turns of 26 gauge d.s.c. wire wound on a 2in. former, tapped at the twenty-fifth turn. Bring the ends out so that they will occupy the positions indicated in the lay-out sketch.

When the coils are finished, lay out the components. Do first of all the panel, placing the radio frequency, detector and the regeneration condensers in line, 2½ inches from the top. Space them evenly and allow a space of 4 inches from each end for the r.f. and regeneration condensers, and place the detector condenser at halfway, that is, 7½ inches. The rheostat and switch are just slightly below the level of the three condensers and to the right and left of the detector condenser. They should be 5¾ inches from each end.

Mount all the components on to the panel, and then fasten the panel to the baseboard, either by screws passed through it or by bracketing. The components are then placed in the positions indicated in the lay-out sketch and fastened down.

List of Components for the Ranger Three

2—.00035 variable condensers and dials.
1—.00025 variable condenser with dial.
1—.00025 grid condenser.
1—1mfd. condenser (optional).
Switch.
30 ohms. Rheostat.
Four terminals.
Panel, 15in. x 7in.
Baseboard, 10in. x 15in.
1 r.f. choke.
3. valve sockets.
1—audio transformer.
1—2 megs grid-leak and holder.
2—special coils.
6 wire battery cable.
Coil of glazite wire.

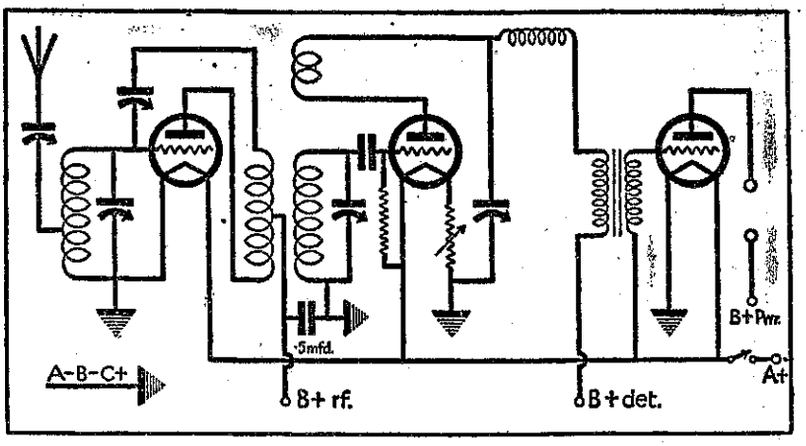
The Wiring.

ON the lay-out diagram the wiring has been shown stiff and angular, in order to make the diagram clear, but when the actual wiring is done, the shortest route should always be taken. Note, too, that the battery leads are brought in by cable, instead of being taken out to the more or less old-fashioned terminal strips. This simplifies the wiring and makes the set a few shillings cheaper.

Do not be concerned if the negative filament wire happens to go to the terminal marked + on the valve socket. Those marked on the valve socket really do not mean anything. You can take the + or the — to either of the two terminals. You will notice that the output valve appears to be connected round the wrong way, that is, the + wire is brought to the one which will most probably be marked —. However, this does not matter one iota.

Some transformers are marked differently from the one shown, and, of course, the wiring of the others into the circuit will necessitate certain alterations, but the connections remain the same.

When the set is finished the reader will naturally think of the valves he will use. These depend to a large extent upon what he happens to have on hand, for, as we said before, this set was designed for the constructor who has components on hand and



wishes to use them. Generally speaking, a general purpose valve can be used in the first stage, followed by a special detector and a high-gain power valve or general purpose valve suitably biased. Don't forget the bias on the last valve: it is really very important. If you wish to select the valves for the set, use the following types in any make and any voltage:—

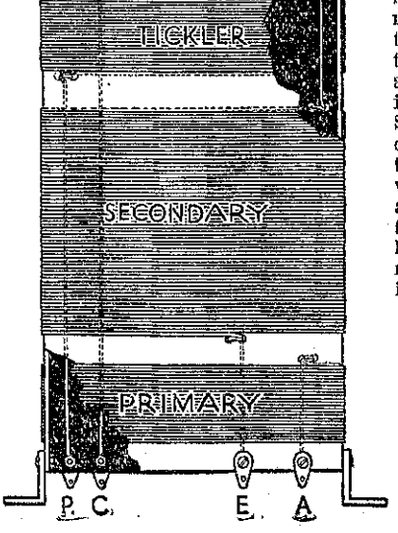
221, first r.f. and detector, and B605 or B609 in the last stage.

If economy of operation is desired, use two 230 valves with a 232 in the last stage. These work from a 2-volt accumulator and are very light on both "A" and "B" batteries.

The batteries depend upon the valves used and the constructor's pocket. It is recommended that two-volt valves be used if an accumulator is not available. By so doing two number six cells can be used in series, but as these will have a voltage more than is required for the filament, a resistance will be necessary when the valves are new. This should be about 10 ohms variable and should be kept fully in the circuit to commence with.

The number of B batteries will depend upon the amount of cash that the constructor has to spend. It is recommended that two of the 60-volt type be used. Use the medium-sized batteries, for, with a power valve in the last stage, the drain will be 10 to 12 amps. and a small battery will soon run down. The set can be operated from one 60-volts battery.

The G.B. voltage depends upon the valve in the last stage and the B voltage on it.



From tables, the constructor can ascertain exactly what voltage to make this battery.

Outside the set A—, B—, and C+ are connected together. B+ power is the highest B+ available, B+ r.f. is the next highest tapping, and for that matter may go on to the highest tapping, as well as the output valve. If this procedure is adopted, it may be necessary to connect a 1mfd by-pass condenser between the tap on the primary coil and earth. This condenser is shown in the theoretical diagram, but not in the lay-out diagram. If the set will not neutralise easily, you must wire this condenser in your set.

Coil Specifications

.00035 Tuning Condensers.
.00025 Regeneration Condenser.
2in. Former.
R.F. Coil.—Secondary, 78 turns, tapped 26th turn.
Regeneration Coil.—Secondary 78 turns; primary, 25 turns; tapped at 12½ turns; tickler, 35 turns.
Wire, secondaries, 26 d.s.c.; tickler and primary 28—30 d.s.c.
When .0005 tuning condensers are used, reduce the number of turns on the secondary coil by 10 turns.

Neutralising.

SELECT a station on about 1YA's frequency and tune to this until its strongest signal is obtained. Advance the reaction condenser until the set breaks into a whistle. Immediately move the neutralising condenser until the whistle weakens or dies away, then advance the reaction condenser again, at the same time retuning until it again breaks into a whistle. Still further adjust the neutralising condenser until further adjustment of this condenser will not prevent the whistling. The set is now neutralised, and this to a large extent will prevent the set from radiating. However, handle the set carefully, because the neutralising condensers will not stabilise the set on all frequencies.

Advisory Committee Meets

THE Rev. S. J. Cooper presided over a meeting of the 4YA Children's Sessions Advisory Committee held on Thursday, September 3, when there were also present Misses M. Telfer (Presbyterian Social Service), Hindle (Y.W.C.A.), V. Barron (Girl Guides' Association), Pastor W. D. More (children's organiser), Messrs. W. Wallace (Y.M.C.A.), A. F. O'Donoghue.

Apologies for absence were received from Miss McIntyre, Mr. Williamson, and Brother O'Sullivan.

The reports of official visits by members of the committee were received. Mr. Wallace said that the night he attended Big Brother Bill described a visit to the "Evening Star." It was not only interesting but very exciting.

The organiser reported on a number of similar attractions that he was arranging—visits to a match factory, the Waipori Falls, Hillside Workshops, and to a ship in port. These talks are limited to fifteen minutes.

In regard to birthday greetings, the organiser said he had sent out 93 the previous Saturday.

The organiser reported that he was putting on a concert for Lone Guides. Lone Guides are country guides who cannot join up with any company. Post Guides are crippled or disabled Guides. Miss Barron said these Guides were linking up with headquarters by mail, but the radio was a direct way of reaching them.