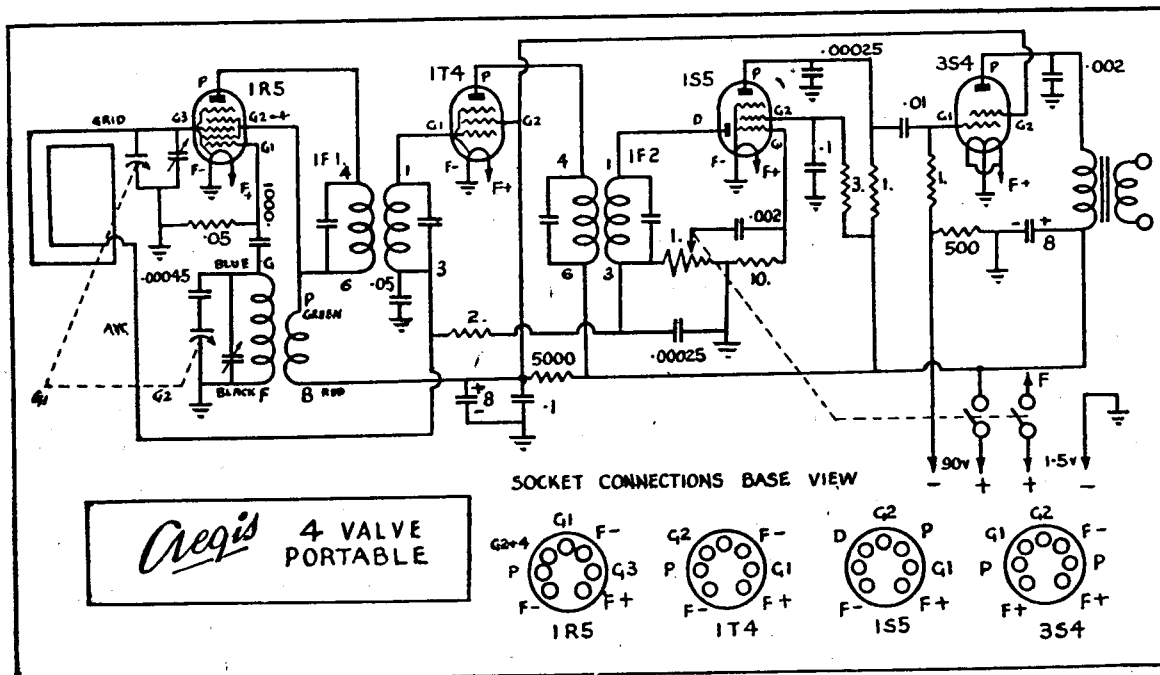


The "Voyager"

THE design of the "Rural 4" is based on the circuit of the "Voyager" self-contained battery-operated portable receiver which was described in the June issue of Australasian Radio World. Not to be confused with the baby "personal" portables, the "Voyager" is not built to the smallest possible dimensions and uses many full-size standard components and batteries heavy enough to ensure long periods of use without replacement. A loop aerial is used, so that no external aerial or earth connections are required. The set is always ready for use by simply turning the volume control which is connected with the switch.

Copies of the June 1947 issue in which this set was described, are available at 1/- post free by writing to Australasian Radio World, Box 13, Mornington, Victoria.

The Voyager Portable. Below, the circuit diagram of the Voyager, which is in many respects similar to the Rural 4.



The

“VOYAGER”

Battery Operated Portable

PRODUCTION of certain radio components is still way behind orders. Quite a few items are still scarce on the dealers' shelves. In the good old days it was possible to take a suitable circuit, pick out a handful of spare parts from your "junk" box, buy the rest of the necessary components from the nearest radio dealer, and away you went with the building up of the latest set.

Today the conditions are very

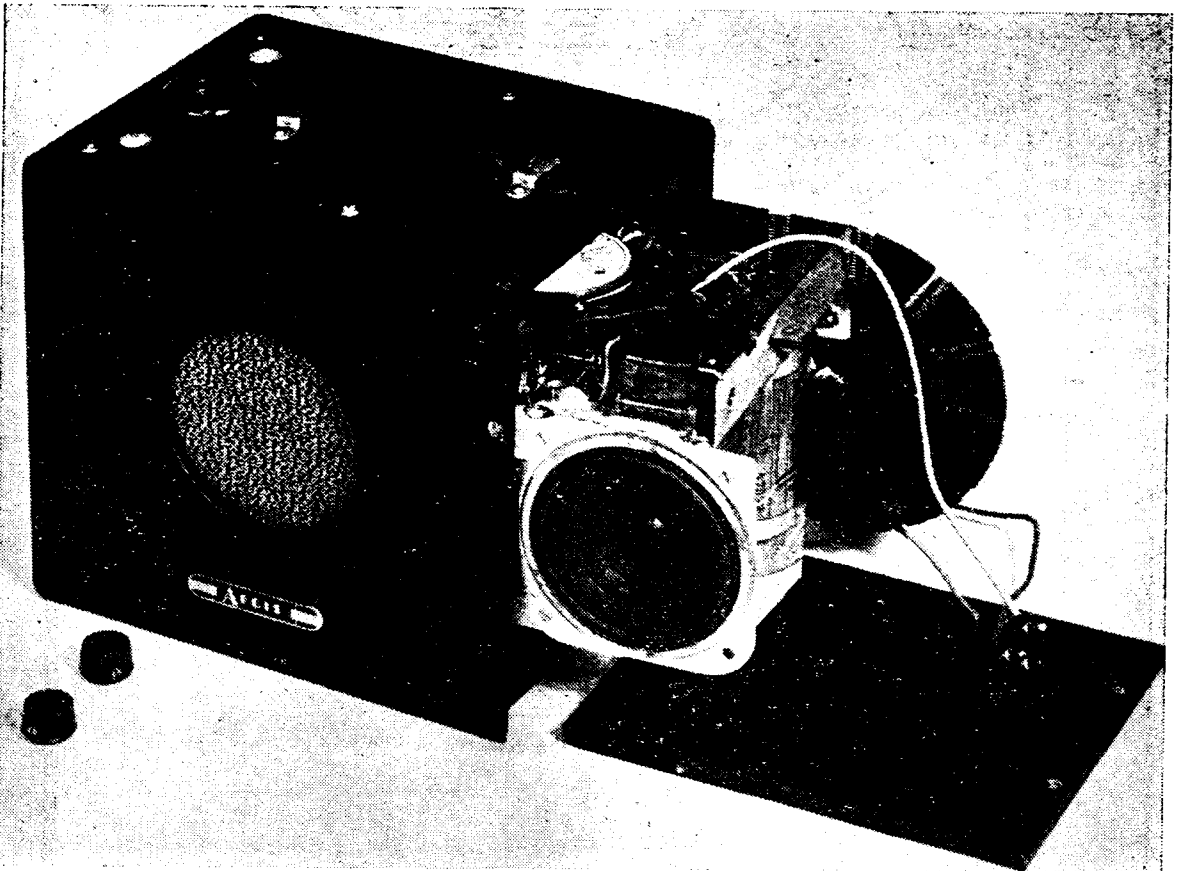
Introduction by
A. G. Hull

Instructions by
**The Engineering Staff
Aegis Manufacturing Co.**

different. We run articles on how to build amplifiers and sets and then sit back to take the abuse of

those who start to build something and then find that they can't obtain some vital part or other. Without this part they cannot complete the job, and so they fill in time while waiting for it by writing and telling us just what they think of us for mentioning something they can't buy. Of course there are those who have determined natures. They go into the dealer's shop and come out with a speaker in one hand and a

(Continued on next page)



A photograph of the completed receiver, showing the inverted chassis.

"VOYAGER"

(Continued)

couple of electrolytic condensers in their pocket. But we don't know how they do it. Fortunately, however, there is at least one firm which is building up a wonderful business and a wealth of goodwill by offering complete kits for set builders. This is the Aegis Company, and it battles along on behalf of the radio enthusiast. By ordering in huge quantities, and swinging plenty of weight behind it, Aegis manages to obtain all the necessary parts for the building of a set.

In the May issue of last year we described the "Metropolis" mantel model, which was offered in kit form by the Aegis Company and it was a terrific success. For a time the orders overwhelmed the supply of speakers and other items, but the Aegis Company put up a great fight and eventually caught up with orders. At any rate, even if they haven't quite caught up with orders yet, they are still turning out hundreds of kits. The dealers who handle them report to us that they are a wonderful success in every way. We have never heard of a case of anyone building a "Metro-

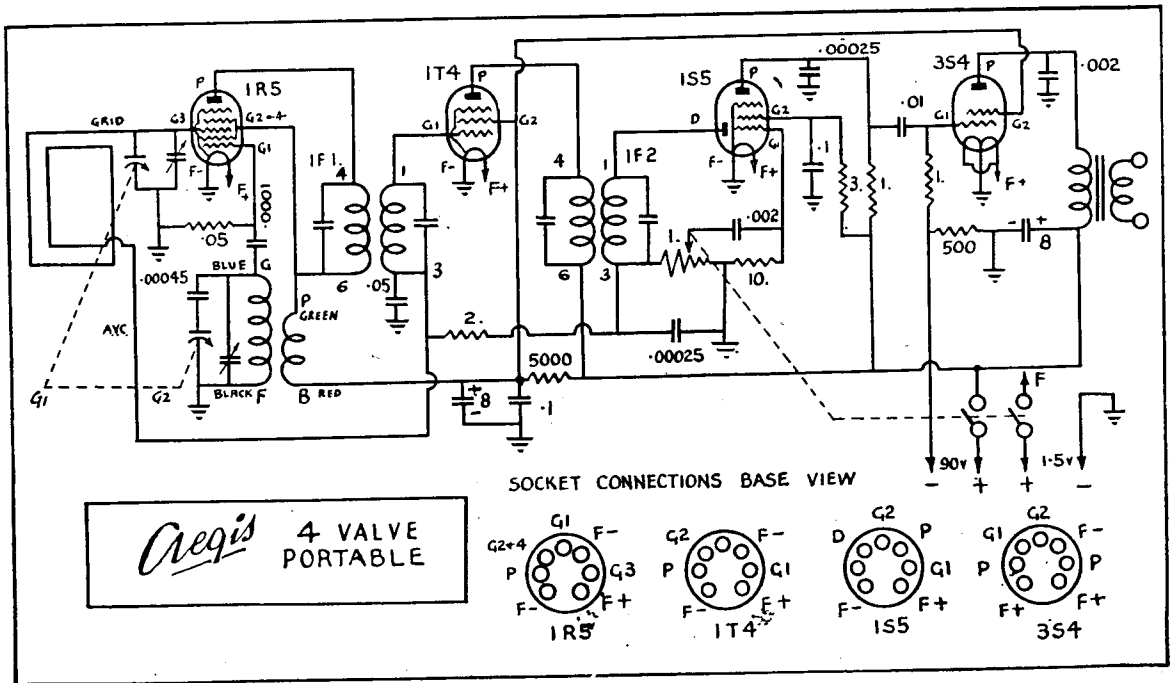
polis" and then having any great trouble with it. In most cases only the simplest adjustments are necessary to ensure performance equal to anything obtained from similar types of sets which have been built and adjusted in factories.

All of which is simply to explain why we again take great pleasure in again co-operating with the Aegis Company by publishing the instructions for the assembly of their latest release, a complete kit set for one of the nicest and most effective little baby portable receivers which we have handled. It is not quite so small as could be made if you went to sufficient trouble to get special minute components, but it is quite a handy little size, yet uses mostly standard components and has plenty of roominess inside to make for easy assembly, adjustment and service. In every way it is a splendid little proposition. The only possible drawback is that you cannot use any of the components out of your junk box, as the kit is only supplied as a complete unit, boxed and sealed and containing everything you need for the whole job.

(Continued on page 24)

PARTS LIST THE "AEGIS VOYAGER"

- 1—Carrying case inc. handle, escutcheon and speaker grille.
- 1—Chassis inc. speaker bracket, tuning bracket, coil bracket.
- 1—Rola 3C speaker, inc. output transformer 8000 ohms.
- 1—2-gang condenser.
- 2—"Aegis" J9 and 10 I.F. transformers.
- 4—Button valve sockets.
- 1—"Aegis" M18 oscillator coil.
- 1—"Aegis" M17 loop antenna.
- 1—Tuning spindle assembly.
- 1—Dial drum and scale.
- 12" Dial cord and dial spring.
- 2—Small knobs.
- 2—3-pin battery plugs.
- 2—482 batteries (Eveready).
- 1—741 battery (Eveready).
- 1—1R5 valve (Radiotron or Philips).
- 1—1T4 valve (Radiotron or Philips).
- 1—1S5 valve (Radiotron or Philips).
- 1—3S4 valve (Radiotron or Philips).
- 3/6" Red hook-up wire.
- 2' Yellow hook-up wire.
- 2' White hook-up wire.
- 2' Black hook-up wire.
- 1' 20 G tinned copper wire.
- 1' 1.5 mm spaghetti sleeving.
- 1—.0001 mFD. mica condenser.
- 2—.00025 " " " "
- 1—.00045 " " " "
- 2—.002 " Paper " "
- 1—.01 " " " "
- 1—.05 " " " "
- 2—.1 " " " "
- 2—.8 " Electro " "
- or 1—Dual 4 mFD or Dual 8 mFD midget electro. when available.
- 1—500 ohm Carbon Resistor
- 1—5000 " " " "
- 2—1. " " " "
- 1—2. " " " "
- 1—3. " " " "
- 1—10 " " " "
- 1—1. " potentiometer W/D. P.S.T.
- switch.
- 8—1" x 3/32" R.H. screws.
- 8—1" x 1/8" R.H. " "
- 3—1" x 1/8" C.S. " "
- 6—1" x 1/8" R.H. " "
- 2—1" x 1/8" R.H. " "
- 8—3/32" hex. nuts.
- 12—1/8" " " "
- 7—5/32" " " "
- 4—4" screw cup washers.



"VOYAGER"

(Continued)

ASSEMBLY

The general layout of the chassis and the arrangement of the batteries is so different from normal set practice that it may be advisable for us to outline the set-up.

In order to have a nice balance for the carrying of the set, the weighty (comparatively) batteries are mounted in the bottom of the case. The chassis bolts on to the underside of the top of the case, in an inverted position, the valves being upside down. The control

knobs come out through the top of the case.

Considering the chassis as from the normal angle, you might put it that the gang mounts on top of the base, on end, with the spindle going through to the underside, coming out and having the dial drum fitted among the wiring and sundry components. Likewise the volume control mounts on the top of the base with the spindle going through to the wiring side. Just above the potentiometer body is the oscillator coil, mounting on a special bracket from the frame of the condenser. The loop aerial coil goes at the back of the base and the

speaker in the front. The speaker transformer mounts through the base, just under the speaker. Three condensers are mounted above the base, the two 8 mfd. electrolytics and the .1 mfd. tubular. There are also a few minor components mounted directly on the oscillator coil base, as shown in our special wiring diagram.

All this may sound a bit complicated, but if you study the kit carefully and in conjunction with the photographs and diagrams you will soon fathom it all. Then you will appreciate that it is both efficient and clever.

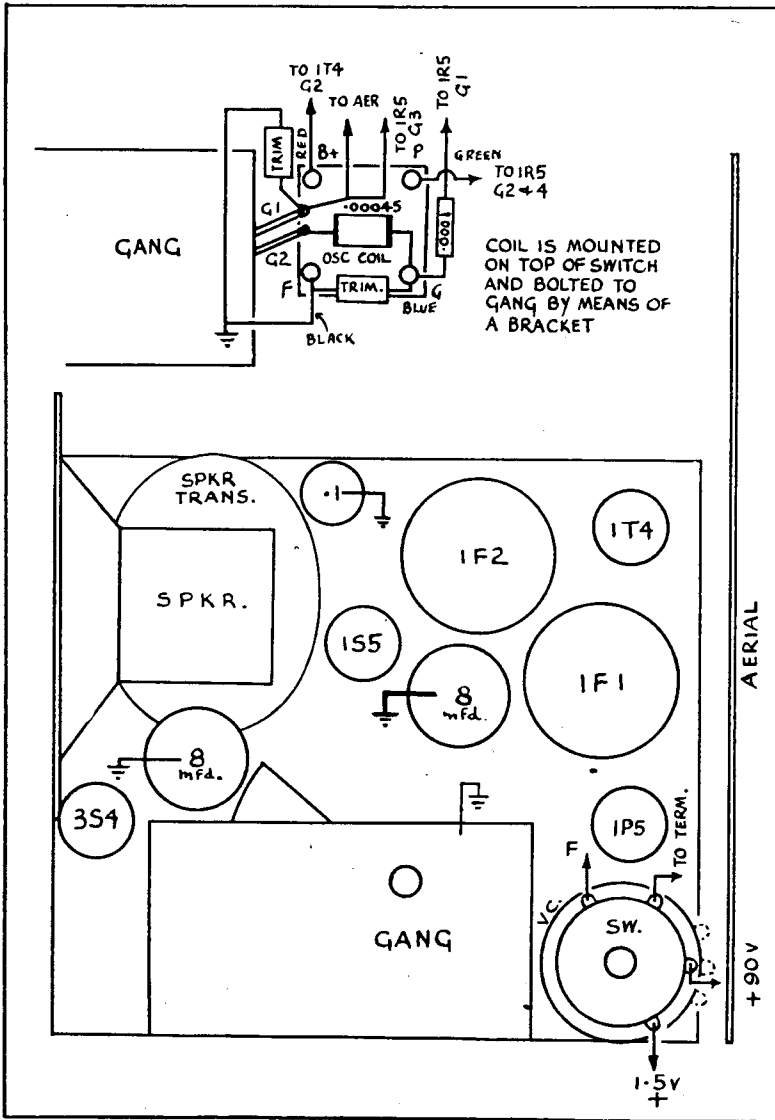
THE CIRCUIT

In designing this receiver we have, after considerable deliberation, taken certain steps which to some may appear retrograde. We feel, however, that in the light of present conditions we can substantiate our reasons for adopting the present design.

The receiver is a portable in the manner of portables as we have known them, with the exception that it is considerably smaller, and while it does not approach the compactness of the so-called "personal portable" it does offer a receiver with a considerable improvement in size as compared with the older portables.

NEW FEATURES

Three remarkable new developments have been incorporated in this portable. First, the new "Button-Series" 1.4 volt valves have been used. These excellent tubes not only are much smaller than the GT series, but are a definite improvement in performance. Second, the "B" batteries used are the new "Layer-Built" type which, like the valves, are smaller and give better service than the older type. Third, is the Rola 3-inch speaker. The rest of the components used in the receiver are quite standard. This point at the outset may appear strange and as we said previously, retrograde, but with the existing conditions as regard to supplies this course was adopted in the interests of maintaining an adequate stock. Suffice it to say that the batteries used were the deciding factor as regards to size, the receiver being



designed to fit the space left after suitably arranging the batteries. Also in using the full size portable batteries for both "A" and "B" supplies, the battery life will be in excess of 250 hours, which, at the rate of 4 hours use per day will give two months' service, or where the receiver is used for weekends only, twelve months service will be possible, with some to spare. This we feel is one of the points in favour of using these batteries in preference to the smaller 67.5 volt "Hearing Aid" battery which only has a quarter of the life.

PERFORMANCE

The receiver is a 4 valve superhet using a loop antenna for pick-up purposes, and has been designed to give the maximum performance consistent with economical battery consumption. The mixer is a 1R5 using combined screen and plate oscillator feedback for maximum oscillator efficiency. The grid circuit is fed with a resonant loop antenna which has been designed with maximum area obtainable in the space available. This has given an area of 30 sq. ins., which is considerably larger than anything we have previously handled. This in no small way helps to give the results we have obtained. The 1R5 is coupled to the I.F. amplifier which is a 1T4 through an Aegis J10 I.F. transformer, which is the High-Gain type. The 1T4 is in turn coupled to the second detector, a 1S5 through another J10 transformer. The 1S5 is a diode-pentode tube enabling detection, A.V.C. and audio amplification. This pentode gives greater gain than the older GT type which was only a triode. The output tube is a 3S4 pentode which has been designed with a double filament, enabling operation on either 1.4 or 2.8 volts.

In operation the receiver has been checked on numerous occasions in the city and country and the performance has been excellent. Operated at home the reception at night of interstate stations has been no effort, and in the country the number of stations received is nothing short of phenomenal.

ASSEMBLING AND WIRING

The sockets and I.F. transform-



A view showing the chassis layout.

ers are mounted in the usual way using 3/32-in. screws for the sockets. The gang condenser is mounted next using three 5/32-in. nuts as spacers, one on each screw. One of the screws mounting the gang is also used to hold the tuning spindle bracket, using two 5/32-in. nuts on each screw as spacers. The speaker bracket is screwed to the top of the gang and the long solder lug on the section of the gang nearest to the chassis is cut to 1/2-in. long. This is the section used for the oscillator. Mount two 1-in. x 1/8-in. screws in the two output transformer mounting holes, using nuts on either side mount the resistor strip half way up the screw towards the middle of the chassis

and then attach the output transformer in the same way, near the ends of the screws. Screw in the volume control after having cut the spindle to a total length of 1 3/4-in. from the chassis. The earth end of volume control is soldered to the metal cover which is in turn earthed to the chassis while the other two lugs are bent back over the edge of the chassis, making sure that they do not short.

Most of the wiring can now be carried out. Having completed this section of the wiring including all the connections to the volume control and battery switch, the oscillator coil can be mounted to the gang condenser and wired in. Then

(Continued on next page)

"VOYAGER"

(Continued)

the loop antenna is screwed on and wired up and finally the speaker mounted and wired. The length and position of the battery leads are as follows—"A minus" black lead, 5 ins. long, through hole in side of chassis near output transformer; "A plus" white lead, 10½ ins. long, from switch along edge of chassis between chassis and loop antenna; "B minus" yellow lead, 11 ins. long, between the edge of the chassis and loop antenna; "B" plus red lead, 9¼ ins. long, from the switch between the oscillator coil and the loop antenna, and the "B" battery connecting lead, red lead, 9 ins. long. Having completed the wiring, turn the gang condenser to maximum and screw on the dial with the 10 opposite the edge of

the chassis. Tie a loop in each end of the dial cord so that it is 8¾ ins. long, hook one end over the pin on the dial drum, wind two turns around the tuning spindle and with the dial spring attached to the other end of the cord, hook the spring over the pin on the drum.

ALIGNMENT

Having checked the wiring, plug in the tubes and connect the "A" battery. Switch on and check the filaments to see if they are lighting. Having made sure that there are no wiring errors that are likely to write off a set of tubes, the "B" batteries can be connected and the receiver switched on. On establishing that the receiver is working O.K., the I.F.T.'s can be aligned to 455KC in the usual manner. From here on it will be necessary to use a radiated signal from the test os-

cillator. Then the oscillator core is adjusted to bring 600 KC on 9 on the dial and the oscillator trimmer adjusted to bring 1400 KC on 2 on the dial. Before adjusting the aerial circuit the receiver should be set up with the batteries in their operating position as they have some effect on the characteristics of the loop antenna. The aerial trimmer is then adjusted to give maximum output on 1400 KC. The oscillator can now be adjusted to track with the aerial section by feeding in a signal at 600 KC and by a combination of varying the oscillator core and rocking the dial until maximum output is obtained. This is the correct position on the dial for 600 KC, and the oscillator trimmer and core should now be adjusted to bring 1400 KC to its original position and 600 KC to its new position on the dial. These oscillator adjustments should be repeated a couple of times until both are correct. This procedure can be carried out without the use of a test oscillator by making use of two radio stations as near as possible to 1400 KC and 600 KC respectively, using as weak a station as practicable. Do not forget of course that the loop antenna is quite directional and the receiver should be rotated to give maximum pick-up.

FINAL ASSEMBLY

With the completion of the alignment, the receiver can be screwed into the cabinet, the batteries connected, the lid screwed on and the knobs fitted. In attaching the batteries the plug is inserted in the "B" battery on the "hot" side and this is then placed in the cabinet, the other "B" battery is plugged in and fitted in the cabinet and finally the "A" is connected.

This completes the construction of the receiver and it is now ready to put into service. We feel confident that the results that you will obtain from this little receiver will agreeably surprise you.

CONCLUSION

If you require any further information about this fine little set you will find the Aegis Manufacturing Company at your service if you phone, write, or call at 208 Little Lonsdale Street, Melbourne.



Ready for use anywhere, any time!