

RURAL 4

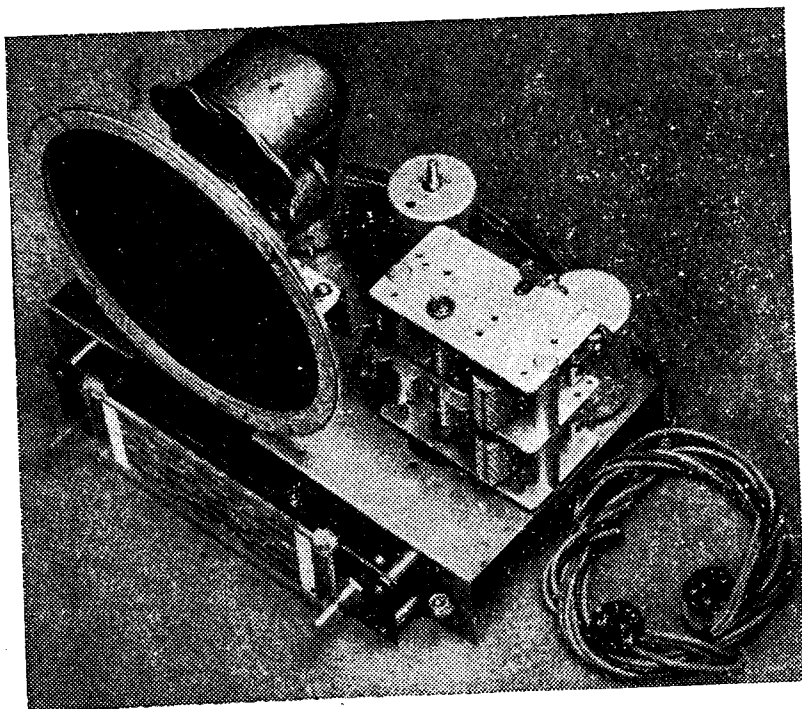
Outstanding Features:-

★

Detailed by
The Engineering Staff
Aegis Manufacturing Co. Pty. Ltd.
208 Little Lonsdale Street
Melbourne

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- (1) High sensitivity with low noise level gives greatest effective day-light range. Ample selectivity for modern reception conditions. High-efficiency Rola permagnetic speaker ensures good tone and powerful volume.
- (2) Operates from dry batteries with very low current drain. Operating about four hours per day the set should run for longer than twelve months without any attention at all. No accumulator or battery charging.
- (3) Circuit has been thoroughly engineered and tested. Sample receivers built from actual kits have been air-tested in several States and give completely, satisfactory performance.
- (4) Ample stocks of kits available from distributors throughout the Commonwealth. Every item supplied in kit, even to the smallest screw, nut and washer. Every component of the highest quality.



A photograph of the chassis, showing the Rola speaker, with the gang condenser alongside, and the coiled-up battery cable.

THROUGHOUT the history of radio developments there has been a close connection between the valve manufacturers and the circuit designers. For many years past the performance of receivers has largely been governed by the characteristics of the valves available. As improved valves have been released, so the performance of sets has improved. And so it is with this battery circuit, the first real post-war model which we have described for home use.

Key to the performance of this latest receiver is the use of the miniature valves which were introduced mainly for use in small portables. Their outstanding performance, however, makes them ideally suited for use in domestic receivers. They give high gain with low noise level and are so economical that it becomes possible to operate them entirely from dry batteries, doing away with the accumulator and its messy re-charging. How often does the accumulator run down just when there is something special you want to hear? Well, never again. This set will run about four

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hours a day for at least a year without any attention at all.

Some months ago the Aegis Company produced a kit for a battery-operated portable receiver called the "Voyager." As soon as this receiver was tested the excellence of the all-round performance was apparent, and it was obvious that with an outside aerial in place of the loop of the portable even better distance could be expected. Tests conducted along these lines showed the accuracy of this forecast and steps were taken immediately to get a kit-set into production. Scarcity of vital parts held up the release of the kit for a few months, but good use of this period of waiting has been made by getting sample receivers out to various interstate distributors for testing under local conditions. All reports indicate that we can have the utmost confidence in recommending this job as thoroughly tested and completely dependable.

ASSEMBLY

First of all, assemble the dial according to the diagram provided. This may require a bit of concentrated study, but if the diagram is followed closely, little trouble should be encountered. Having

done this, tubular brass spacers are now supplied to facilitate mounting the dial plate on the chassis. Next, mount the button-valve sockets underneath the chassis, using the 3/32" screws and nuts. Follow the wiring diagram closely, making

sure their position is correct. Should there be any excess length of screw beyond the nut, nip it off with your cutting pliers, otherwise it may cause a short circuit on one or more of the valve socket terminals. We
(Continued on page 5)

THE AEGIS "RURAL FOUR"

Parts List

- 1—Cabinet, bakelite, inc. grille and baffle.
- 1—Chassis and speaker bracket.
- 1—Dial assembly complete with glass.
- 1—Dial drum, 3" (Aegis).
- 2—"Aegis" I.F. transformers, type "J-10."
- 1—"Aegis" Aerial Coil, type "M-9-L."
- 1—"Aegis" Oscillator Coil, type "M-18-A."
- 1—"A.W.A." 2-gang condenser.
- 1—"Rola" speaker complete with 8000-ohm transformer, type 6H.
- 1—1R5 valve.
- 1—1T4 "
- 1—1S5 "
- 1—3S4 "
- 4—Button valve sockets.
- 2—M.E.C. trimmers.
- 1—Red terminal.
- 1—Black terminal.
- 1—Large "A" battery, 1.4 volts.
- 2—Large "B" batteries, 45 volts.
- 2—Knobs (Aegis).
- 1—3/8" Rubber gromet.
- 30ft. 5-wire battery cable.
- 5ft. Hook-up wire.

- 1ft. 20G tinned copper wire.
- 3in. Resistor strip, 3/4" (Aegis).

SCREWS

- 8—1/4" x 3/32" R.H.
- 3—1/4" x 1/8" R.H.
- 3—3/8" x 1/8" R.H.
- 4—3/8" x 1/8" C.H.
- 2—3/8" x 5/32" R.H.
- 2—3/8" x 5/32" R.H.
- 1—1" x 1/8" R.H.
- 8—3/32" Hex. Nuts.
- 3—1/8" Hex. Nuts.
- 9—5/32" Hex. Nuts.
- 1—3/8" Shake Proof Washer.
- 2—Bolts, orn. head, 5/32".

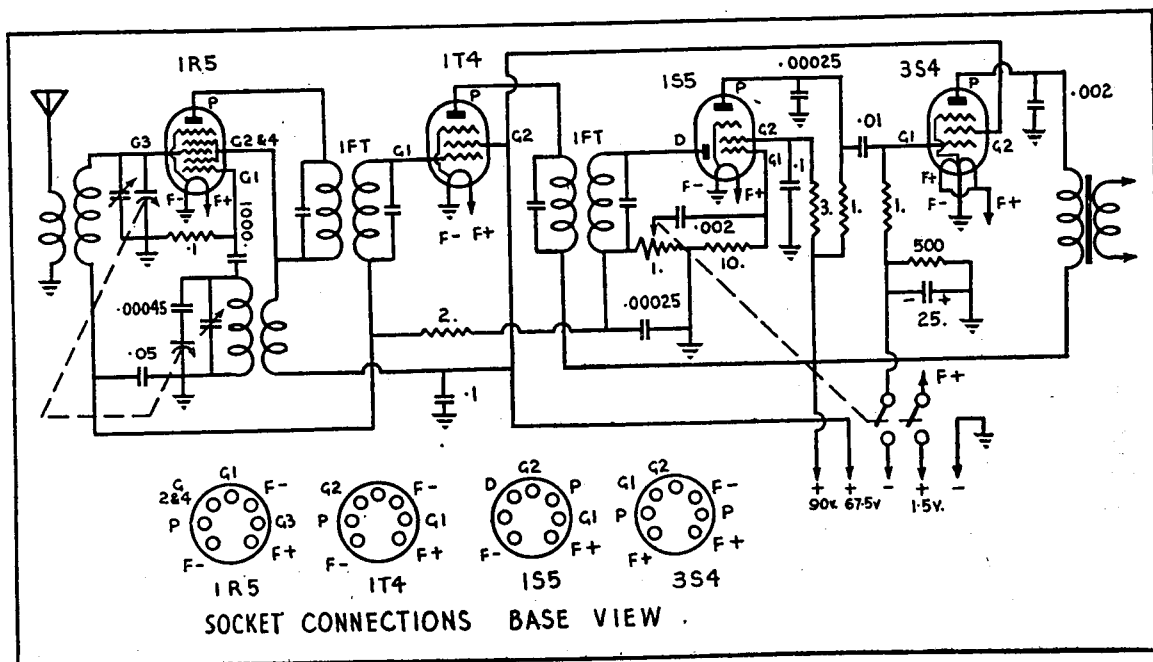
CONDENSERS

- 1—100 MMF. Mica.
- 2—250 MMF. Mica.
- 1—450 MMF. Mica.
- 2—.002 MFD. Paper.
- 1—.01 MFD. Paper.
- 1—.05 MFD. Paper.
- 2—.01 MFD. Paper.
- 1—25 MFD. - 40V. E'lytc.

CARBON RESISTORS

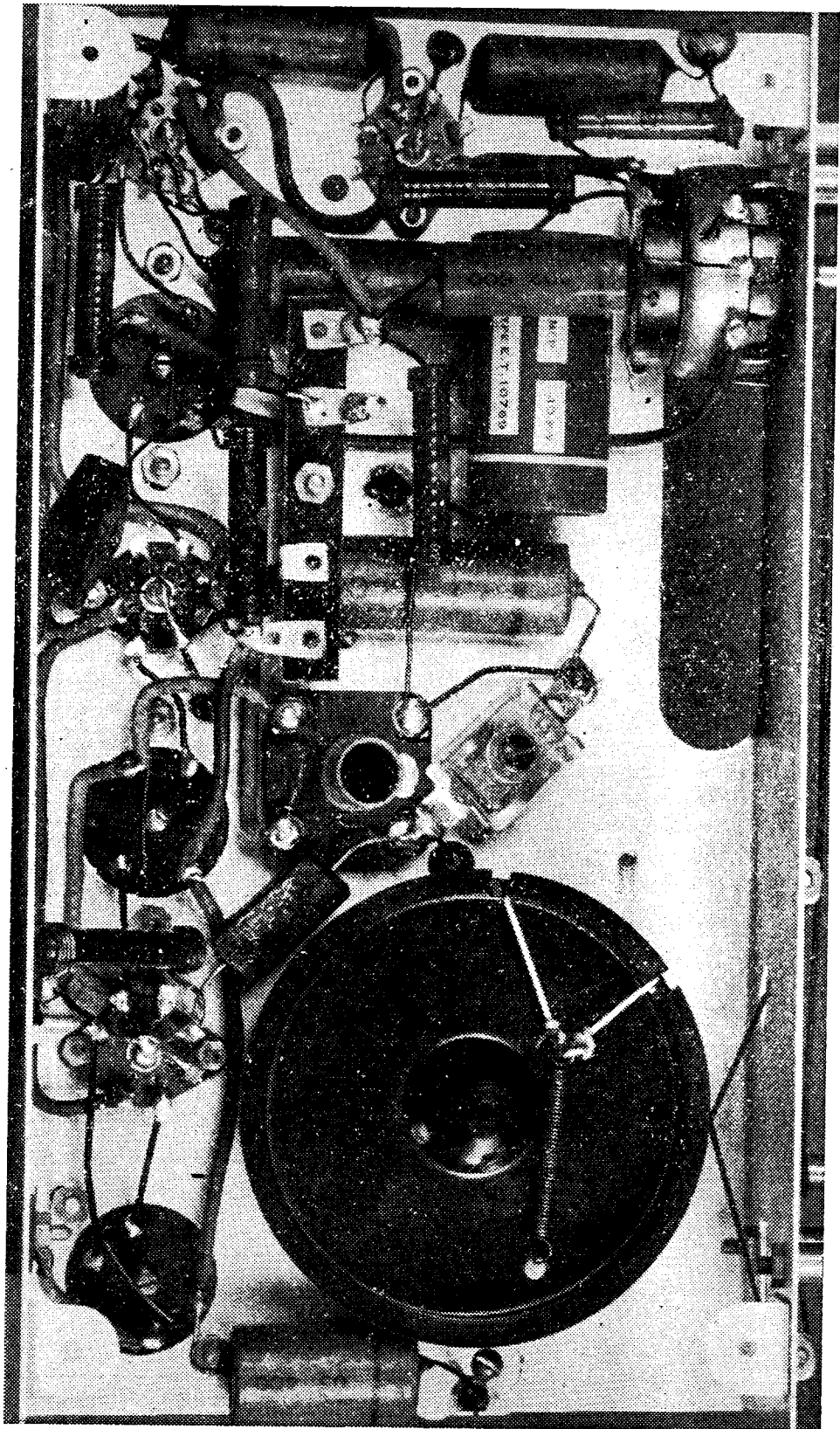
- | VALUE | (Body) | (End) | (Dot) |
|----------------------|--------|-------|--------|
| 1—500 ohm 1 Watt | Green | Black | Brown |
| 1—.1 Meg. ohm 1 Watt | Brown | Black | Yellow |
| 2—.1 Meg. ohm " | Brown | Black | Green |
| 1—2 Meg. ohm " | Red | Black | Green |
| 1—3 Meg. ohm " | Orange | Black | Green |
| 1—10 Meg. ohm " | Brown | Black | Blue |

1 — 1 Meg. ohm Volume Control with D.P.S.T. Switch W.S.T.



The schematic circuit, showing how closely it follows the "Voyager", highly successful portable described a few months ago.

PHOTOGRAPH OF THE WIRING OF THE ORIGINAL SET



Almost full-size, this photograph of the wiring of the original receiver should be followed carefully and used as a guide for the placing of the components and the lay-out of the wiring.

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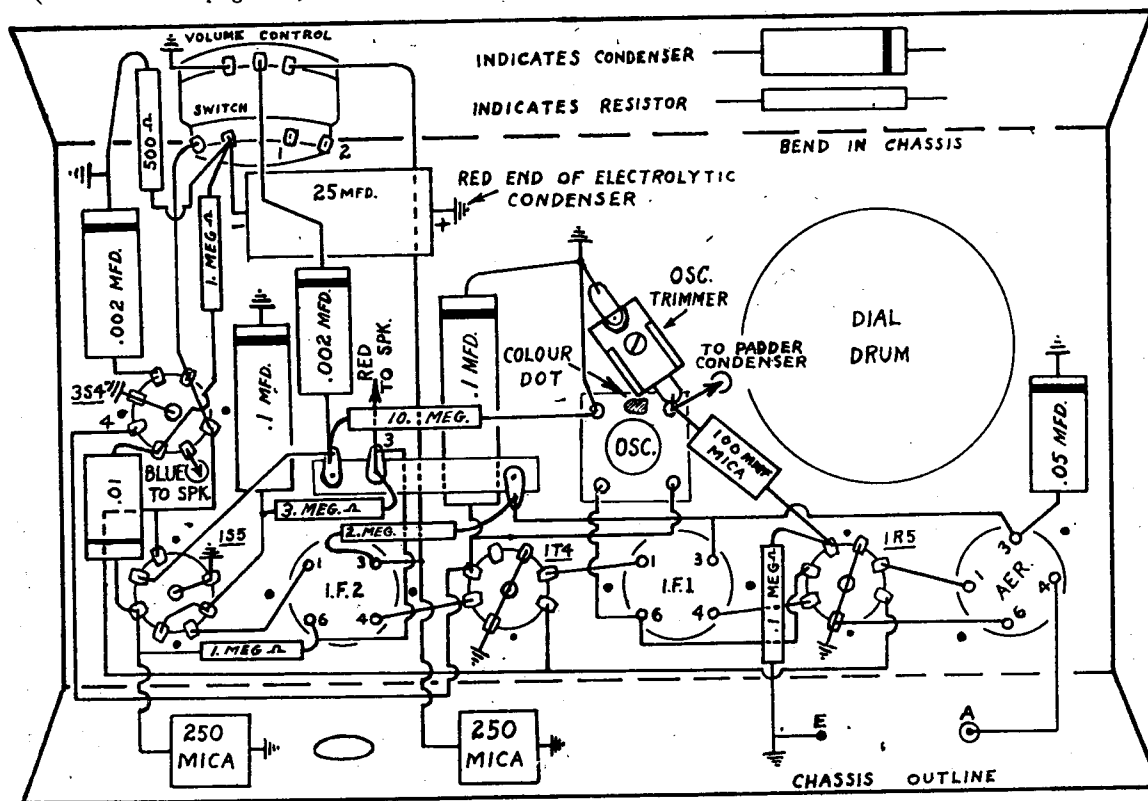
Saving you lots of time and worry the Aegis kits are a sure way to successful radio set building. Every kit contains full instructions and is complete in every detail. Described in the May, 1946, issue was the "Metropolis 4," an all-electric mantel model in bakelite mantel model cabinet similar to the one used for the Rural 4 in this issue. This little set still stands as a thoroughly reliable kit with excellent all-round performance and a splendid proposition in every way.

Detailed in the June, 1947, issue was the "Voyager," a self-contained battery-operated portable of compact dimensions, yet fitted with full-size components and using batteries large enough to ensure long periods of service.

Both of the above sets are available in complete kit-set form, with cabinet and every item securely boxed and sealed.

The Aegis Manufacturing Company also offers the "Connoisseur" range of foundation kits, consisting of steel chassis, coils, intermediate transformers, gang condenser and dial. These are available for a five-valve model, described in the September, 1946, issue and six and seven-valve models described in the February, 1947, issue. All are for a.c. operation.

Copies of the above back numbers of Australian Radio World are available at 1/- each, post free, by writing to Box 13, Mornington, Victoria.



Use this picture diagram of the wiring in conjunction with the photograph opposite and you can't go wrong.

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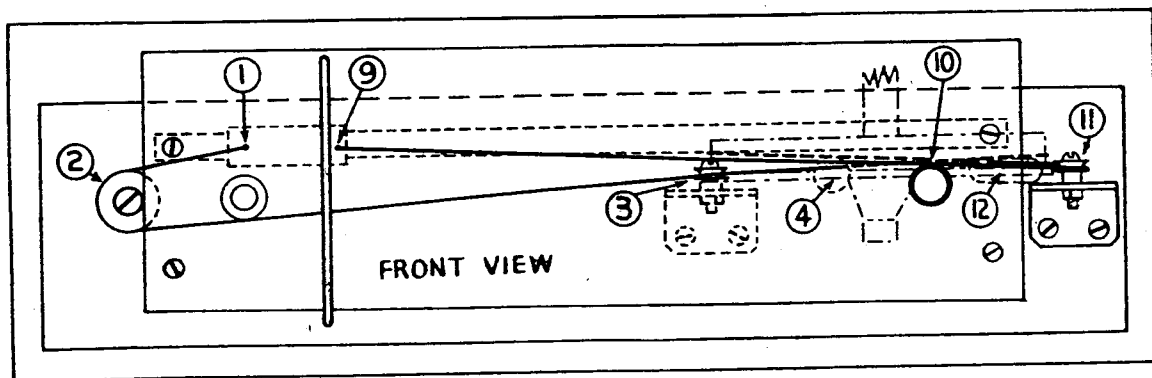
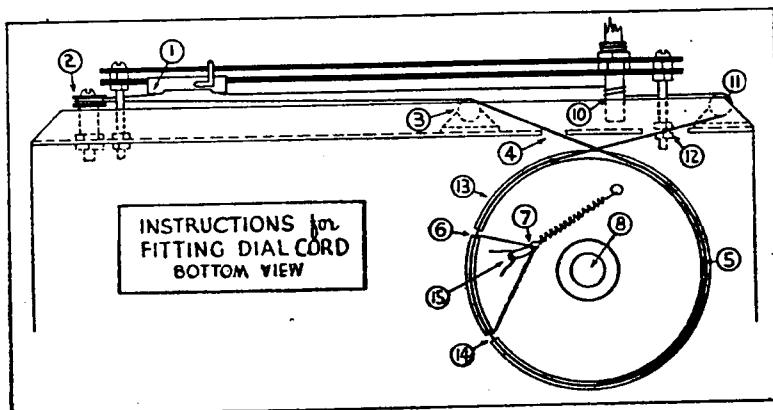
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You will find that the holes for these screws are tapped in the chassis and nuts are unnecessary. The volume control mounts next and a 3/8" shake proof washer is placed over the threaded portion of the shaft first, before inserting it through the hole in the chassis and tightening the nut. With a 1/4" x 1/8" screw mount the aerial trimmer as shown on top of the tuning condenser. Next, slip the dial drum on the condenser shaft beneath the chassis, and follow up by mounting the aerial and earth terminals. Make certain the aerial terminal screw does not touch the chassis. The speaker and baffle board are left off until the radio is completely wired.

INSTRUCTIONS FOR FITTING THE DIAL CORD

Start with the pointer carriage and thread the dial cord through Hole 1, and out through Hole 9,

so that 24 inches of cord is left free from both Holes. With the gang condenser at maximum capacity, adjust the dial drum so that the cord slots are in the position shown. Pass the cord around pulley 2, then pulley 3, through the hole in the chassis 4, around the drum 5, through the slot 6, through the tension spring 7, and without tying any knots on the spring, attach the cord to a screw in the centre of drum 8, temporarily. Taking the rest of the cord, attached to the pointer carriage 9, put two turns around the tuning spindle 10, making sure to start from the front and top of the spindle. Then pass the cord around pulley 11, through the hole in the chassis 12, around the drum 13, through the slot 14, and pass through the tension spring 7, from the opposite side to the first cord. Free the first cord and holding one cord in each hand, tie a single overhand knot, as though tying a bootlace. Then by pulling with both cords,



GOOD AERIAL DESIRABLE

The use of an efficient aerial and a good earth connection is highly desirable with battery-operated receivers of all types. For an aerial use one at least fifty feet long, as high as possible, well clear of roofs, spouting and downpipes, and with a direct lead-in to the set. For an earth connection clamp to a water pipe which goes underground, or to a piece of piping driven at least three feet into the ground in a damp spot outside the house.

the tension can be increased until it is satisfactory, and the knot pulled tight at the same time. This knot will hold sufficiently to check the operation of the tuning mechanism and when it proves satisfactory a couple of extra knots can be tied and the surplus cut off.

SETTING THE DIAL

After attaching the dial glass loosen the grub-screws in the dial drum and with the gang condenser at maximum, move the drum until the pointer coincides with the end of the dial scale—not the 550 KC mark. Tighten the grub-screws, making sure that the drum is in line with the pulleys. Check the cord from pulley 3, to see that it is higher than the cord from pulley 11, looking at the chassis right-

The fitting of the dial cord may be a little tricky until you follow out these diagrams.

way up. If necessary, pack pulley 3, up slightly so that the cords do not rub together.

A drop of thin oil on the pulleys, slide and tuning spindle will improve the operation of the tuning mechanism, but make sure that no oil gets on the tuning spindle where the cord runs around it.

CIRCUIT AND WIRING

The circuit is essentially the same as the "Voyager," the differences being the use of a standard aerial coil in place of the loop antenna and the use of the tap on the "B" batteries to supply the 67.5 volts required for the screens instead of using a dropping resistor. This enables the 8 MFD. electrolytic condensers to be dispensed with as the impedance of the large "B" batteries is very low at audio frequencies; the only electrolytic that is required being a 25 MFD. across the back-bias resistor.

FOLLOW DIAGRAMS

The wiring of this receiver is so simple that there is little that can be said to facilitate it. Follow the wiring diagrams closely and place the condensers and resistors exactly as shown. A resistor colour code is given in the parts list. Number 20G tinned copper wire is used for earthing the valve socket terminals and for short, direct connections as between coils and grid or plate terminals on sockets.

IMPORTANT

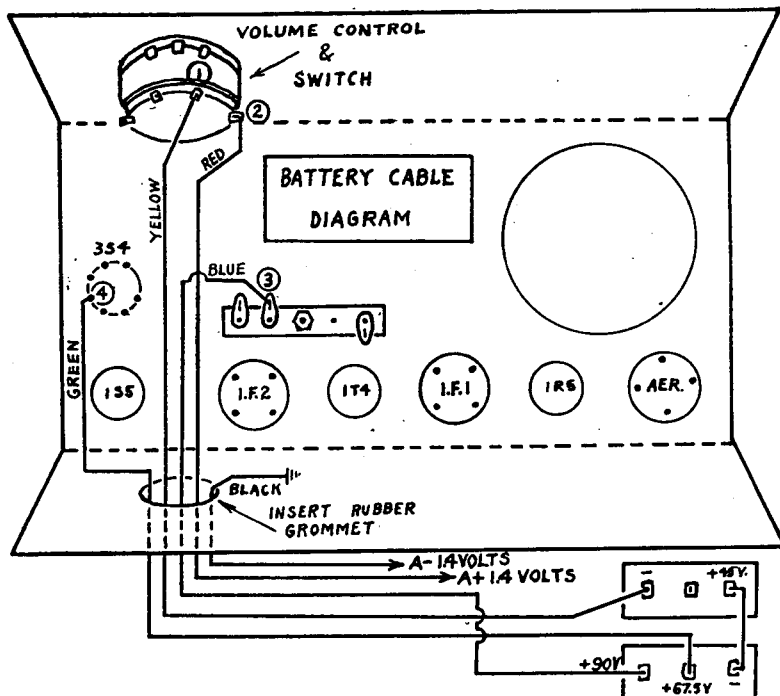
Earthing the centre pins of the sockets is very important as they are provided as shields to prevent feed-back between valve pins.

BATTERY CABLE

Having completed all the main wiring, make up the battery cable

BEWARE

Even the best of valves are speedily ruined if the filaments come in contact with high tension voltage from the "B" battery. Take the greatest care to make sure you do not suffer a sad accident of this kind!



Incorrect connections to the battery can ruin the valves, so be careful to check connections with this diagram BEFORE you insert the valves.

from the six-foot lengths of different coloured rubber-covered wire. Twist or braid them together as you choose, then connect the various colours to points exactly as shown in the Battery Cable Diagram.

Now you are ready to mount and wire in the speaker and baffle board, using the four 5/32in. screws and nuts that are left; the two short screws mount the speaker and the two long ones mount the baffle.

FIRST TEST

Having finished the assembling and wiring it is desirable to check this, as battery valves are susceptible to being blown if the wrong volts get around. If you have a voltmeter, leave the valves out and connect in the batteries. Check the volts on the various points to see if they are correct. If you do not have a voltmeter, plug the valves in and connect the "A" battery only. Switch on and see if the filaments light up. After establishing that everything is in order the rest can be connected and the alignment carried out.

ALIGNMENT

A test oscillator, such as the one described in last month's issue is a great help to ensure perfect alignment, but don't be discouraged if you do not have an oscillator on hand. Excellent results can be obtained after alignment on the broadcasting stations if you do the job carefully.

With a test oscillator, align the I.F.T.'s to 455 kC. or if you do not have an oscillator, align the I.F.T.'s for maximum output on a station.

Then with the oscillator on 600 kC. or a station as near as possible to 600 kC., adjust the receiver oscillator iron core to bring it to its correct position on the dial.

Next, with a signal at 1400 kC. or a station as near as possible to it, adjust the oscillator trimmer to bring it to its correct position on the dial.

Repeat these two adjustments until both are correct, always making the final adjustment with the trimmer.

In aligning the aerial coil a test oscillator can be used with a

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(Continued)

dummy antenna, but we would suggest that final alignment be made using the aerial that will be used on the receiver, using weak stations near 600 kC. and 1400 kC. or a weak radiated signal from the test oscillator.

The aerial core is adjusted for maximum at 600 kC. and the aerial trimmer is adjusted at 1400 kC. These two adjustments are repeated until both are correct, making the last adjustment with the trimmer.

BATTERY LIFE

The receiver is now ready for operation and we feel that the performance that will be obtained from it will be exceptional. Reception of all States of Australia from Melbourne is an accomplished fact and battery drain (12-14 Milliampères) is such that at the rate of four hours' use per day, more than twelve months' service can be expected from the batteries

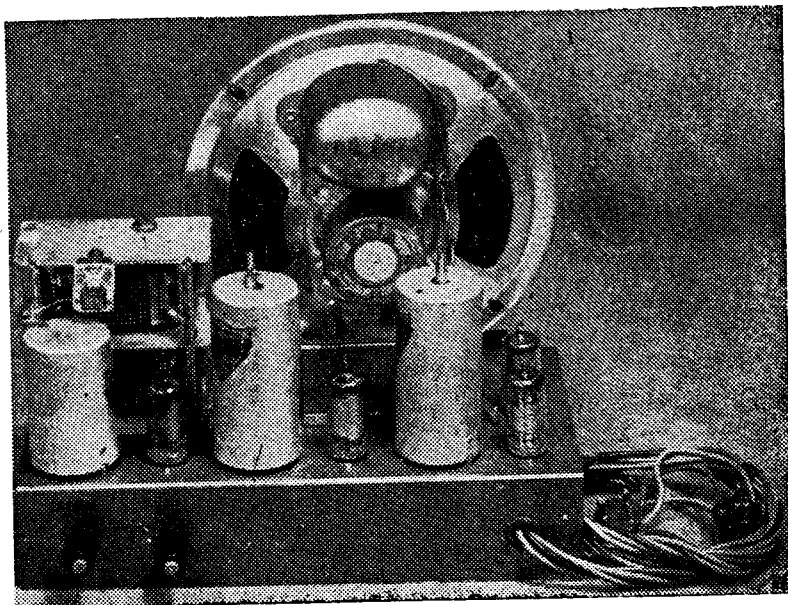
without the necessity of charging worries.

We feel confident that you will be proud of your "Rural Four," having built it yourself, and with a good aerial and earth, shall en-

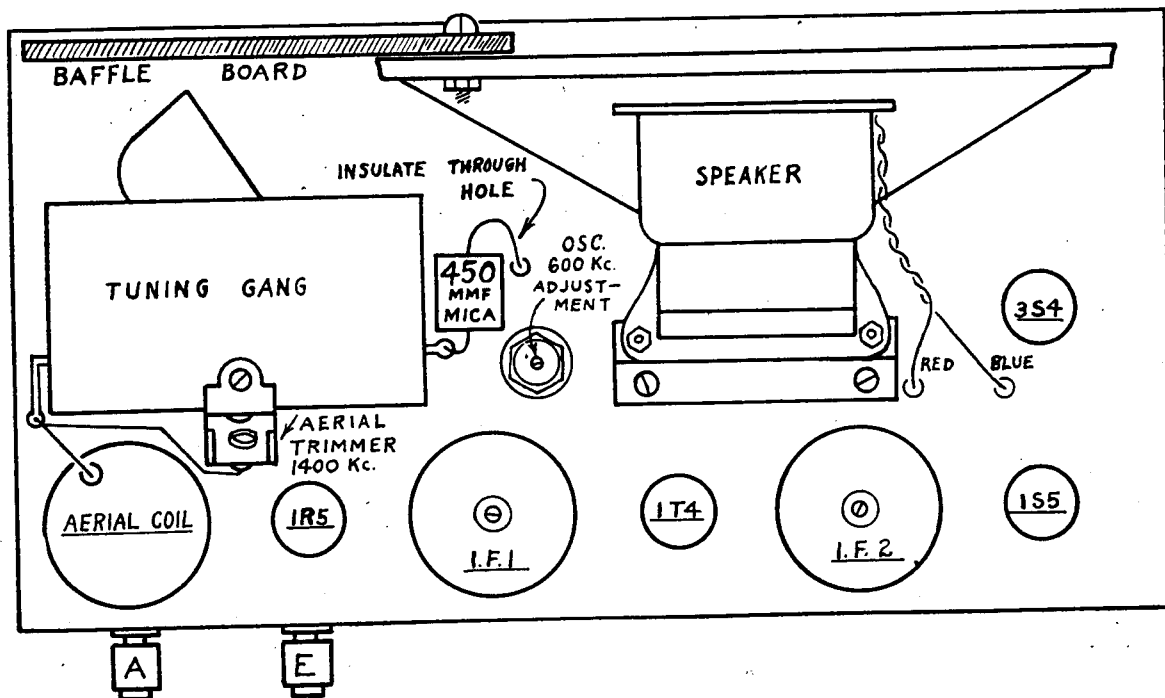
joy many happy hours of entertainment at a minimum of cost.

CONCLUSION

We welcome, at all times, your inquiries and constructive criticism.



Rear view of chassis. Note the small size of the highly-efficient miniature valves.



Plan of lay-out, showing positions of components and location of aerial trimmer adjustment.