

***CJRX**, 11,720kc., 25.6m., Winnipeg: There are several Canadian stations, but this is the one heard mostly. Best time is towards 5 p.m. on Sundays.

***CJRO**, 6150kc., 48.78m., Winnipeg: Sister station of **CJRX**. Both owned by James Richardson & Sons Ltd., the big grain merchants.

***CFRX**, 6070kc., 49.42m., Toronto: This may be heard. Schedule is: 10 p.m. to 3 a.m. daily. 1 a.m. to 2 p.m. Sun.

THE EAST.

Burma.

XYZ, 6007kc., 49.94m., Rangoon: Heard strongly at 12.45 a.m. (Bantow, Rodgers).

China.

XGOX, 15,190kc., 19.75m., Szechwan Prov.: Signal here at mid-day is only fair, but is much better in Northern Australia. Dr. Gaden reports it as very fair at 11.30 a.m.

***FFZ**, 12,050kc., 24.85m., Shanghai: This station comes through well when not drowned by morse. Heard as early as 8 p.m. with Oriental programme which changes later to French and at 11 to English. Mr. Washfold struck them on a bad night in Victoria and only gives them an R2-3 signal, while Mr. Chapman classes them as fair.

XGOY, 11,900kc., 25.21m., Szechwan: Very good at night (Washfold, Chapman, Rodgers, Smith, Bantow, Dr. Gaden, Blight).

XMHA, 11,855kc., 25.3m., Shanghai: Seem to be nearer 25.27m. lately, and signal a little better. Only can be classed as fair (Dr. Gaden, Chapman, Washfold).

XGOK, 11,650kc., 25.75m., Canton: Here is a station that appears to be using more power, as the signal the last few nights has been much better. This is also pointed out by Dr. Gaden, who classes it as, night very strong.

***XGOY**, 9500kc., 31.58m., Szechwan: Powerful signal at 6 a.m. (Cushen, N.Z.).

XPSA, 7000kc., 42.8m., Kweiyang: Fairly strong at 9.30 p.m. (Bantow). Night very strong (Dr. Gaden). Strong, but noisy in Randwick.—Ed.

Dutch East Indies.

YDC, 15,150kc., 19.8m., Bandoeng: Very strong night station (Washfold, Chapman, Bantow, Gaden). Appears to play records without announcement from 6.30 p.m. till 7.30 lately.—Ed.

PLP, 11,000kc., 27.27m., Bandoeng: Only fair (Washfold, Chapman, Bantow, Rodgers).

PMN, 10,260kc., 29.24m., Bandoeng: Only fair in early evening, but good later (Chapman, Rodgers, Bantow).

***YDB**, 9550kc., 31.41m., Soerabaya: Generally weak, but on May 19 I heard them quite well at 10.10 p.m., but there was no sign of **YDC**, 19.80m.—Ed.

PMH, 6720kc., 44.64m., Bandoeng: Strong nightly (Bantow, Washfold).

YDX, 7220kc., 41.55, Medan, Sumatra: Fairly strong at 9.45 p.m. (Bantow).

YDD, 6045kc., 49.63m., Bandoeng: Heard most nights but weak (Bantow, Rodgers).

***YDE-2**, 4810kc., 62.37m., Solo: One of the best on the band (Dr. Gaden).

French Indo-China.

Radio Saigon, 11,780kc., 25.47m., Saigon: Excellent station from 8.30 p.m. (Chapman, Bantow, Rodgers, Woods, Blight). Dr. Gaden, while classing night as very good, also says good between 9.30 and 10.30 a.m.

Hong Kong.

ZBW-3, 9525kc., 31.49m., Hong Kong: Strong at 10.30 p.m. (Bantow, Washfold, Rodgers, Oliver). When conditions are bad, try them at 11.15 for a relay of B.B.C. news.—Ed.

India.

YUD-3, 15,290kc., 19.62m., Delhi: Heard opening at noon, with fairly good signal (Dr. Gaden).

YUD, 11,870kc., 25.26m., Delhi: Very strong at night (Chapman, Smith, Rodgers, Dr. Gaden).

YUD-2, 9590kc., 31.28m., Delhi: Very strong (Chapman, Smith, Rodgers, Dr. Gaden).

***YUB-2**, 4880kc., 61.48m., Bombay: Closes at 3 a.m.; best of Indians (Cushen, N.Z.).

Japan.

***JLS-2**, 17,845kc., 16.81m., Tokyo: Dr. Gaden reports having heard this first on May 7 from 11 a.m. to noon in special programme for U.S.A. Advices just to hand from Tokyo show this as a regular daily broadcast for eastern districts of North America between 11

RARE CATCH.

While pressure of space has prevented a list of "hams" logged last month, readers will be interested to know Mr. D. J. Hastings, of Ashgrove, Brisbane, has received a verification from **HBICE**, Liechtenstein.

HBICE is a portable transmitter owned by **HB9CE**, of Switzerland.

Liechtenstein is a small principality in the Tyrol between Vuarlberg and the Upper Rhine; area, 65 square miles; population, 10,500; capital, Vaduz.

Mr. Hastings is naturally elated with the "catch" and describes the QSL card as very attractive.

STOP PRESS.

NEW STATION.

I am indebted to my friend, Mr. Muller, of Newtown, for the following:—

Redo Pacifique, 7280kc., 41.25m, New Caledonia: Announce as Radio Pacifique Broadcasting Station of New Caledonia. Session is in French and from 6.30 to 7 a.m.

Mr. G. Muller, Newtown, advises that Rome has made a change in morning schedule:—

2RO-6, 19.61m., has been replaced by **2RO-8**, 16.83m., at 5.30 a.m.

2RO-3, 31.15m., is running same programme as advised in Logging List.

a.m. and noon, Sydney time.—Ed.

JZK, 15,160kc., 19.79m., Tokyo: Fair both morning and night (Chapman). Strong at 10.30 p.m., also heard calling Hawaii at 5.30 p.m. (Bantow). Gives news in English at: 6 and 11.15 a.m.; also 10.30 p.m.

JVH, 14,600kc., 20.55m., Tokyo: Heard by Dr. Gaden on April 7 at 4 p.m., weakly.

JZJ, 11,800kc., 25.42m., Tokyo: Good both morning and night (Chapman, Bantow).

Japan.

MTCY, 11,775kc., 25.48m., Hsinking, Manchuria: Good in mornings (Chapman, Rodgers).

JVW-3, 11,720kc., 25.6m., Tokyo: Very strong at night (Bantow, Chapman, Washfold).

JZI, 9535kc., 31.46m., Tokyo: Seems to be in the discard at present.

Malaya and Straits Settlements.

ZHP, 9700kc., 30.94m., Singapore: Very good night station (Dr. Gaden). Strong at 10 p.m. (Bantow). R7-8 (Washfold).

***ZHJ**, 6090kc., 49.26m., Penang: Fair (Dr. Gaden). R7-8 (Washfold).

Philippines.

KZRH, 9640kc., 31.12m., Manila: Very good station (Bantow, Rodgers, Smith, Chapman, Washfold, Dr. Gaden, Blight).

KZRM, 9570kc., 31.35m., Manila: Very good and reliable (Chapman, Bantow, Rodgers, Dr. Gaden, Washfold, Blight).

KZIB, 9500kc., 31.58m., Manila: Fair (Chapman, Rodgers). R7 (Washfold).

KZRF, 6140kc., 48.86m., Manila: Strong at 10.30 p.m., QRM bad (Bantow). R7 (Washfold).

KZRC, 6100kc., 49.18m., Manila: "The Voice of Cebu." Very good at 10 p.m. (Cushen, N.Z.).

KZIB, 6040kc., 49.67m., Manila: R7 (Washfold).

Thai.

HSP-6, 7968kc., 37.65m., Bangkok: Strong at 11.45 p.m. (Bantow).

EUROPE.

Albania.

***ZAA**, 7850kc., 38.2m., Tirana: Reported R4 (Cushen, N.Z.). Schedule believed to be: 9 to 11.30 p.m.—Ed.

—, 6085kc., 49.3m., Tirana: Fair on opening at 3.20 a.m. (Cushen, N.Z.). According to latest advices schedule is: 3.20 to 8 a.m.—Ed.

Bulgaria.

Radio Sofia, 10,310kc., 29.09m., Sofia: Heard at 7 a.m. with good signal (Dr. Gaden). Mr. Muller tells me he has heard them till 8 a.m. on Sundays and also between 3 and 5 p.m.—Ed.

(Continued on next page)

ALL-WAVE ALL-WORLD DX CLUB

Application for Membership



The Secretary,
All-Wave All-World DX Club,
117 Reservoir Street,
Sydney, N.S.W.
Dear Sir,

I am very interested in dxing, and am keen to join your Club. The details you require are given below:

Name.....

Address.....

[Please print both plainly.].....

My set is a.....

(Give make or type, number of valves, and state whether battery or mains operated).....

I enclose herewith the Life Membership fee of 3/6 [Postal Notes or Money Order], for which I will receive, post free, a Club badge and a Membership Certificate showing my Official Club Number.

(Signed).....

(Note: Readers who do not want to mutilate their copies of the "Radio World" by cutting out this form can write out the details required).

LOGGINGS (Continued)

Belgium.

ORK, 10,330kc., 29.04m., Ruyssede: Excellent signals at 4.30 a.m. (Cushen, N.Z.). Weak in mornings (Chapman). Unfortunately this is probably another station that will at least be temporarily off the air.—Ed.

Canary Islands.

EJ-43, 10,360kc., 28.96m., Tenerife: Understood off the air at present.

France.

TPB-3, 17,765kc., 16.88m., Paris: 8.30 p.m. to 12.40 a.m. News at 9 p.m. As Dr. Gaden puts it, "Very erratic." Actually some time since heard in Randwick.—Ed.

TPA-2, 15,243kc., 19.68m., Paris: 7.30 a.m. to 10.45 a.m. 11.40 p.m. to 12.40 a.m. 1.15 a.m. to 2.15 a.m. News at 1.45 a.m.

TPB-6, 15,130kc., 19.83m., Paris: 4-7 p.m. News 6.15 p.m., also heard after midnight.

TPA-3, 11,885kc., 25.24m., Paris: 4 p.m. to 7 p.m., news at 6.15, 2.30 a.m. to 6.45 a.m. News 5.30.

TBP-7, 11,885kc., 25.24m., Paris: This transmitter is generally used for N. and S. America.

TPB-5, 11,824kc., 25.33m., Paris: Very good when not interfered with by **VLR-3**. 1.15 a.m. to 2.15 a.m. News 1.45 a.m., 2.30 to 6.45 a.m. News 5.30.

TPC-8, 11,845kc., 25.33m., Paris: Used for North America.

TPB-4, 11,720kc., 25.60m., Paris: Used for South America. 7.30 a.m. to 10.45 a.m., 11 to 3.45 p.m. News at 2.45. Good signal. Very strong in afternoon.

TPC-23, 9,680kc., 30.99m., Paris: Not heard lately.

TPC-13, 9,520kc., 31.51m., Paris: 11 a.m. to 3.45 p.m. News at 2.45 p.m. 4 p.m. to 5 p.m. News at 4.30 p.m.

TPB-25, 7,280kc., 41.21m., Paris: Recently this was being used between 3.30 and 4 a.m. for Russia. Present schedule unknown.

Germany.

DJS, 21,450kc., 13.99m., Berlin: 3.05 p.m. to 10.55 p.m. for Asia. Not being heard at present.—Ed.

DJH, 17,845kc., 16.81m., Berlin: Some nights quite good. Surprisingly good on May 21 at 10 p.m.

DJE, 17,760kc., 16.89m., Berlin: Heard occasionally at night.

DJR, 15,340kc., 19.56m., Berlin: Present schedule unknown, but heard loudly at noon.—Ed.

DXU, 15,320kc., 19.58m., Berlin: **DJQ**, 15,280kc., 19.63m., Berlin: 3 p.m. to 2 a.m. R8 (Washfold).

DXT, 15,230kc., 19.70m., Berlin: Dr. Gaden reports hearing this, which is the old **OLR5A** W/L.

DJB, 15,200kc., 19.74m., Berlin: 2 p.m. to

2 a.m., 3 a.m. to 7.30 a.m., 7.50 a.m. to 2 p.m. "Lord Haw Haw" 7.15 a.m.

DXS, 15,160kc., 19.79m., Berlin: This is another old Czech W/L. **OLR5C**.

DJL, 15,110kc., 19.85m., Berlin: Not sure of schedule; can any listener oblige?—Ed.

DZH, 14,460kc., 20.75m., Berlin: Heard with terrific signal from noon till after 1.30 p.m.

DJP, 11,850kc., 25.31m., Berlin: Same programme as **DXQ**, 48.64m. Not sure of schedule. Heard well at 12.15 p.m.—Ed.

DJZ, 11,801kc., 25.42m., Berlin: Heard round about mid-day.

DJD, 11,770kc., 25.49m., Berlin: 11 a.m. to 2 p.m., 1.40 a.m. to 7.30 a.m. Excellent signal.—Ed.

DXD, 10,535kc., 28.5m., Berlin: 9 to 10 a.m.

DZC, 10,290kc., 29.25m., Berlin: 5 a.m. to 1.45 p.m.

DZB, 9,610kc., 29.86m., Berlin: 6 a.m. to 1.45 p.m.

DJX, 9,670kc., 31.01m., Berlin: 1.45 a.m. to 7.30 a.m., 10.30 a.m. to noon.

DJW, 9,650kc., 31.09m., Berlin: Best 31m. station in forenoon (Dr. Gaden). R8 (Washfold).

DXB, 9,610kc., 31.22m., Berlin: From 1 to 4 p.m. Good (Dr. Gaden). R8 (Washfold).

DJA, 9,560kc., 31.38m., Berlin: One of the best Berlin transmitters. Believe schedule to be: 3 a.m. to 8.30 a.m. and 3 p.m. to 6 p.m. News in English at 5 p.m.

DJN, 9,540kc., 31.45m., Berlin: Have not heard for some time.

DXJ, 7,240kc., 41.44m., Berlin: 1.45 a.m. to noon.

DXQ, 6,170kc., 48.64m., Berlin: Gives same programme as **DJP**, 25.31m.

DJC, 6,020kc., 49.83m., Berlin: 1.40 to 7.30 a.m. Very strong station, particularly towards 6 a.m. "Lord Haw Haw" 6.45 a.m., and news at 7.10 a.m.

DXO, 6,010kc., 49.92m., Berlin: Have not heard schedule, but station is strong at 7.30 a.m. Is heard again in late afternoon and closes at 5, but is much weaker then.

Great Britain.

GST, 21,550kc., 13.92m., Daventry: 8.40 p.m. to 11.45 p.m. News at 9.30 and 11.15 p.m. Have not heard for some time.—Ed.

GJL, 21,530kc., 13.93m., Daventry: Like the 16-metre band, very erratic (Dr. Gaden).

GSH, 21,470kc., 13.97m., Daventry: Also erratic (Dr. Gaden).

GSV, 17,810kc., 16.84m., Daventry: Unlikely to be heard.

GSG, 17,790kc., 16.86m., Daventry: 8.40 p.m. to 11.45 p.m. News at 9.30 and 11.15 p.m. Some nights splendid, while others inaudible.—Ed. M/N to 1.15 a.m.: More likely to be heard.

GSP, 15,310kc., 19.60m., Daventry: 2.55 p.m. to 6.15 p.m. News at 4.15 and 6 p.m. Good but stronger on **GSI** (Dr. Gaden). 4.30

Conditions vary from day to day.

You cannot expect to hear each and every one of these stations every day.

If your set is just an ordinary one, you will find that you will stand a much better chance if you fit a booster unit of the type described on page 35 of this issue.

It gives you just a little extra sensitivity, without extra noise, and that means just that little improvement which is the difference between yes and no.

to 6.30 a.m. Weak (Chapman). 6.50 a.m. to 9 a.m. News at 6.50 and 7.45 a.m.

GSI, 15,260kc., 19.66m., Daventry: 2.55 p.m. to 6.15 p.m. News at 4.15 and 6 p.m. Very good.—Ed. 2.52 a.m. to 6.30 a.m. News at 4 a.m.

GSO, 15,180kc., 19.76m., Daventry: Does not appear to be in use at present.—Ed.

GSF, 15,140kc., 19.82m., Daventry: 8.40 p.m. to 11.45 p.m. News at 9.30 and 11.15 p.m. M/N to 2.30 a.m. News at 2 a.m. 2.52 a.m. to 6.30 a.m. News at 4 a.m. 6.50 a.m. to 9 a.m. News at 6.50 and 7.45 a.m. 9.24 a.m. to 12.15 p.m. News at 10.30 a.m. If listeners desirous of hearing news at 10.30 a.m. have any difficulty on this wavelength, turn to **GSE**, 25.29m., where it roars in.—Ed.

GSE, 11,860kc., 25.29m., Daventry: 9.24 a.m. to 12.15 p.m. News at 10.30 a.m. All reporters give this special mention, with which I absolutely concur. It is actually intended for Europe.—Ed.

GSD, 11,750kc., 25.53m., Daventry: 2.55 p.m. to 6.15 p.m. News at 4.15 and 6 p.m. Excellent. 1.30 a.m. to 2.30 a.m. News at 2 a.m. Very fair. 2.52 a.m. to 6.30 a.m. News at 4 a.m. Very fair. 6.50 a.m. to 9 a.m. News at 6.50 and 7.45 a.m. Good. 9.24 a.m. to 12.15 p.m. News at 10.30 a.m. Very good. 12.40 p.m. to 2.30 p.m. News at 2 p.m. Very good. This transmitter also comes in for fine comment from all our reporters.—Ed.

GRX, 9,690kc., 30.96m., Daventry: 2.52 a.m. to 10 a.m. News at 4, 8 and 9.30 a.m. Although intended for Europe, is heard well here.

GRY, 9,600kc., 31.25m., Daventry: Does not appear to be used at present.

GSC, 9,580kc., 31.32m., Daventry: 4.45 a.m. to 6.30 a.m., 6.50 to 9 a.m. News: 6.50 and 7.45 a.m.

GSB, 9,510kc., 31.55m., Daventry: 2.55 p.m. to 6.15 p.m. News at 4.15 and 6 p.m. 9.24 a.m. to 12.15 p.m. News at 10.30 a.m. 12.40 p.m. to 2.30 p.m. News at 12.45 and 2 p.m. Heard till 11 a.m. and again at 1 p.m. when it improves (Dr. Gaden).

GSU, 7,260kc., 41.32m., Daventry: Not being used at present.

GSW, 7,230kc., 41.49m., Daventry: Used for Europe, and mainly in foreign language.

GSL, 6,110kc., 49.10m., Daventry: Not being used at present.

GSA, 6,050kc., 49.59m., Daventry: Intended for Europe—2.25 p.m. to 8 p.m., 8.40 p.m. to 2.30 a.m.; 2.52 a.m. to 11 a.m.

Hungary.

HAS-3, 15,370kc., 19.52m., Budapest: Fair at midnight (Chapman). This station opens at one minute after midnight on Sundays and remains on the air till 1.30 a.m.—Ed.

Italy.

2RO-8, 17,820kc., 16.83m., Rome: Not heard of a night now, although conditions are so erratic, it may come to light. Schedule is 12.30 a.m. to 1.50 a.m., with news at 1.40 a.m. Mr. Muller (Newtown) advises opens at 5.30 a.m.

2RO-20, 17,780kc., 16.87m., Rome: Terrific signal at 1 p.m. in programme for S. America (Bantow, Dr. Gaden, Rodgers, Smith and Cushen, N.Z.).

2RO-6, 15,300kc., 19.61m., Rome: 11.15 a.m. to 1.15 p.m.: News 1 p.m. Good. 4 p.m. to 5.15 p.m.: News 4.35 p.m. Very good. 2 a.m. to 8.30 a.m.; News 5.15 a.m. (Good). Mr. Muller (Newtown) says is replaced by **2RO-8**, at 5.30 p.m.

SHORT-WAVE TUNING GUIDE

Nifty Radiotron Novelty

All owners of dual-wave radio sets who are anxious to obtain a means of selecting wavebands providing best reception from overseas stations will be very interested in a new release of Amalgamated Wireless Valve Co. Pty. Ltd., of 47 York Street, Sydney.

It takes the form of a card which slides inside a celluloid sleeve—a vertical window allowing the short-wave bands providing the best reception each month during the year, to be readily visible.

As reception conditions vary from hour to hour, the card makes provision for this, and all the listener need do is slide the card to the nearest hour

at which he intends to listen and read the wavelengths shown for the following cities:—London, Paris, Berlin, Rome, Moscow, Belgrade, Ankara, Tokyo, Saigon, Delhi, Singapore, Batavia, Manila and U.S.A.

Its size is such that it can be readily slipped into the vest pocket, whilst the celluloid covering not only ensures that it will last a long time, but also makes it a very neat and presentable accessory to a wireless set.

These vest pocket short-wave log cards are obtainable only from leading radio firms, and enquiries should be made direct to your local radio dealer.

Have Your "RADIO WORLD" Posted To You Direct

Readers who want to take the "Radio World" on a subscription basis and have their copies posted to them direct each month are invited to complete the coupon below (annual sub., 10/6). New readers are advised that all back numbers in Volumes 1, 2 and 3 are still available, price 9d., post free, for all copies up to and including the December, 1938, issue, and 1/-, post free, for subsequent numbers.

Enclosed please find remittance for 10/6 in payment for an annual subscription to the "Australasian Radio World," commencing with the.....issue.

Name

Street and No.

City State

THE AUSTRALASIAN RADIO WORLD
117 Reservoir Street, Sydney.

2RO-6, 15,230kc., 19.70m.; Rome: 11 p.m. to 2.45 a.m.

2RO-12, 15,100kc., 19.87m., Rome: Classed as fair by Mr. Bantow, in the mornings.

***1QA**, 14,790kc., 20.28m., Rome: No advice.

***2RO-13**, 11,900kc., 25.21m., Rome: No advice.

2RO-4, 11,810kc., 25.40m., Rome: 11.15 a.m. to 1.15 p.m.: News at 1 p.m. Very good. 12.30 a.m. to 1.50 a.m.: News at 1.40 a.m. 2 a.m. to 8.30 a.m.: News at 5.15 a.m. Fore-noon good, lunch-time better (Dr. Gaden, Bantow).

2RO-15, 11,760kc., 25.51m., Rome: Good at night (Chapman).

***1QY**, 11,673kc., 25.70m., Rome: 8.30 p.m. to 9 p.m., 3 a.m. to 4 a.m., 5 to 6 a.m.

***1RF**, 9835kc., 30.52m., Rome: 9.15 p.m. to 10 p.m., 3 a.m. to 5.30 a.m., 9 a.m. to 1.15 p.m.

2RO-9, 9670kc., 31.02m., Rome: Good in mornings (Chapman). 3 a.m. to 8.30 a.m.

2RO-3, 9635kc., 31.15m., Rome: 4 p.m. to 5.15 p.m.: News at 4.35 p.m.; 3 a.m. to 8.30 a.m.: News at 4.28 and 7.35 a.m.; 11.15 a.m. to 1.15 p.m.: News at 1 p.m. Better on 25.40.

***2RO-11**, 7220kc., 41.55m., Rome: 3 a.m. to 8.30 a.m.

***1AC**, 6355kc., 47.20m., Rome: No advice.

***2RO-1**, 6085kc., 49.30m., Rome: This is the same wavelength as Albania. 3.20 to 8 a.m.—Ed.

Vatican City.

***HVJ**, 15,120kc., 19.84m.: 11.30 p.m. on Tuesdays; talk in English.

***HVJ**, 11,740kc., 25.55m.: Appears to have given over again to 19.84m.

***HVJ**, 9660kc., 31.05m.: Appears to have given over again to 19.84m.

***HVJ**, 6190kc., 48.47m.: 5 a.m.: Talks in English on Weds. and Sats.

Portugal.

CSW-5, 11,040kc., 27.17m., Lisbon: Good in early morning (Chapman, Dr. Gaden).

CSW-7, 9740kc., 30.8m., Lisbon: Fairly strong at 6.30 a.m. (Bantow). Good after 7 a.m. (Dr. Gaden). Some mornings this station can be heard till well after 10.15. According to advices, they put over a special programme for U.S.A. from 8.45 till noon.—Ed.

Roumania.

*....., 9234kc., 32.54m., Bucharest: Schedule is believed to be: 3.17 a.m. to 8 a.m.

Spain.

*....., 9620kc., 31.19m.: Mr. Muller tells me he has been hearing in the mornings a station on this wavelength carrying same programme as Malaga, 41.55m.—Ed.

EAJ-9, 7220kc., 41.55m., Malaga: 7 to 9 a.m. Good signal.

....., 7120kc., 42.1m., Malaga: 5 to 6 a.m. Very fair.

Switzerland.

***HBJ**, 14,538kc., 20.64m., Geneva: 3.45 to 5.10 p.m. First Sunday in the month.

***HBO**, 11,402kc., 26.31m., Geneva: 3.45 to 5.10 p.m. First Sunday in the month. See special reference elsewhere.—Ed.

*....., 11,865kc., 25.28m., Schwarzenberg: Reported testing with N. America between 11 a.m. and noon.

*....., 9535kc., 31.46m., Schwarzenberg: Reported testing with N. America between 11.45 a.m. and 1.15 p.m.

Turkey.

TAP, 9465kc., 31.70m., Ankara: Very strong in mornings (Chapman, Bantow). Daily news at 5.15 a.m. Sundays, 6.50 a.m.: Talk and Letter Bag.

U.S.S.R.

RW-96, 15,400kc., 19.47m.: 7 p.m. to 10 p.m. R6-7 (Washfold). At various hours strong (Dr. Gaden).

RW-96, 15,170kc., 19.76m.: 2.45 p.m. to 6.45 p.m. News at 6 p.m. Midnight to 8.30 a.m. 10 to 11.30 a.m. News at 10 a.m. Good at 10 a.m. and 6 p.m. (Dr. Gaden). Strong 6.15 p.m. (Bantow). Talk in English at 7.30 a.m.

***RKI**, 15,040kc., 19.95m.: R7 (Washfold).

Opens at 10 a.m. (Dr. Gaden). Not heard here for a week or more.—Ed.

*....., 14,720kc., 20.38m.: Operates in early morning; same programme as **RNE**, 25m. Heard on a few occasions at terrific power (Dr. Gaden).

RNE, 11,990kc., 25m.: M/N to 8.30 a.m. 10 to 11.30 a.m. News at 10 a.m. 2.45 p.m. to 6.45 p.m., 7 p.m. to 10 p.m. This station appears to have been operating on about 24.83m. quite often lately.—Ed.

....., 11,900kc., 25.21m.: 8.30 p.m. to 9.30 p.m., 7 to 8 a.m.

....., 11,645kc., 25.77m.: Used with **RNE** and 20.38 in early mornings.

*....., 9690kc., 30.97m.: In early mornings carries same programme as **RW-96**, 31.51m.

RAN, 9600kc., 31.25m.: 4 a.m. to 9 a.m. News at 6, 7.30 and 8 a.m. Talk in English at 7.30 a.m.

RV-96, 9518kc., 31.51m.: 4 a.m. to 9 a.m. News at 6, 7.30 and 8 a.m.

....., 8060kc., 37.17m.: 6 a.m. R-5 (Cushen, N.Z.).

*....., 7520kc., 39.89m.: News in English at 6 and 7.30 a.m.

RV-59, 6026kc., 49.75m.: M/N to 9 a.m. News at 6, 7.30 and 8 a.m.

....., 6000kc., 50m.: Fair signal at 10 p.m. (Dr. Gaden).

***RV-15**, 4250kc., 70.59m., Khabarovsk: Fair signal at 10 p.m. (Dr. Gaden).

Yugo-Slavia.

***YUE**, 11,740kc., 25.55m., Belgrade: 10.30 a.m. to noon or 1 p.m.

***YUF**, 15,240kc., 19.68m., Belgrade: For South America; 10 to 11 a.m. Good signal (Dr. Gaden).

***YUG**, 15,240kc., 19.68m., Belgrade: For North America; 11 a.m. to noon. Good signal (Dr. Gaden).

YUC, 9505kc., 31.56m., Belgrade: Poor owing to interference (Chapman). News 7.25 p.m.

***YUA**, 6100kc., 49.18m., Belgrade: Good in the mornings (Dr. Gaden). News 7.25 a.m.

SCANDINAVIA.

Denmark.

OZU, 7260kc., 41.32m., Skam Lebal: Said to be on the air again. Old schedule, 5-8 a.m.

Finland.

OIE, 15,190kc., 19.75m., Lahti: Fair signal at 7 a.m., poor at 6 p.m. (Dr. Gaden).

Norway.

LKQ, 11,735kc., 25.57m., Oslo: Heard once at 7 p.m. with fair signal (Dr. Gaden).

Sweden.

***SBT**, 15,155kc., 19.8m., Motala: Just before 6 p.m. on Sundays gives all information re wavelengths, times, etc., in English. Best Swedish station in morning (Dr. Gaden).

SBP, 11,705kc., 25.63m., Motala: Fair a.m. (Chapman). Strong at 7.15 a.m. (Bantow).

Not as good as **SBT** in morning or night, but best in a.m. (Dr. Gaden). According to latest advices, schedule is: Daily 4 a.m. to 7.30 a.m. Sundays: 6 to 7.30 p.m., 11 p.m. to M/N. (News at 11 p.m.).

***SBU**, 9535kc., 31.46m., Stockholm: 7.30 to 8 a.m., 11 p.m. to M/N. News in English at 7.45 a.m.

SBO, 6060kc., 49.50m., Stockholm: Gives news in English at 7.45 a.m.

WEST INDIES.

Cuba.

***COCH**, 9437kc., 31.8m., Havana: Heard well at 2 p.m., and fair at 10 p.m. (Dr. Gaden).

***COBC**, 9380kc., 31.99m., Havana: Same remarks apply (Dr. Gaden).

***COBZ**, 9030kc., 33.32m., Havana: Same remarks apply (Dr. Gaden).

***COCQ**, 8830kc., 33.98m., Havana: Same remarks apply (Dr. Gaden).

NEW ¼-OHM. I.R.C. RESISTORS FOR 1.4 VOLT SETS.

Messrs. W. J. McLellan & Co., of Sydney, sole distributors for Australia of I.R.C. resistors and volume controls, announce the release of two new moulded wirewound resistors specially designed for use with 1.4 volt receivers.

Both have a resistance of .25 ohm, one being identical in size with the standard ½-watt I.R.C. metallised resistor, and the other with the 1-watt type. They are designed for use in series with "A+" to prevent over-voltaging of 1.4-volt valves with new 1½-volt "A" batteries.

In applications where space is at a premium, the smaller ½-watt type can be mounted inside the battery plug.

R.C.S.

TROLITUL COILS and COMPONENTS are TESTED and PROVEN BETTER for SENSITIVITY and SELECTIVITY

The MYSTERY DUAL WAVE requires the new R.C.S. Trolitul Coil Unit and Dial to track. This unit covers 13.7 to 50 metres; It is undoubtedly the most efficient unit we have designed. Specify Kit Type K148 Coil Unit.

Price	£1 7 6
Specify Dial Type DA3—13.7 to 50 metres D.W. Price	£1 2 6
1st I.F. Type IF130—Perm. core I.F.	13 9
2nd I.F. Type IF132—Perm. core I.F.	13 9

FIDELITY SIX

To obtain maximum results, specify the R.C.S. Trolitul Coil Kit. This high "Q" unit is a very important contributing factor to the success of this outstanding set.

Order Kit Type K148. Price	£3 7 6
1 I.F. 1st Inter. Perm. core I.F.	13 9
1 I.F. 2nd Inter. Perm. core I.F.	13 9
1 DA1 Dial	1 2 6

The WAR NEWS BOOSTER UNIT features Type K147 Trolitul D.W. Coil Unit, around which the set was designed.

Specify Type K147	Price 14/-
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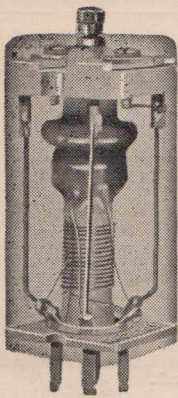
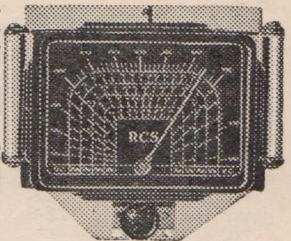
For the "VIBRA HOME AMPLIFIER" use R.C.S. Type C785 Vibrator Unit for smooth and efficient operation.

Type C785	Price £6/19/-
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NEW R.C.S. DIALS

For some time we have felt that we should provide dials for use with coils of our manufacture, thus assuring perfect tracking. Both types are single glass Dual Wave, the type DA-2 having been designed especially for use with our Five Band Communications Receiver coil kit, and the "H" type condenser. Type DA-1 is a standard Dual Wave dial for use with R.C.S. Coils and the "F" type condenser.

DA-1. Standard D/W Dial. Retail Price, 22/6.
DA-2. Communications Dial. Retail Price, 22/6.
DA-3. 13.7 to 50 metre D/W Dial. Retail Price, 22/6.
Illustrated Type DA-3.



R.C.S. TROLITUL DUAL WAVE COILS

These coils have the B/C and S/W Trimmers incorporated. The Oscillator coil also contains the S/W Padder. S/W 16 to 50 metres, B/C 1500 to 550 k.c.

Cat. No.	Retail Price
G19. Aerial Air Core	14/-
G20. R.F. Air Core	14/-
G21. Osc. Air Core	14/-

Type G19.



R.C.S. PADDERS and TRIMMERS

R.C.S. Trolitul Padding Condensers are available in four standard capacities. Variations from standard made to special order.

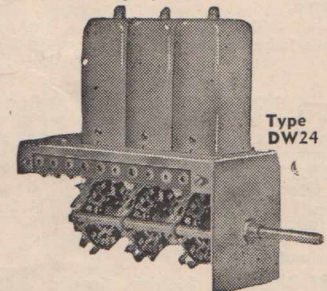
The R.C.S. MEC Type Trimmer is a very small low loss unit for trimming coils, etc.

Cat. No.	Retail Price
P21. Padding Condenser, 460 k.c.	2/3
P22. Padding Condenser, 262 k.c.	2/9
P23. Padding Condenser, 175 k.c.	2/9
CG15. Trimming Condenser	1/-

R.C.S. DUAL WAVE UNITS

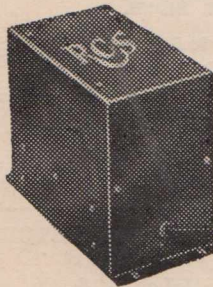
Type DW24, as illustrated, consists of Aerial, R.F. and Oscillator Coils, Wave Change Switch, the necessary B/C and S/W Trimmers and Padder mounted on a rigid steel base, wired up ready to assemble in a set utilising 465 k.c. and an R.F. Stage. The bands are S/W 16 to 50 metres, and B/C 1500 to 550 k.c.

DW24 for A.C. operation	Retail Price £3 7 6
DW25 for battery operation	£3 7 6



Type DW24

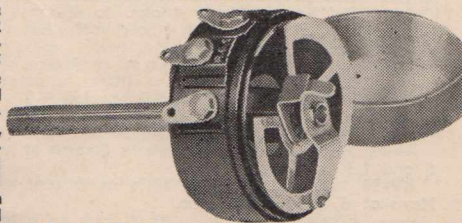
R.C.S. VIBRATOR UNITS



These units are made for 2, 4, 6, 12 and 32 volts input, the output being either 135 or 220 volts. They are self contained, and consist of the necessary filter chokes, transformers, condensers, etc., assembled and wired in a metal chassis, complete with cover shield, and have two low voltage input and high voltage output terminals.

Cat. No.	Input Volts	Output Volts	Retail Price
C89S. Directly heated	2	135 30	£6/19/-
C87S. Directly heated	2	100 15	£6/19/-
C88S. Indirectly heated	2	220 60	Quote
C83S. Directly heated	4	135 30	£6/19/-
C84S. Indirectly heated	4	220 60	£6/19/-
C74S. Directly heated	6	135 30	£6/6/-
C78S. Indirectly heated	6	220 60	£6/19/-
C75S. Indirectly heated	6	135 30	£6/6/-
C79S. Directly heated	12	135 30	£6/19/-
C80S. Indirectly heated	12	220 60	£6/19/-
C81S. Directly heated	32	135 30	£6/19/-
C82S. Indirectly heated	32	220 60	£6/19/-

R.C.S. POTENTIOMETERS AND RHEOSTATS



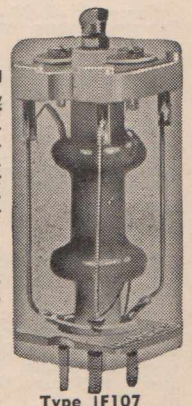
The R.C.S. Volume Controls are the result of improved and new methods of manufacture, together with alterations in design and final testing. Noiseless, they are constructed so as to cut off all volume.

6 ohm Rheostat	.25 Amp.	Cat. No.	Retail Price
10 " "	.25 Amp.	PT40	5/-
20 " "	.25 Amp.	PT38	5/-
30 " "	.25 Amp.	PT39	5/-
400 " Potentiom.	.25 Amp.	PT34	5/-
1000 " "	50 M/A	PT46	5/-
2500 " "	35 M/A	PT47	5/-
5000 " "	30 M/A	PT49	5/-
10000 " "	30 M/A	PT51	5/-
15000 " "	20 M/A	PT52	5/-
20000 " "	20 M/A	PT53	6/6
	15 M/A	PT54	6/9

R.C.S. TROLITUL INTERMEDIATE TRANSFORMERS

The new R.C.S. Trolitul I.F.'s are extremely stable, due to new methods of construction made possible by the use of Trolitul formers and base. No loose wires to shift and alter frequency. Positively the best I.F.'s yet produced.

Cat. No.	Retail Price
Air Core, 465 k.c.	
IF107. 1st I.F.	7/6
IF108. 2nd I.F.	7/6
Iron Core, 465 k.c.	
IF109. 1st I.F.	11/-
IF110. 2nd I.F.	11/-
Air Core, 175 k.c.	
IE68. 1st I.F.	7/6
IE69. 2nd I.F.	7/6



Type IF107

Obtainable from your local dealer

R.C.S. RADIO PTY. LTD.

50 GLEBE ST., GLEBE. Phone MW 2405

WAR NEWS

Booster Unit

This little Unit will improve the range of any receiver and make long-distance reception possible, even when conditions are bad.

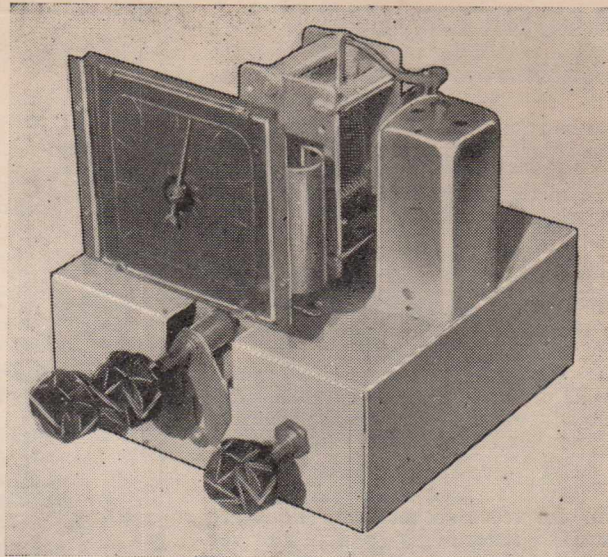
Long-distance reception, no matter whether on short-waves or broadcast, still lacks dependability. At critical times like these everyone wants to keep abreast of overseas developments, but often enough, just when the news is wanted the reception conditions are not good.

One way of overcoming such difficulties is to have greater sensitivity, with lower noise level. Added sensitivity is in itself of little help if it brings up the hiss and background noise at the same time.

The simplest way to get added sensitivity without extra noise is to have added amplification at the original signal frequency. This can be had in quite a simple way by adding a booster unit to the set. No matter what type or style of set is being used it is always possible to add the booster unit, which is actually a self-contained stage of radio frequency amplification.

The booster unit is an easy item to

Front view shows neat appearance. The 6J7G is almost hidden behind the coil unit.



WAR NEWS BOOSTER UNIT

List of Parts

- 1—Special booster coil unit (R.C.S.)
- 1—.000385 mfd. single-gang condenser
- 1—Octal socket
- 1—250 ohm 1-watt resistor (I.R.C.)
- 1—50,000 ohm 1-watt resistor (I.R.C.)
- 2—terminals, "A" and "E"
- 1—6K7G valve (Brimar, Radiotron, Ken-Rad, Mullard, Philip)
- 2—.1 mfd. tubular condensers (T.C.C., Solar)
- 1—4-pin power socket, plug and length of 4-wire cable
- 1—.005 mfd. mica condenser (T.C.C., E.T.C.)
- 1—All-wave r.f. choke (R.C.S.)
- 1—Chassis to suit
- 1—Valve shield
- Push-back, midget grid clips, solder tags, nuts and bolts, rubber grommet.

assemble, and costs only a pound or two. The only point requiring any thought is in the matter of picking off suitable high tension and heater current supply from the receiver to which the booster is to be attached, but even this matter does not call for any big amount of wizardry.

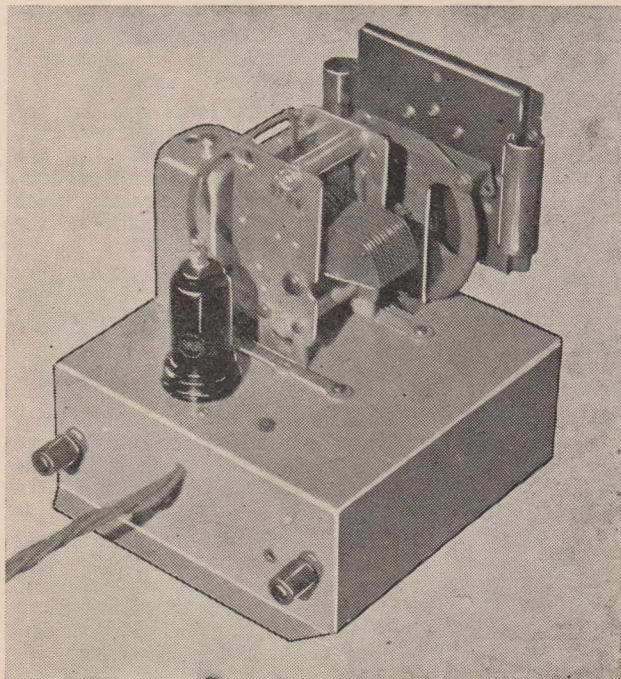
How it is Fitted.

The booster unit is fitted in the aerial lead-in, so that the actual signal received in the aerial is amplified before being handed on to the set itself. A considerable improvement in selectivity is also secured at the same time, as the booster is sharply tuned to the signal being handled. For ordinary broadcast receivers the unit can be built with a single coil, and without a multi-contact switch. If, however, it is desired to use the booster with a dual-wave receiver, then it will be built exactly as described in this article and switched over to whichever band is being used.

This version is intended for use with a receiver operating from alternating current electric power, and some minor modifications are necessary to make it suitable for use with battery-operated sets. We hope to be able to describe the battery version in detail in next month's issue.

In Operation.

When in operation it is necessary to tune the booster unit at the same time as the set. In practice it is found that the booster is not as critical in tuning as the receiver itself and so it is only necessary to set the booster to about the right wave-length of the station to be received, then the receiver is tuned in the ordinary way and a final touch up on the booster brings up the signal. The booster is fitted with its own sensitivity control, so that the volume control of the set



This rear view shows simple layout. Terminals are: Left, aerial; right, to "A" of the set.

BOOSTER UNIT

(Continued)

can be retarded and that of the booster advanced to maximum. The greater the gain in the booster the lower will be the noise level for any given degree of sensitivity.

The Parts.

The parts required are few and mostly quite cheap. The biggest item is the valve itself, which can be of any suitable r.f. amplifier type. A 6K7 was used in the original, but a 6K7G or a 6U7G could be used without any other alteration than merely fitting a suitable valve shield.

Other valve types such as the 6D6 or 78 can be used if the valve socket and the valve socket connections are modified accordingly, and if the set has valves taking only 2.5 volts for their heaters the 58 type valve can be used, with this voltage on its heater, of course.

The Coil.

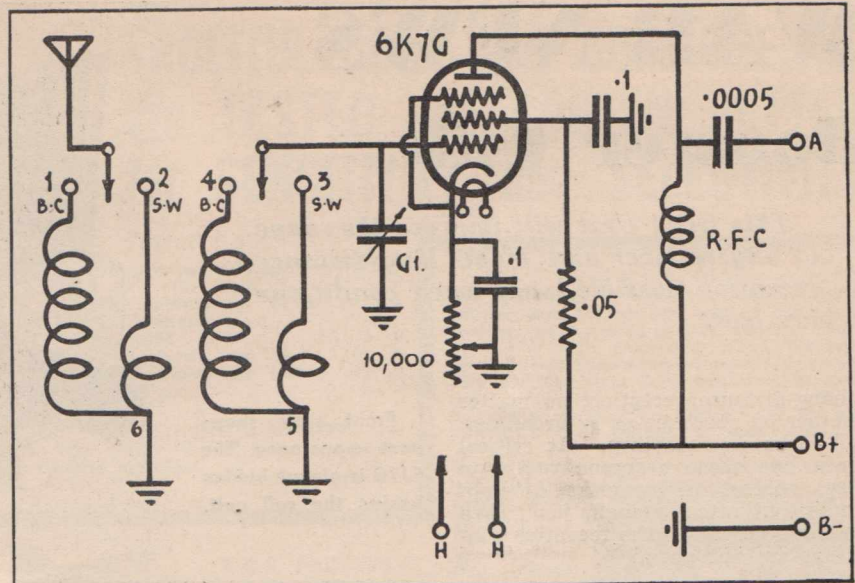
The coil is one of the units from the big dual-wave coil assembly used in most of our big sets. It is the aerial unit and is fitted with six terminal lugs, which have to be wired up to a single-bank dual-wave switch unit, as shown in our diagrams.

The Sensitivity Control.

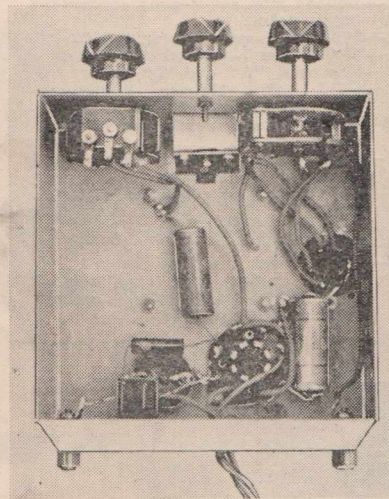
A potentiometer is wired as a variable bias resistance for the valve, so that the gain can be controlled to a certain extent. The resistance of the potentiometer is not critical, any value between 2,500 and 10,000 ohms being suitable.

No attempt is made to apply automatic volume control to the booster valve, as in most cases the a.v.c. of the set itself is capable of stabilising the signal.

In many cases, especially if the set



Above.—Circuit of booster; the wiring to the coils is clearly shown. Compare with photograph below.



is already fitted with one stage of radio frequency amplification, the sensitivity control will also operate as a stability control, oscillation trouble being encountered before the control can be fully advanced. This is quite in order and allows terrific gain to be obtained when the control is set a fraction of a turn back from the "boiling over" point. Needless to add the booster should not be operated with the control sufficiently advanced to allow actual oscillation to occur.

Connecting Up.

Four leads run from the booster unit to the set, two carrying heater current from one of the valve sockets or the power transformer, and of course, connected up to a suitable voltage for the valve used.

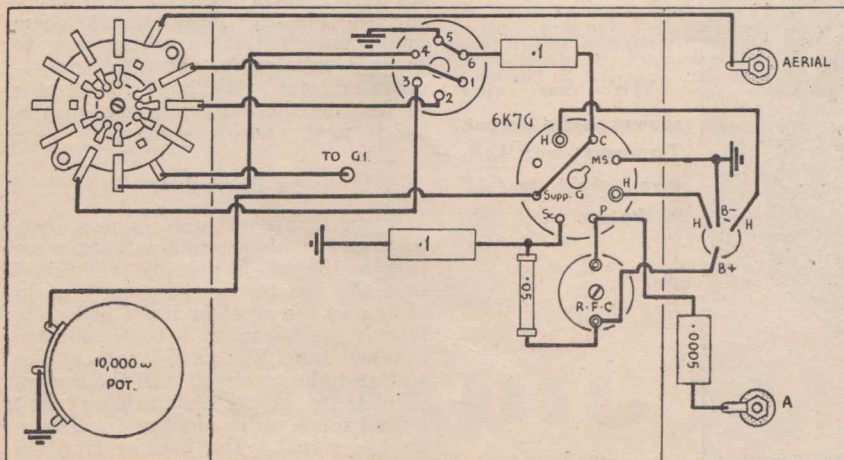
The two other leads are for the high tension supply, taken from the top of the voltage divider or the screen pin of the pentode in most sets, and the other the earth return which connects up the actual metal of the booster and receiver bases.

The aerial lead in is applied to the booster and the output of the booster connects to the aerial terminal of the set.

Coupling.

To a certain extent the efficiency of the booster will depend on the type of aerial coil used in the set, as its design will affect the loading of the booster valve.

There is little that can be done about that point, however, and so the best we can do is to use the most effective radio frequency choke available. Even at the worst there must be considerable gain obtained.



Picture diagram shows how simple is the wiring of the set.

Shortwave Review

(Continued from Page 29)

I wonder how many recognised the voice of "The Man in the Street" on Monday night, May 27, when Lt. Doug. Channel put over the Diggers' session from Palestine.

In last issue I referred to the Yanks and their happy knack of getting unusual news over. Sure enough they were on the job with the invasion of Holland on Friday, May 10, and once more KGEI maintained a non-stop session, giving news every few minutes.

Then on Tuesday, May 28, they were first to give Premier Reynaud's speech, and while listening to John Gunther from New York in his commentary of the speech, at 5.30 p.m., he broke his talk to tell us of the action of the late King of the Belgians.

The afternoon session from KGEI, 3 to 6 p.m., is now much better to hear than when they open at 10 p.m., most nights.

Broadcasting stations in the United States total 771. Permits are outstanding for the construction of 50

more, bringing the total to a new high of 821, according to the F.C.C. (New York "Times").

Permission for S.W. station, WRUL, Boston, to increase power from 20,000 watts to 50,000 watts, has been granted by the Federal Communications Commission. Walter S. Lemmon, President of the World Wide Broadcasting Foundation, which operates the station, said the additional equipment will be used "to further increase the power of the station's effective voice on behalf of world peace and international understanding."

Mr. K. J. Blight, Murtoa, Victoria, advises that he has received verifications from:—KZRF, Manila; YDC, Java; Radio-Saigon; KZRM, Manila; HSP6, Thai; JVV-3, Japan; ZHP, Singapore. Surely a nice list. He has sent reports to Paris Mondial, WLWO, Cincinnati; KGEI, 'Frisco, and WRCA, Bound Brook. All this has been possible with a two-valve battery set. Nice work!

Here Are Some Stations to Look For.

Our New Zealand observer, A. T. Cushen, reports hearing just before 6 a.m., what he thinks may be YI5KG, 7.9 mc., 37.65 metres. The signal was only R-3, and the station closed at 6 a.m. This call sign is Baghdad, but

I have no record of them on this frequency. The only particulars I have are YI5KG, 7200kc., or 41.6 metres, and the schedule is shown as: 10.30 p.m. to 7 a.m.

Would appreciate reports as, like Mr. Cushen, am anxious to know about same.

Has anyone heard a stranger on 7.24 mc. or 41.44 metres round about 7 a.m.?

A station supposed to be the official station in France for the Poles is announced on this frequency.

Chime notes are used for interval signals, and French and Polish language is heard. They often refer to Radio Toulouse and at end of broadcast refer to Radio National Paris.

I think this may be the station my friend, Mr. Muller, spoke about some time ago.

One's thoughts at this time are naturally in Belgium. It must be expected that the usual programmes will cease if they have not already done so. Perhaps it is not generally known, but a station exists in the Belgian Congo, Africa. OQ2AA, 6.14 mc., 48.68 metres, Leopoldville, is scheduled for either 8.35 p.m. to 10 p.m. or 9 p.m. to 11.30 p.m. on Sundays. It is known as Radio Leo.

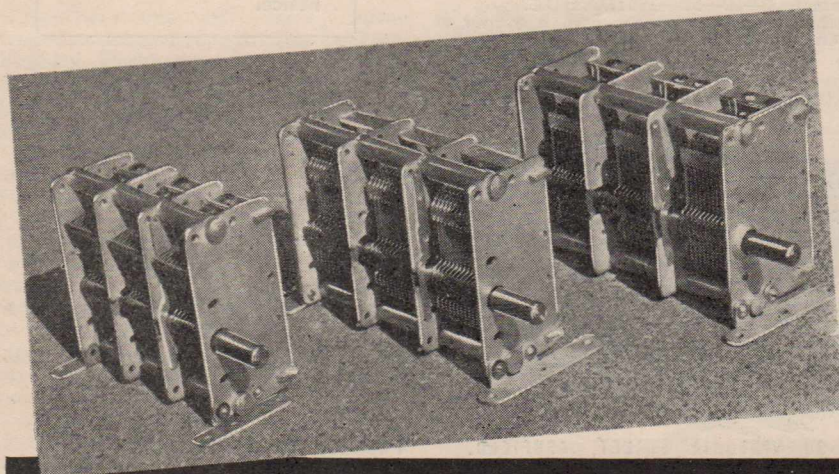
Has anyone heard this one?

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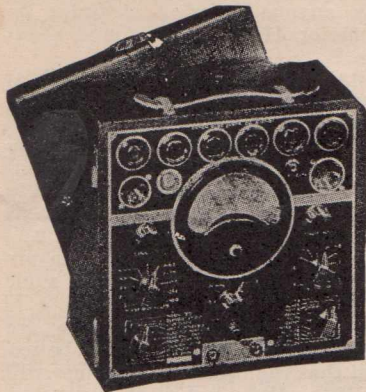


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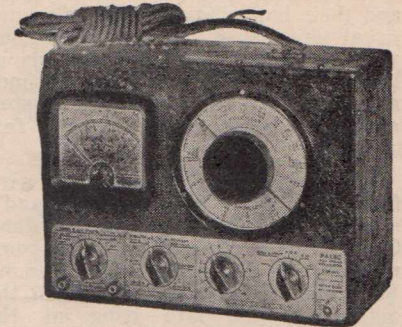
MODEL "VCT" COMPLETE VALVE AND CIRCUIT TESTER

The Model "VCT," together with the new All-Wave Oscillator, can be aptly described as the serviceman's and experimenter's right and left hand, respectively. They enable every conceivable test and adjustment to be made on a receiver, from the aerial coil right through to the speaker voice coil—in other words, with just these two instruments you are well, if not fully, equipped.

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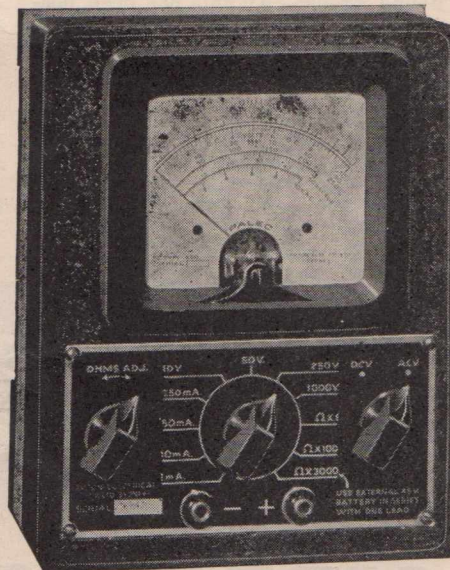
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MODEL "M" SERIES MULTIMETERS . . . have a solid cast aluminium case measuring 8in. x 6in. x 2½in. . . . used to house all four types. The basis of each instrument is the new "PALEC" Model "K400" rectangular moving coil Meter, which gives excellent accuracy and legibility on a scale 3½in. in length.
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Current, 1—10—50—250 MA's D.G.
Resistance in three ranges from a quarter of an ohm to 15 megohms.
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HEADACHE CORNER...

Being tales of woe from our Lab. Service

There have been lots of headaches in the Laboratory this month, and investigations have revealed four minor errors in circuits and diagrams, and these little errors are all of a kind that mean a lot in practice.

The main worry has been in regard to the "Big Boy" amplifier, which is an excellent job when connected up correctly, but not when the connections are according to a mistake in the socket connections in the picture diagram of the wiring.

Socket Connections.

Somehow or other the diodes and screen got tangled up. Our diagram showed the screen as being the next pin to the plate, whereas the diodes are next, so that when connected this way the screen is tied to the cathode instead of the plate and as a result the amplifier lacks punch. Fortunately the cure is simple and obvious and no damage can be done to the valves by the wrong connection.

Further confusion is caused by the fact that the circuit schematic showed the diode plates not connected to anything at all, whereas the picture diagram showed them connected to the cathode. As a matter of fact it doesn't count two hoots whether the diodes are left open-circuited or whether they are tied to the cathode, but as we mention above, make sure that the screen is tied to the plate, not the cathode.

De Luxe Fidelity 8.

Another one of life's minor tragedies happened with the De Luxe Fidelity Eight circuit in the May issue. The field coil was shown as having a resistance of 750 ohms, which was quite incorrect. Correct value should have been 2,500 ohms as shown in the parts list. Those who bought a 750 ohm speaker can use it without any difficulty, simply by taking the high tension supply for the centre-tap of the speaker input transformer from the set side of the field coil instead of the rectifier side. In other words, by passing the total high tension current of the set through the field instead of just portion of it, as in the original design.

Still another minor error occurred in the circuit diagram of the "Super

Set" in the May issue. A 50,000 ohm grid leak was omitted in the oscillator circuit. It should connect the oscillator grid of the 6J8G to earth.

World Standard.

A particularly difficult example of the "World Standard" (March issue) was sent in and proved quite a problem to tame, but the work on this chassis brought to light a minor amendment which can be carried out in case any difficulty is encountered. The symptoms are lack of volume, yet ample range, and is caused by the automatic volume control taking charge and cutting down the gain too much.

The cure is quite simple, being just a matter of shifting one end of the .0001 mfd. mica condenser over to the diode plate of the second 6G8G (instead of to the plate of the first 6G8G). If

all is well the original circuit is O.K., but if there is any considerable leakage, or anything in the way of low resistance in the mica condenser, then some of the high tension voltage leaks through and muddles up the a.v.c. action. Completely satisfactory operation is obtained in just as easy a method by taking the r.f. from the secondary of the second i.f. transformer.

An Eye-opener.

The whole of our work on this particular chassis was an eye-opener on the subject of just how easy it is to make a poor set instead of a good one. Everything seems so easy when you know how, and when you appreciate which minor details need to be carefully watched. This set was built by a fellow who should have known better, but he took it easy in one or two places, and many were the tears shed accordingly.

For example, instead of getting the correct chassis he used a standard type of 5/6 chassis, and used one of the electrolytic condenser holes for the extra valve socket. The second electrolytic condenser was replaced with one of the tubular type, with pigtailed, and was hung in the thick of the wiring. This didn't matter, except that the negative pigtail was soldered direct to the paint on the base.

Several attempts were made at

(Continued on next page)

LABORATORY SERVICE FOR READERS

For the assistance of bona-fide amateur set builders, we have installed laboratory equipment at our head office, 117 Reservoir Street, Sydney.

At this laboratory we will inspect and test receivers built up according to constructional articles published in this or any future issues of Australasian Radio World.

We will not carry out repair work, or make adjustments or alignments, but we will be prepared to inspect and test the receiver and report on its performance.

If not up to standard, we will indicate what we think should be done to obtain normal results.

A nominal fee of 2/6 will be charged for the service.

THE TESTS.

Briefly, the receivers will be tested as follows:—First, the valves will be checked for emission and mutual conductance, the electrolytic condensers

tested for capacity and leakage, wiring tested for high-resistance joints, and the main resistors and condensers will be checked to make sure that they are according to their ratings.

Then the receiver will be tested for comparative performance with an oscillator and output meter and finally the receiver will be tested on the air under normal running conditions.

CONDITIONS.

Normally the service will take about 24 hours to perform, and receivers left for inspection on one day should be ready to be picked up by 5 p.m. on the day following.

In the event of the service proving even more popular than we anticipate, a slightly longer period of time may be required for the inspection.

Receivers forwarded from distant readers will be unpacked and repacked without extra charge, but no freights or carrying charges will be paid.

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490 Elizabeth St., 168 and 243 Swanston St., Melbourne, and at Prahran, Camberwell and Moonee Ponds. F 3145 (6 lines)

"earthing" condensers in a similar way, although a bare "earth" wire was run around the base, yet by some strange mischance, was not used by the builder to earth the most important connections, the pig-tails of the by-pass condensers.

The ineffective earthing of the by-passes was evidenced by the set being hopelessly unstable, squealing and howling in a most difficult way, so that it was impossible to align it at all or get it going long enough to work on it.

Tackling the Job.

In case it may interest those who are likely to face a similar problem we can give a few details of the way in which we tackled the job. First of all we connected up all the earths to the earth wire, and ran the aerial wire straight out through the side of the base instead of tangling it up in the i.f. wiring as had been done originally in order to take it to an insulated terminal in the back of the chassis. Then we fitted a variable resistance (10,000 ohm potentiometer) in place of the bias resistor of the r.f. and i.f. valves. Next we disconnected the a.v.c. by taking away the mica condenser which was feeding the r.f. to the a.v.c. diode. This made it a simple matter to stabilise the set with the variable bias, and gave us a chance to get it going steadily. Then by adjusting the con-

trol we could bring it to the edge of oscillation and apply by-pass condensers here and there to see whether they helped to stabilise it. By this procedure we found that an extra condenser on the screen of the i.f. valve, at the socket, was quite a help, and that a .5 mfd. tubular condenser up at the coil unit made a more effective by-passing than the electrolytic which was mounted across the high tension down at the other end of the base.

Final Check.

Eventually we were able to get stable operation with normal bias on the r.f. and i.f. valves, so that we re-fitted the normal bias resistor. We then re-fitted the mica condenser for the a.v.c. and checked over alignment again, and passed the job out as a very different performer, compared to results as they were when it came in to us.

Mystery Dual-Waver

(Continued from page 19.)

two electrolytics is adequate to bring the hum down to a level which is much better than the average found in the sets on the market to-day, which (perhaps) isn't saying much.

Construction.

The building of a set of this kind is child's play to anyone who has had a little experience in this type of

Kits of Parts.

Several of the leading Sydney radio shops are making a point of providing kits of selected parts for this set, as can be seen from their advertisements in this issue, and we cannot be too strong in our recommendation to readers to make sure that they get their components from these shops.

Handling these parts in quantities and fully understanding the ins and outs of this type of business, they are in a much better position to help you than the ordinary radio shop.

work. Even to a novice it cannot present any real problem.

At first glance the picture diagram of the wiring may appear a lot of meaningless black and white lines, but when you get a kit of parts together and compare them with the diagram and the photographs you find that it is easy enough to identify each component in the diagram, assemble it according to the layout and then wire it up, checking the connection on the schematic circuit as you go along.

Additions.

There are two minor points which may need a little explanation. Two minor components have been added to the set to make quite sure that in-

stability will not occur in further receivers built up to this circuit, and they can be considered as good practice. Actually the set should perform without them, but to be on the safe side they should be fitted.

Both of them appear in the picture diagram, but they are not shown in the schematic.

One is a small mica condenser of .005 mfd. fitted across the input to the speaker, and the other is a 100,000 ohm resistor fitted to the grid terminal of the output valve to safeguard against any chance of parasitic oscillation happening when this high-gain pentode is used.

CALSTAN IN BRISBANE.

Mr. A. E. Harrold, 123 Charlotte Street, Brisbane, has been appointed distributor of Calstan testing equipment in Queensland.

Mr. Harrold reports that sales have been excellent during the past month.

Apparently it is being fully appreciated that good testing equipment is a sound investment.

VIBRA AMPLIFIER.

(Continued from page 22.)

speaking, however, the better class permagnetic speakers have a fairly strong high-note response and excellent results can be obtained with a single speaker if handled properly.

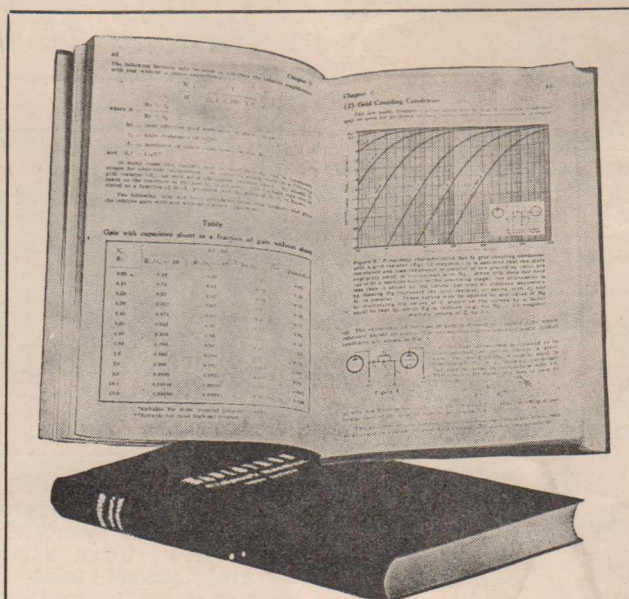
Higher Gain.

As shown in the main circuit diagram the amplifier has ample gain for the ordinary crystal type of pick-up, which has fairly solid voltage output when running on modern recordings.

There is a chance, however, that there will be insufficient gain for use with some of the magnetic pick-ups which have a lower signal output, but this matter can be fixed up very simply by a few minor alterations to the circuit around the first valve, putting it into operation as a pentode and obtaining a great lift.

Further Hints.

Those who build this amplifier are strongly advised to read over the general articles on obtaining quality reproduction, as contained in our issues of April and May. We cannot spare the space to go over the pointers about acoustics, motor torque and the many other necessities for fidelity, yet attention to them is essential if really good results are to be certain.



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Between its covers, radio engineers, amateur experimenters, technicians and service men will find in the Radiotron Designer's Handbook, 40 chapters covering a wealth of technical information.

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Cloth Bound Edition, 7/6 (Postage 6d.), obtainable only from Amalgamated Wireless Valve Co. Pty. Ltd.

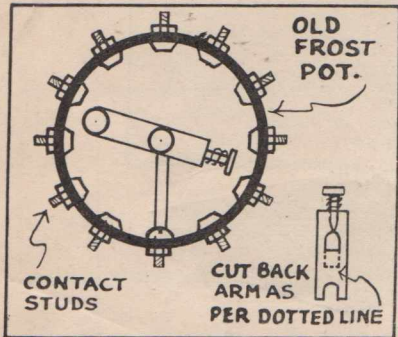
Advertisement of Amalgamated Wireless Valve Co. Pty. Ltd.

HINTS and TIPS

by Nicholas G. Walters

Handy Multi-tap Switch.

An exceptionally handy multi contact switch from an old Frost (or similar type) Potentiometer, by removing the resistance element and drilling as many circumference holes

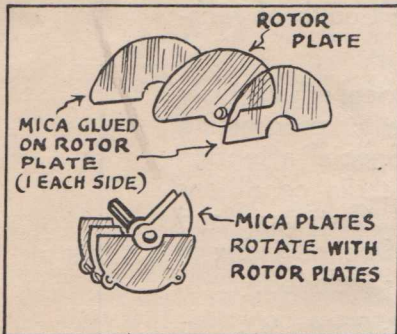


as needed for taps. Remove the contact arm and cut it back as indicated by dotted lines in sketch. This allows the contact point to slide back further and clear the contact studs.

* * *

Capacity Booster.

If you find your variable condenser does not give you a high enough capacity, a quick way of overcoming the

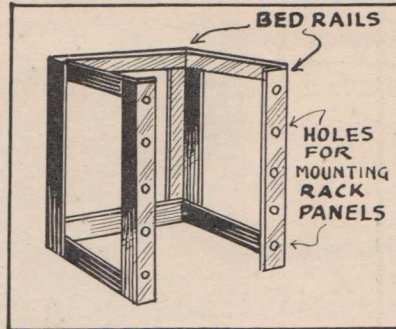


difficulty is to cut out a number of pieces of mica the same size as the rotor plates of the condenser. Glue one sheet of mica to each side of each rotor plate. The reason for this trick raising the capacity is that mica has a higher dielectric capacity than air. The minimum capacity is of course slightly raised also.

* * *

Panel Racks at Low Cost.

Home-made racks for panel equipment can be easily and inexpensively made from old iron bedstead rails.

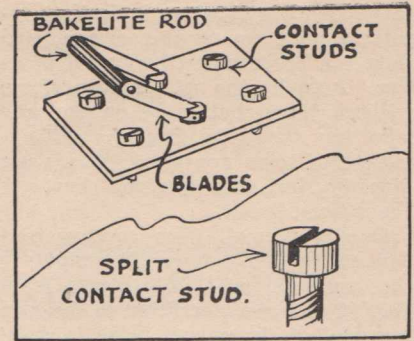


The rails are cut to size, drilled and bolted together in the form of a rack. The details are clearly shown in the illustration. Given a coat of black or grey enamel paint, the finished article makes a sturdy and efficient rack.

* * *

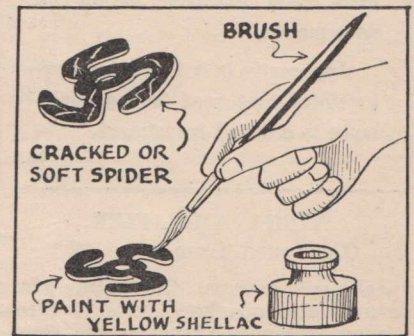
Double Pole Double Throw Switch.

Handy switches can be made from deep-headed contact studs and pieces of junk usually lying around the shack. The contact studs are slit with a hacksaw to receive the blades of the switch. The two centre contact studs are also drilled at right angles to the slit to receive pins to pivot the switch blades with. The base plate is made of bakelite or other good insulative material. The details can be clearly seen in the sketch.



Repairing Loud-Speaker Spiders.

In cases where loud-speaker rattle is caused by fatigue of the spider or some similar defect, the speaker can be made as good as new by coating the spider with orange shellac. This makes the spider stiffer. Speaker trouble in car radios can often be cured by this means.



Price's Radio Overcomes War Hazard

On account of the international situation, Price's Radio have found it impossible to produce their usual large catalogue that everyone has been eagerly waiting for. Costs of material change literally every day, so that to print a large catalogue would be a waste of time.

However, war or no war, Price's Radio have succeeded in bringing their large range of goods under public notice by means of a new price list.

Fully illustrated and well laid out, the list leaves no doubt in one's mind as to the price of each and every item listed, a point that creates good feel-

ing between customer and retailer.

A special section is given over to morse outfits, keys, buzzers, etc. Many different brands are profusely illustrated, and should be of great help to the enthusiast in choosing his equipment. When purchasing a morse outfit at Price's, take advantage of their free offer. An attractive card, clearly setting out the morse code in full, will be supplied free with each outfit.

The new price list being issued is available to all "Radio World" readers, free and post free.

If you want a copy write to Price's Radio Service, 5-6 Angel Place, Sydney.

TRADE NOTES

NEW RADIOKES COMPANY FORMED

THE radio trade, as well as the home constructor, will be interested to know that a new company has been formed for the manufacture and sale of Radiokes Precision Products.

Manufacturing Policy.

The company announces that their manufacturing policy will be along the same lines in the future, as they have followed so successfully in the past. Manufacturing and developmental trends will be closely studied, new coil kits and units will be designed and developed, and precision methods, combined with purity and quality of raw materials, will be a feature of component construction. It is anticipated that a proportion of Radiokes production will be utilised by radio receiver manufacturers—just as in the past many receiver manufacturers have relied on Radiokes, and they will continue to do so in the future. It is emphasised that all future Radiokes components will combine many features of design and construction which will be absolutely exclusive to Radiokes. Trolitul, the outstandingly efficient material in use to-day, will be standardised throughout Radiokes production. Trolitul has proven so



The famous Radiokes trade-mark.

High Grade Morse Equipment at Levenson's

At the outbreak of war there was a sudden rush by the public to become acquainted with the marvels of the morse code. This demand has increased, and, as is only natural, supplies of equipment in most establishments is becoming drastically low. Prices have soared and morse is now a costly hobby.

At Levenson's Wireless Store, the story is quite different. Being the manufacturers of nearly all the morse equipment sold by them, there is no shortage of stocks at this time. Their range is just as complete as it was before the conflict, and the quality is in no way inferior. Two splendid models are available and are excellent examples of Australian workmanship. The lightweight model is just the

satisfactory and superior to any other material which might be used for a similar purpose, that Radiokes Pty. Ltd. have decided that no other material on the market combines such high standards of efficiency with continuity of supply.

Radiokes will again specialise in coil and coil kit construction, and Radiokes coil kits will be featured for sets described in forthcoming issues of this journal. Illustrated leaflets describing new Radiokes products will be made available soon, also hook-up diagrams showing complete details of popular set circuits suitable for construction with the components.

Few, if any, radio component manufacturers have given more time and thought than has Radiokes to the development and perfection of radio components.

Pioneer Developments.

In the earliest day of radio manufacture many companies without sufficient backing and engineering skill rushed into component production. While Radiokes Pty. Ltd. was one of the first (the company was first formed in 1923), they are also one of the few companies who are still engaged in large-scale production to-day.

From the beginning, Radiokes have pioneered most major developments in the production and marketing of a wide range of radio parts, including dual-wave coil units, coils, if transformers, potentiometers, r.f. chokes, resistors, audio transformers and line filters, speaker transformers and vibrator units, midjet variable condensers, voltage dividers and a variety of smaller lines

Proceeding always cautiously and

thing for high-speed sending and the P.M.G. type is of the robust, heavy structure that is much in demand at present.

For all morse equipment write or visit Levenson's Wireless Store, of 226c Pitt Street, Sydney, where you are assured of getting the right article at the right price.

We have been informed that the supply of Levenson's catalogues is getting very low. Rush 8d. now to Levenson's Wireless and be sure of your copy. It covers fully the morse equipment range, as well as all other radio components and contains a special concession certificate which enables you to purchase goods to the value of 22/- for £1.



Mr. R. K. Stokes

surely, it is yet typical that they were producing tested and thoroughly-tried developments when others were still experimenting. Their slogan, "First with the New Release," is thus as true in 1940 as it was seventeen years ago. The result of Radiokes initiative and thoroughness was that their range of components became known throughout Australia for the high standard of efficiency they set and maintained, and the material assistance they gave to the manufacturer and constructor in enabling them to attain the highest standard of results.

The Kitset Comes.

Radiokes Pty. Ltd. were also the first to introduce to Australia what is now one of the most popular methods of marketing components—the kitset. It was in 1927 that Radiokes offered the first kitset for sale in Australia—it was for a set that many early constructors will recall, the "Standard" and since then Radiokes Pty. Ltd. have sold close to a half-million kitsets, while the total number sold by later marketers of the kitset must run into staggering figures—obviously several millions!

Over A Million Coils.

Perhaps the component most frequently associated with the name of Radiokes is the coil. Time and again Radiokes have led the field in coil developments, and it is of interest to recall that well over a million Radiokes coils have been sold—a quantity that challenges comparison with any other manufacturer in Australia. Radiokes coil kits and units have also been used by many thousands of home constructors, for a Radiokes coil kit has been closely associated with every popular set featured by constructors' journals in the last fifteen years.

Manufacturers, as well as home constructors, who would like to be kept informed on new Radiokes developments will be gladly supplied with recent literature—and their names will be added to the Radiokes mailing list for supplies of further technical data—on application to the sole agents for Radiokes Products, Radio Suppliers Pty. Ltd., Wingello House, Angel Place, Sydney.



The JUNIOR TECHNICAL SECTION

EARTHING THE RECEIVER

RECEIVERS operated from the power mains usually work equally as well with or without an earth connection. This is because there is plenty of capacity coupling to the power supply wires, one of which is connected to earth.

Crystal and battery sets always work better with an earth connection.

The best earth connection is an insulated stranded wire clamped to the nearest water pipe. This connection should be periodically removed, cleaned and refitted. An earth wire may be soldered to a water pipe for a permanent connection. To do this, first turn the water off at the main cock. Then drain as much water as possible from the pipes by turning on all taps. Use a large soldering iron or blow lamp as a source of heat for the soldering.

Country enthusiasts can use with equally good results an efficient "buried" earth. Such an earth may consist of a kerosene tin or sheet of galvanized iron with wire soldered to two or three places. Bury the iron at least three feet in the dampest soil near the receiver. Before covering with soil, "metallise" the surrounding hole by partly filling it with old scrap metal to hand. Fill the chinks with ashes (to retain moisture) and finally tap over with soil.

Insulation.

Since the earth wire is at zero potential, i.e., it is "dead," it is reasonable to ask why an insulated cable is called for. As a matter of fact, insulation of the earth wire is not important so far as battery and crystal sets are concerned. It is when a receiver is operated from the power mains that insulation is necessary in order to protect us from the lethal voltages which appear.

The dangerous mains voltage is isolated from the rest of the receiver components by the insulation of the power transformer primary winding. However, there is a considerable amount of capacity coupling between



The "Earth" Symbol.

this winding and the chassis and it must be remembered that a condenser will pass an alternating voltage. Thus, even with a chassis in proper order, it is quite probable that one will get

a nasty shock between the chassis and the free earth wire.

Always connect the earth wire before switching on the power.

Why use an earth with a mains operated receiver? A reasonable question answered by the fact that, through a structural defect or breakdown, it is possible for a receiver to become "live" all over and still work normally. The danger in this is immediately apparent; the housewife may be operating a vacuum cleaner or iron, etc., the metal frame of which is at earth potential.

If she should happen to touch the receiver at the same time, the full voltage of the mains will pass through the body to earth. A horrifying thought indeed, but we can eliminate this grave risk by connecting an earth wire to the set.

Immediately a defect occurs of the nature described, the fuses will blow and the power disappears and it is then necessary to remedy the fault in the receiver before further operation is possible.

J. T. QUERIES

D.R.T., Burra North:—

1. Copying morse a word behind enables one to put capital letters in their proper place. Our copy is not spoilt if the sender makes an error; it prevents the common error of anticipation and generally indicates that the receiver is an expert.

2. 50 watts input to the plate, which will mean about 35 watts to the aerial.

3. Shielding may not be necessary, but is no trouble to apply.

4. No transmitting equipment may be constructed at present, licence or no licence!

* * *

E.V., Mittagong:—

Yes, the artificial centre tap may be used on both primary and secondary of the same transformer at the same time.

* * *

R.J., Wyong:—

The catalogue is misleading. It gives the size of the spaghetti in "mills," when it means m.m. (millimetre). A "mill" is a one-thousandth part of an inch.

* * *

G.H., Summer Hill:—

Electrolytic condensers cannot be used in resistance-capacity coupled circuits for two reasons: (1) Alternating voltages appear in the circuit; (2) Such condensers leak to a certain extent.

SOME FACTS ABOUT EARTHING

Stranded Wire.

For reasons of mechanical strength and flexibility, stranded cable of the standard 3-20 or 7-22 should be used for the earth connection. Constant flexing of a single strand cable or the hammering in of staples may break the conductor inside the insulation—an often unsuspected fault.

Mercury Vapour.

It may happen that a receiver or amplifier is built to work with a mercury vapour rectifier tube such as the

83. An annoying audible "hash" generated by this type of tube immediately disappears when the chassis is earthed.

Earth Resistance.

A 16-gauge wire running between Sydney and Melbourne would have a resistance of roughly 6,000 ohms, yet the earth resistance between the G.P.O.'s of these cities is in the vicinity of ten ohms only! We must remember, however, that the conductor in this case, although a poor one, is 8,000 miles thick and the connections are properly made!

Soldering (Part 2)

PART ONE of our chat about soldering dealt exclusively with the technique as applied to chassis wiring.

We saw that this particular application of the art of soldering was limited and suitable for little more use than the linking together with wires the components of an electrical circuit.

For such work we use resin as a flux because for one reason a violent de-oxidising action is not required as

siderably extend our tinkering activities.

The Flux.

Resin is not a suitable flux for general soldering work. Something with a greater scouring and de-oxidising action is called for. Admirably suited to this purpose is "killed-spirits."

To make up a quantity of this flux, half-fill a wide-mouth jar with hydrochloric (muriatic) acid. Into this acid drop scraps of zinc or galvanised iron, adding more scraps until no further chemical action is apparent. The flux is then ready for use.

Be careful during the process of making up the flux, because hydrogen, a highly explosive gas, is generated.

For applying the flux we may use a small brush or frayed piece of softwood.

The solder.

A bar of "50-50" solder will be required.

This solder consists of half tin and half lead and, unlike "cored" solders, carries no flux in itself. It is possible, however, to procure acid cored solder if the occasion demands.

Metals Hard To Solder.

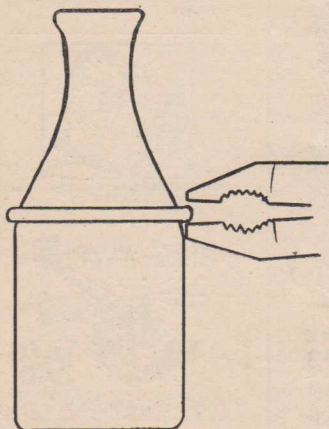
Not all metals and alloys may easily be soldered. In fact, the newcomer should avoid attempts to solder the following metals and alloys:—Aluminium cast-iron, pewter, die-cast metal, chromium plating, stainless steel.

Application.

The basic technique of soft soldering is similar to that discussed in Part I. of our article. The metals must be tinned before joining, and this means that, with the exception of galvanised iron, the metal must be first scraped clean.

After the work is completed, a wash in plain water will brighten it up and remove future chances of corrosion.

The latter statement shows us why we must not use an acid flux for chassis wiring. It would be just too bad if we held our completed receiver under the tap!



To make a flux-pot: Crack the top off a bottle, using a close-fitting red-hot wire ring.

the joints are mostly "tinned" already. Secondly, resin is non-corrosive, in fact it actually leaves a protective layer over the usually delicate joint.

General Soldering.

The applications of soldering apart from radio wiring are legion. The models we will be making from scraps of metal, the pots and pans we can make as good as new are but the simple applications. On the other hand, we have the ponderous and costly machine which with unerring precision solders thousands of cans per hour!

Now, with general soldering (referred to as "soft-soldering" to distinguish it from hard-soldering or brazing), we usually find that large bodies of metal have to be joined. This means that heat is quickly dissipated and therefore, although we use a soldering iron as in radio work, we find that a large iron capable of holding plenty of heat will be required. The small radio iron usually will not hold sufficient reserve heat. In fact, we will later see that a blowlamp, spirit lamp or gas burner often may be used directly as a source of heat.

For a start, however, we can procure a two-pound "iron" of the externally heated type. This will con-

Electric Light For The Den

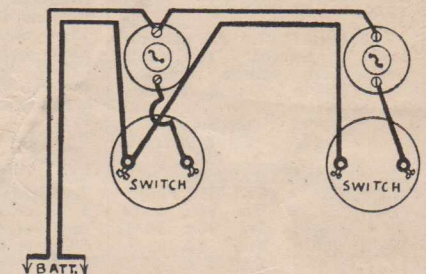
B.G., Bowral, is putting a splendid idea into operation. He is going to instal electric lighting in his den; power is to be obtained from a battery of wet cells (A.R.W. April, '40).

He wants a wiring circuit for two torch bulbs, each controlled by a separate switch.

Here it is, B.G., note that a two-wire line only is required and there are no joins in it.

By the way; are you making your own switches and sockets? Here are a couple of rough sketches which may be of interest.

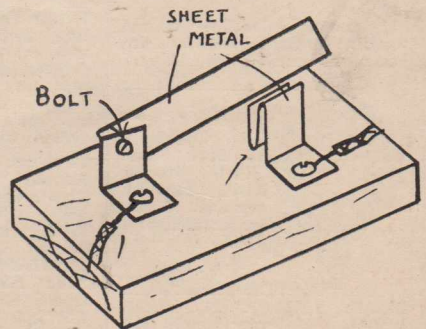
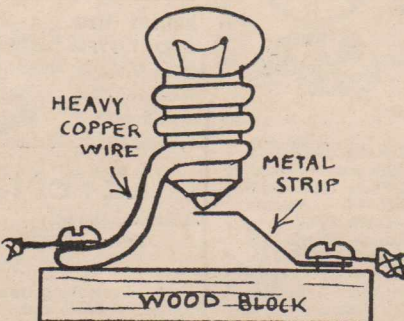
Whilst we are dealing with this subject, it seems that a few additional words about the wet cell as described would no tbe out of place. One chap wrote saying that he had difficulty in finding jars with mouth large enough to take the old dry cell. Well, then, why not use jam or treacle tins? First melt a piece of candle in the tin



Circuit for using two torch bulbs with separate switches.

and swirl around so as to coat the inside, then allow to set; a piece of wood in the bottom will prevent short circuit.

A battery of two or more cells will work an electric bell or buzzer system. By substituting a morse key for the bellpush we have a code practice set and so on.



Above: Suggestions for making your own sockets and switches.

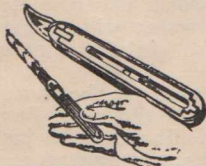


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4-in-1 POCKET DRIVERS. Steel or Bakelite. 2/- .

Collapsible Frame AERIALS. Cost £9/9/- . Now, 42/- . Costly imported articles, slight defects, easily adjusted.

The World's Best POCKET KNIFE, 6/6. Cobalt Stainless Steel Blade, all metal. Opens one finger control. Three positions. 6/6. Ever-lasting. Sheffield make.



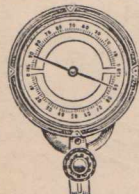
RADIOES BACK PANEL ILLUMINATED DIALS. Straight Vision, back Panel, 22/6 value. NOW 5/- . Circular Travel Spotlight, 4/- . Lightning Arrestors, fixed type, 1/6. Ormond 3in. Vernier Dials, 8/6. World famous Utility Short-wave Dials, 12/6.

ACCUMULATORS. All guaranteed 12 months. You can't beat these values. Packing Cases, 1/- to 1/6 extra, according to size.

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6v. 9 plate Amps.	60 31/9
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"Ormond" 3-in. Bakelite and metal Vernier DIAL, British make, 2 speeds. fast or very slow, 8/6.



3-in. Illuminated Back Panel Slow Motion DIAL. Smallest made. Circular escutcheons. 7/6.

BUILD YOUR OWN MUSIC BOXES. We can supply the complete works, spring wound. 12/6, 15/- . Swiss manufacture.

JUST ARRIVED. JUNIOR TYPE 4000 OHM HEADPHONES, 8/6 pair.



ERICSSON'S 4,000 ohm Professional Head Phones, 32/6. S.T.C. or B.T.H., British, 30/- . "Like-A-Flash" 4,000 ohms, 15/- . Other types, 9/6, 11/6, 12/6. Acme De-Luxe Flyweight Headphones, 4,000 ohms, U.S.A., 15/9. Acme Special, 12/11. Rubber Phone Pads, 2/- .

ELECTRIC GRAMOPHONES, British built, 240 A.C., 39/6.

GRAMOPHONE MOTORS AND TURN-TABLES. Complete. 48/6. Sturdy built 240-volt Electric Motor, with all fittings; were listed to sell at 75/- from overtime Customs Sale; now 50/- .

LINES TO CLEAR. 5,000 ohm small imported Pots., 2/6. Lissen Super Audio Trans., 15/- . Telsen .0005 sturdy Var. Condensers, 6/9 (British). Telsen Audio Transformers, 10/6. Set Testing Kits, Leads, Clips, etc., 4/6. NOW 2/6. Radio Saw, 3 Blades, for Metal, Wood, Bakelite, 1/9. Breast Drills, large, 4/11. U.S.A. made. 00035 Variable Condensers, 5/6.

High-pitched Tone De Luxe Professional Buzzer. The best made. 15/- . Morse Code Practice Sets, Keys and Buzzers, and Light, 25/- . With P.M.G. Key, 30/- . Buzzers, British, small practice type, 3/9 and 4/9. High Tone 5/6.

GRAMO NEEDLES for Pick-up playing, as used by B.B.C., London. 150 Golden Pyramid Radiogram Needles, each play 5 records, 4/6. "Embassy" semi-permo. needles, each plays 10 records, 2/- tin. 50 needles of 40-minute play, 4/3. 100 needles of 15-minute play, 3/6.

Insulated British Manufactured Police Patrol AERIAL. Rubber clad, highly sensitive, multi-strand tinned copper wires, needs no separate lead in or insulators, 50ft., 2/6; 100ft., 5/- . Heavier clad, super grade multi-strand tinned wires, 50ft., 5/-; 100ft., 10/- .

B.G.E. Table Type Microphone, highly recommended for amateur or professional use. Built-in Transformer and Battery, with volume control incorporated. Just plug into pick-up terminals of any set or amplifier. 39/6.



CRYSTAL SETS AND CRYSTALS Famous All-Station Model. Charts 6d. All Parts 25/- . Built 35/- , in Cabinet 45/- . Phones 12/6. Aerial—Earth 2/6. Phones 12/6. Aerial—Earth 2/6. CRYSTALS A.1. Semi Fixed, 2/6. "Tec" Fixed Crystal 2/6. Lion-tron 5/6. Lion Micro 5/6. Re-fills 2/6. Red Diamond 4/6. BREAST DRILLS. Large size. 4/11.

VALVES. We have always on hand part-used Valves which are near or 100%. We guarantee these or replace them. Let's know what types interest you. Used 57, 58, 6/6. New 4XP, 5/- . New MH4, 2/6. 44Su Rectifier, new, 5/- . New 41MRc, ML4, 2/6. Used 1C6, 6A6, 6A7, 6A8, 6B7, 6F6, 6F7, 6L7, 6/6. Used 6F7, 6J8, A13, Ek2, 2B7, 2A3, 5/6. 2-Volt, 4-Volt, 6-Volt Batt. Valves, used, 5/- . 42, used, 3/9. 201A Types, 2/6. Packing Case for Valves up to 3 Valves, 9d.; 6 Valves, 1/- . Postage extra.

VALVES, MADE IN U.S.A.			
Type	Price	Type	Price
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58	10/6	6D6	11/-
38	12/9	6C6	11/-
32	11/3	6A7	11/9
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2B7	14/-	42	12/-
27	11/9	80	9/6
6E5	9/-	71A	11/9
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6H6	12/9		



COSMOCORD CRYSTAL TYPE BRITISH BUILT AND DESIGNED GRAMOPHONE PICK-UP DE LUXE, with volume control built in as illustrated, 59/6.

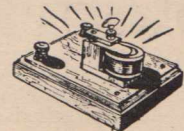
GRAMOPHONE PICK-UPS. All have Vol. Control built in. British made. "Cosmocord" Special, 30/- . "Cosmocord" Extra Special, 35/- . "Cosmocord" High Definition, 38/6. "Cosmocord" Studio Model, 48/6.



"WATES" BRITISH POCKET VOLT METERS. 4-in-one combination, 14/- . Reads 0 to 6, 0 to 15, 0 to 180 Volts, 0-30 M/Amps. "EMICOL" Pocket Meter, 12/6. 0 to 6, 0 to 150 Volts, 0 to 30 M/Amps. For Testing Meters and Analysers. Write for List.

5-Cell 1500ft. FOCUSING TORCHES, 6/6. Fountain-pen Type Torch, 2/6. Both with Batteries fitted.

BRAND NEW AND TESTED. P.M.G. TYPE 280 VALVES. SOUNDER Made in U.S.A. 9/6 each.



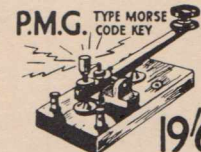
High-pitched Tone De Luxe Professional Buzzer. The best made. 15/- .



As illustrated. Long or Short Toppers, 12/6. Adjustable all ways. Bakelite base. Nickelled fittings.



MICROPHONES, as illustrated, Hand Holding Type, 22/6.



P.M.G. ADJUSTABLE EVERY WAY MORSE CODE KEYS, 19/6.



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SMALL COLLAPSIBLE HEADPHONE SETS, 9/11. All metal.

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Everything from A to Z in Radio at Same Profit Prices. 'Phones: M 2525 and M 2526-7. Goods forwarded C.O.D. Post or Rail. (C.O.D. Mail within N.S.W. only. Not Interstate). We welcome Prepaid Telegrams and Long-Distance 'Phone Calls.

SPEEDY QUERY SERVICE



Conducted under the personal supervision of A. G. HULL.

"Fido" (Artarmon) enquires about baffling for tweeter speakers.

A.—It is generally conceded that a tweeter does not need to be baffled at all, as it is not called upon to handle low notes. We find in practice, however, that a small baffle board, about a foot square is desirable with the tweeter. In fact best results of all, so far as we are concerned, are obtained by filling the tweeter hole as close as possible to the big hole in a four-foot square baffle board. This is just the opposite to the idea of stereoscopic reproduction, where the two speakers are kept at opposite sides of the room. Interesting experimenting can be carried out if the speakers are provided with long enough leads to allow them to be moved around the room a bit, and different acoustic effects tried out in practice.

E.A.G. (Caulfield, Vic.) writes on rectifiers.

A.—You will get a decided increase in voltage by using an 83 in place of the 80. Although the filament draws a heavier current this is seldom a difficulty in practice, as the usual power transformer will readily stand the overload imposed.

Naturally you will be working in the dark, as you haven't any meters available. It is a great pity that you couldn't get a few bob together and get hold of at least a kit of parts for a simple multimeter. It would be wonderfully helpful, especially in a case like this.

It is pretty safe to assume that valves will accept heavy overloads without complaint. We recall a trip to the South Coast some years ago, when we took along a big amplifier and lectured on electrical reproduction from recordings. The valves, which were big Mullard D040 type, were running on over 500 volts, but one got dropped and bust. We finished the tour and ran the amplifier for many hours with a pair of 45 type picked up from an enthusiast at one of the towns. These valves, rated to take only 250 volts worked well on 500 and showed no signs of overheating when working under these conditions and with plenty of bias. Needless to say, we don't recommend such overloading unless there is no easy way out of it. It is always safest to keep to the makers ratings; they should know.

D.C. (Goulburn) enquires after volume expansion control, about which so much was written a few years ago.

A.—Volume expansion is not necessary these days as the modern recordings have a much wider dynamic range. This is actually cut into the records, by the improved recording methods, and additional expansion would not be desirable. The original idea was to overcome the compression which had taken place during the recording of the disc.

E.T. (Ballarat) has a push-pull 2A3 amplifier which is at present running with self-bias from a resistor in the filament circuit. He wants to know what advantages he would get from having fixed bias.

A.—On paper there are many advantages

for fixed bias, but in practice we haven't found these advantages so noticeable. We suggest, however, that you do a little experimenting for yourself and you will then be able to make quite sure. We suggest that you use an old B battery to supply bias. Apply about 60 volts negative to the centre-tapping of the secondary of the audio transformer, and short-circuit the bias resistor. Be sure you don't put a positive instead of negative voltage on to the centre-tap. You will have extra plate voltage as there won't be the drop in the bias resistor, but the valves should stand this at least for a short test. You will probably notice that the power output goes up, but we doubt if you will find the improvement in tonal quality which you appear to expect from the altered biasing method.

"Impatient" (Clifton Hill, Vic.) is worried about our publication date.

A.—We know that it is the American practice to date the issue well ahead, and we have often seen a March issue of an American magazine actually on sale here in February. We don't try to follow out that particular scheme, being happy if we get our May issue on sale by the end of the first week in May. Our direct subscribers had their May issues posted out from this office on May 8 and May 9. Doubtless there is some slight delay in distribution, but we are surprised to hear that yours did not arrive until so late.

J.P.P. (Newtown) complains of a noise in his receiver.

A.—Without further details it is quite impossible for us to tell you what is causing the noise. For a start we would feel inclined to doubt whether it is coming from the actual set or from outside source. Usually you can tell by short circuiting the aerial terminal to the base of the set. If this immediately stops all the noise there is quite a chance that it is coming from an electrical machine of some kind, even from a distance of a few hundred yards. Neon signs, refrigerators and many other kinds of electrical machinery, are capable of causing noise which comes through the set in much the same way as the radio signals. In such cases it is much easier to stop the noise at the source than at the set. A good aerial, out-of-doors, and high, is always a help.

O.P.S. (Parramatta) asks about the idea of the sensitivity control in the "De Luxe Fidelity 8."

A.—The potentiometer is used as a sensitivity or stability control. In practice it is left at zero position for all normal playing of the set, and there is ample gain for bringing in interstate stations and the overseas short-wave stations which are coming through reasonably well. When extreme sensitivity is wanted, as for daylight reception over long distances or trying to bring in a weak short-wave signal, the control is brought into play. Without this control the set tends to be rather rowdy, especially when operated by an inexperienced person, and when not tuned to any station.

H.J. (Cremorne) has designed an amplifier but finds that it has far too much gain, and the volume control cannot be advanced more than about one quarter.

A.—The designing of the correct voltage gain is simple enough, provided you know the input that you have. Some of the crystal pick-up units have a fairly solid output, at least two volts and sometimes more. Working on the input as two volts you only need a gain of about 20 in order to get sufficient drive for the single 2A3, as it has forty volts bias. The effective gain of the 57 as a pentode is about 100, and you would be nearer the mark with it operating as a triode, as per our "Baby Grand" circuit in the April issue, which gives just nice gain for a crystal pick-up. The effective amplification as a triode is about 15.

"S.O.S. (Brisbane) wants to know where he can obtain blanks for a home recording outfit.

A.—We understand that John Martin Pty. Ltd. have now obtained fresh stocks of these and we suggest you get in touch with them again, and we have no doubt but that they will be able to fix you up. Many thanks for the kind works. Things are swell!

P.R. (Brisbane) has built up the "Big Boy" amplifier, but with a permagnetic speaker, and complains that the power output is not up to expectations.

A.—We don't wonder that you are in trouble of this kind, as the speaker is quite incapable of handling anything like the power available. The first essential to power handling is to have the speaker with plenty energising, and the light permag is hopeless in this respect. You need one of the better quality permags, and there simply isn't anything else we can say or do about it.

Serviceman's Technical Books

	Price.	Postage.
Automatic Volume Control , by J. F. Rider	6/-	4d.
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The Oscillator at Work , by J. F. Rider	12/-	8d.
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SPEEDY QUERY SERVICE

(continued)

R.R. (Rutherglen) is interested in taking up radio as a profession.

A.—Yes, there is no doubt about the future of good radio engineers, as undoubtedly thousands will be required with the expanding use of radio, and especially for radio operators to work the ambulance, police and such-like communications systems. There is also plenty of scope in the future of set building and servicing. Replacement business must amount to many thousands if receivers are to be considered obsolete after ten years' service.

We haven't the slightest hesitation in strongly recommending the correspondence course offered by the Australian Radio College, but of course they can't work miracles unless the student has a certain amount of intelligence and puts it into studying. Many successful radio men have been trained by this college.

* * * *

G.W. (Mudgee) doesn't like our scheme for having a separate power supply unit.

A.—Sorry you don't approve, but we still think its a darn good idea, especially with big sets and even with smaller ones, too. The extra cost is only a few shillings, if that. The advantages are quite considerable. We reckon the two units are easier to build than one. Of course if you really insist there is no reason why you shouldn't build any of the jobs on a single base, but we regret that we can't possibly undertake to draw up special layout plans for you.

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"SS100 (Frankton, N.Z.) wants to know whether the padder on a short-wave oscillator coil is critical.

A.—It all depends on what you call critical. It is not as critical as the padder of a broadcast coil, but it still helps to have it right, as is usually the way. We doubt whether you can hope for anything like good results unless the r.f. coil peaks up properly. There should be a definite peak. If it is so bad that you can't tell whether results are best with the trimmer right in or right out we think it is time to look for a faulty connection, broken wire, short circuit in the condenser or something like that. If results are best with trimmer right in, extra capacity might be tried, or if right out, the reverse.

* * * *

J.J. (Clovally) is confused with the difference between parts list and circuit, in the matter of the field coil of the "De Luxe Fidelity 8."

A.—Quite so. This is just one of life's minor tragedies. The circuit was wrong, the correct field coil resistance being 2,500 ohms. It would be possible to use the 750 ohm type, but only if the high tension lead to the speaker input transformer is taken from the other end of the field, so that the full high tension current of the output valves goes through the field. With a 750 ohm field used as shown in the circuit the speaker would not be sufficiently energised to give good quality reproduction.

* * * *

C.S. (Mosman) has had a very rough spin from a so-called "radio engineer," according to his letter.

A.—Sorry, but we cannot recommend any particular man to do the work you have in mind. We are not at all surprised to hear of the trouble you encountered when trying to get it done by an ordinary radio man who has been accustomed to installation and service work on local commercial receivers. You can't expect anyone to be a specialist in every section of the radio game. From what we can see of it the average suburban dealer and repair man has lots to contend with, and few appear to be making quick fortunes.

* * * *

D.F.R. (Burwood) mentions that we can hear an excellent sound system at the Union Hall at the University.

A.—We'd be interested to have further details about this installation, especially as to when and where and how to make the appointment. Reservations for the Amplifier Championship have been arranged as requested.

* * * *

G.G.H. (Southport) enquires about subscription orders.

A.—We prefer to take the annual subscription of 10/6 for twelve issues, post free, but if this is beyond your financial capabilities at the moment we haven't the slightest hesitation in extending a half-year to you at 5/3 for six issues, post free.

As regards the battery charger, you can easily buy a suitable rectifier valve, and make up a suitable charger, but the cost may closely approach the price of a commercial unit of similar capacity. Cheapest way is to use one of the transformer and rectifier units from one of the old a.c. type speakers. It will give you a charging current of 1 ampere and that is just a handy current for keeping the battery in nice trim. If the battery was dead flat it would take about a hundred and twenty hours to fully re-charge it at this charging rate.

SPEEDY QUERY SERVICE.

Readers should note that our radio information service has now been re-organised and we offer two distinct forms of assistance.

Letters received by the 15th day of any month will be answered in these columns in the next issue. There is no charge for this service, no coupon is required and all readers and their friends are invited to use the service for any queries dealing with radio, photography, model aeroplanes, and any other subjects for which we are likely to be able to get helpful information.

The other service is for a reply by mail, and in this case a fee of 1/- is charged.

Every effort will be made to get replies to such queries away within 24 hours, but no guarantee of this can be given, as there may be times when pressure of other work will make it necessary to hold over queries for a day or two. Answers to such queries are limited to a single sheet of letter paper, and there is no hope of such a service covering the design of special circuits, the calculations for special power transformers, coil windings, etc.

Address all correspondence to
AUSTRALASIAN RADIO WORLD,
 117 Reservoir Street,
 Sydney.

A.E.P. (Paddington) wants instructions on the repair of a speaker cone.

A.—We couldn't possibly recommend you to attempt the job, especially as you admit that you are not a handy man. Even the centring of the cone on the pole piece is the sort of a job we avoid like the plague. The Rola people have a service department at 116 Clarence Street, and we feel sure that if you take the speaker along to them you will find that they will make a first-class job of it and the charge will not be nearly as heavy as you think. You have a good speaker model, and it should be well worth spending a few bob on it to get it into perfect order again.

* * * *

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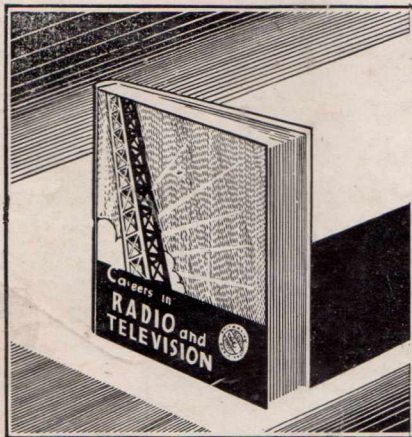
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who would like to be making **£500** a year



Men who can't face up to present conditions, who adopt a defeatist attitude, who are satisfied with their present job, come what may, will NOT be interested in this advertisement. But the man of action, who is set on striking out for himself, in doubling his income and opportunities, no matter how seemingly "tough" the going may be, will here find much food for thought.

This is a message to the man who knows he is capable of earning a good deal more than he earns now, but who feels he lacks the confidence and experience to get and secure a position of importance. It is also addressed to young men, perhaps not long from school, who are looking for an industry which will provide them with a profitable and interesting career NOW and in the years to come. This is the day of the specialist; unskilled labour is unneeded; Radio engineering seeks specialists in all branches. Now, more than ever before, Radio is crying out for skilled men—in peace or war, Radio booms!

Whether you possess certain Radio or electrical knowledge, or whether you know nothing of these subjects, the Australian Radio College can quickly put you on the right track. We haven't been in business for many years without acquiring a know-

ledge of what Radio demands and how we can speedily impart the knowledge that will fit you for a man-sized job.

STRIKING LETTERS.

Here are a few letters we have received from grateful students. These are not just another "batch of testimonials," but genuine unsolicited letters, typical of the hundreds which may be inspected at our head office.

A student writes:—"Before turning to Radio professionally, I had, in recent months, found it impossible to obtain employment in the line for which I was qualified. Thanks to your aid, I was placed within two weeks of my examination."

Another states:—"There must be a shortage of trained men all right. I get offers ever so often since I successfully passed through your course. My most recent was the offer of a branch manager-ship."

Here's a man, now in business for himself, who says:—"I sold six sets last week; employ two men, and have just bought a new delivery van, all in my spare time whilst training and after."



L. B. GRAHAME,
Principal, Australian Radio College.
The Australian Radio College is not a cold-blooded institution run along orthodox lines—rather, it is a warm, friendly, co-operative organisation, personally conducted by the principal.

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