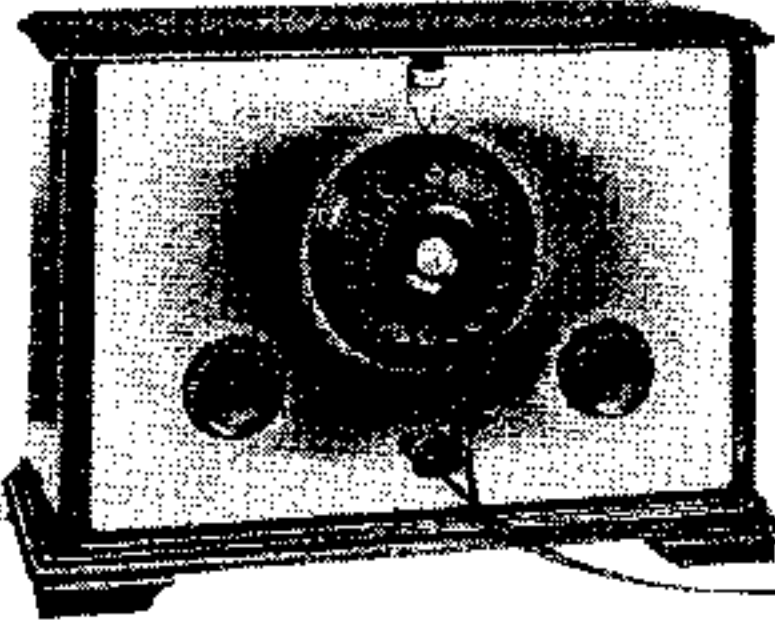


Broadcast Receivers



General Radio



Two-valve Set



A Complete Loud-speaker Receiving Installation for £12.

THE purchaser of the G.R.C.15 receiver does not have to enter into technicalities regarding the choice of valves, batteries, and other accessories, as is often the case with other receivers, for a *complete* set of accessories is sent out with each set. However interesting it may be to the wireless enthusiast to weigh the pros and cons of two- and six-volt valves, of H.T. and grid-bias valves, there must always be a very large section of the public for whom these things have no appeal, and who merely wish to have "the wireless" installed in their homes with the least possible expense and trouble.

Accessories and Equipment.

The General Radio Co., Ltd., have been quick to appreciate the commercial possibilities of a complete receiving equipment at a reasonable figure that can be installed by the handyman of average ability. Assuming that conditions are favourable for the erection of a suitable aerial, there is no reason why broadcasting should not be received within a few hours of taking delivery of this set. The instructions for erection and operation are both lucid and complete, and every possible requirement has been anticipated. In addition to the usual valves, batteries and loud-speaker, there are a pair of headphones complete with jack for tuning purposes and long-distance work, and a complete aerial and earth equipment, which includes wire and insulators, screws for fixing the aerial and earth terminal boards, and insulated staples for laying the earth wire.

The price of the complete outfit is £12, an extremely reasonable figure made possible, no doubt, by simplified construction in the receiver itself. The photograph of the interior of the receiver clearly shows the simplicity of the layout. The front panel and baseboard is cut in one piece from sheet metal, bent at right angles, and hinged in the cabinet to facilitate the removal of valves and ad-

justment of the aerial coil tapping. The metal panel and baseboard is at earth potential, and serves as the connection between — L.T. and earth. It therefore acts as an effective capacity screen, which will be at once appreciated when making fine adjustments of the reaction and vernier tuning controls. A further consequence of this method of construction is the simplification of the cabinet, as there is no necessity for a hinged top or back.

Features of the Circuit.

The first valve of the receiver is employed as a detector with reaction, the second valve being a low-frequency amplifier with transformer coupling to the first valve. The aerial tuning coil consists of a single layer of enamelled wire on a cylindrical Paxolin former. This coil is tapped at three points, leads being brought out to three sockets at the edge of the former marked "Short Waves," "Medium Waves," and "Long Waves." A flexible lead with wander plug inserted into the appropriate socket gives the wavelength band required, the total range of wavelengths covered by the receiver being 250 to 2,400 metres on an average aerial. This range is covered with the assistance of a fixed series aerial condenser provided with two terminals "A" and "C" for the aerial, so that it may be excluded from the circuit when required. In passing, it might be mentioned that the aerial and earth leads enter through two holes in the left-hand side of the cabinet, and cross over the tuning coil when the panel is pulled forward, and care must be taken that the aerial lead does not foul any part of the interior of the set after changing from the "C" to the "A" terminal, or *vice versa*. The aerial tuning condenser is of the well-known General Radio type, which is completely enclosed in the dial itself. The full range of the condenser is obtained by two revolutions of the dial, which is rather stiff in action by comparison with other types. This, however, is not a serious dis-

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advantage as one soon becomes accustomed to the "feel" of the movement.

The reaction coil is wound on a cylindrical Paxolin former of small diameter, and is mounted on a spindle to rotate inside the aerial coil. The coil is attached with its axis at an angle of 45° to the spindle. As will be seen in the photograph of the interior of the set, the aerial coil is also set at 45° to the axis of the spindle. By these means a 90° variation of coupling is obtained by rotating the reaction control through 180° . It will be at once apparent that this is equivalent to fitting a slow-motion dial with a 2:1 ratio. The reaction control knob is on the left-hand side of the front panel, and is matched on the right-hand side by a vernier condenser control for fine tuning.

Valves and Batteries.

The valves are mounted in spring valve holders of ingenious construction. The permissible lateral movement of the valves is rather excessive, but no trouble should

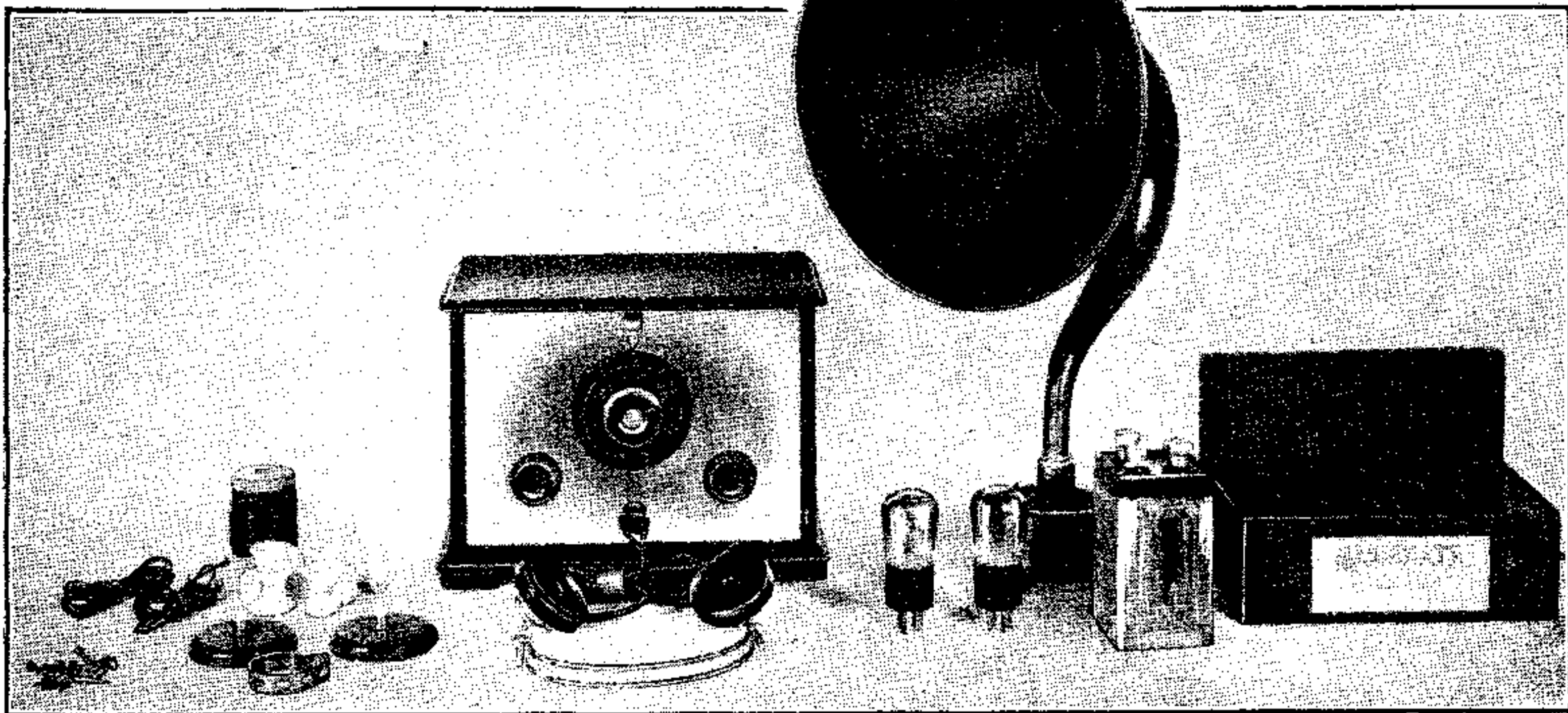
be encountered on this score under normal conditions. No attempt should be made, however, to transport the set from place to place with the valves *in situ*. Both valves are of the L.F. type (Six Sixty, S.S.2A, L.F.) each taking 0.1 amp. at 2 volts.

Battery connections are made through a multi-cored cable, a feature which has many advantages over the more usual terminal board. Two of the leads are fitted with spade connectors for the terminals of the L.T. accumulator, which is of the D.T.G. type (20 amp.-hour). The remaining four leads are provided with wander plugs for attachment to the 100-volt dry cell battery, which not only provides anode current for the valves, but also grid bias for the L.F. amplifier. For this purpose the negative end of the battery is provided with $1\frac{1}{2}$ -volt tapplings. The negative grid bias lead is inserted permanently in

Output Plug and Jack.

the negative terminal, and the lead usually regarded as - H.T. is inserted at a point higher up the battery, depending on the grid bias required for the last valve. The two remaining plugs are inserted at about + 50 and + 100 volts for the detector and I.F. valves respectively.

The telephone and loud-speaker connections are made through the medium of a plug and jack situated on the front panel below the tuning condenser. A separate pair of contacts is incorporated in this jack for switching on the filament current to the valves when the loud-speaker plug is inserted. The construction of the plugs calls for special comment, as it is a very simple matter to connect or disconnect the loud-speaker leads. Instead of the usual interior terminals with set screws for clamping the tag connections at the end of the loud-speaker leads, two spring contacts are provided, and it is only necessary to push in the tags to obtain a firm electrical contact. Thus



The equipment of the G.R.C.15 receiver is unusually complete and includes all necessary accessories.

the single jack provided serves both for the 'phones and loud-speaker both of which are provided with leads terminating in tag connectors.

Performance.

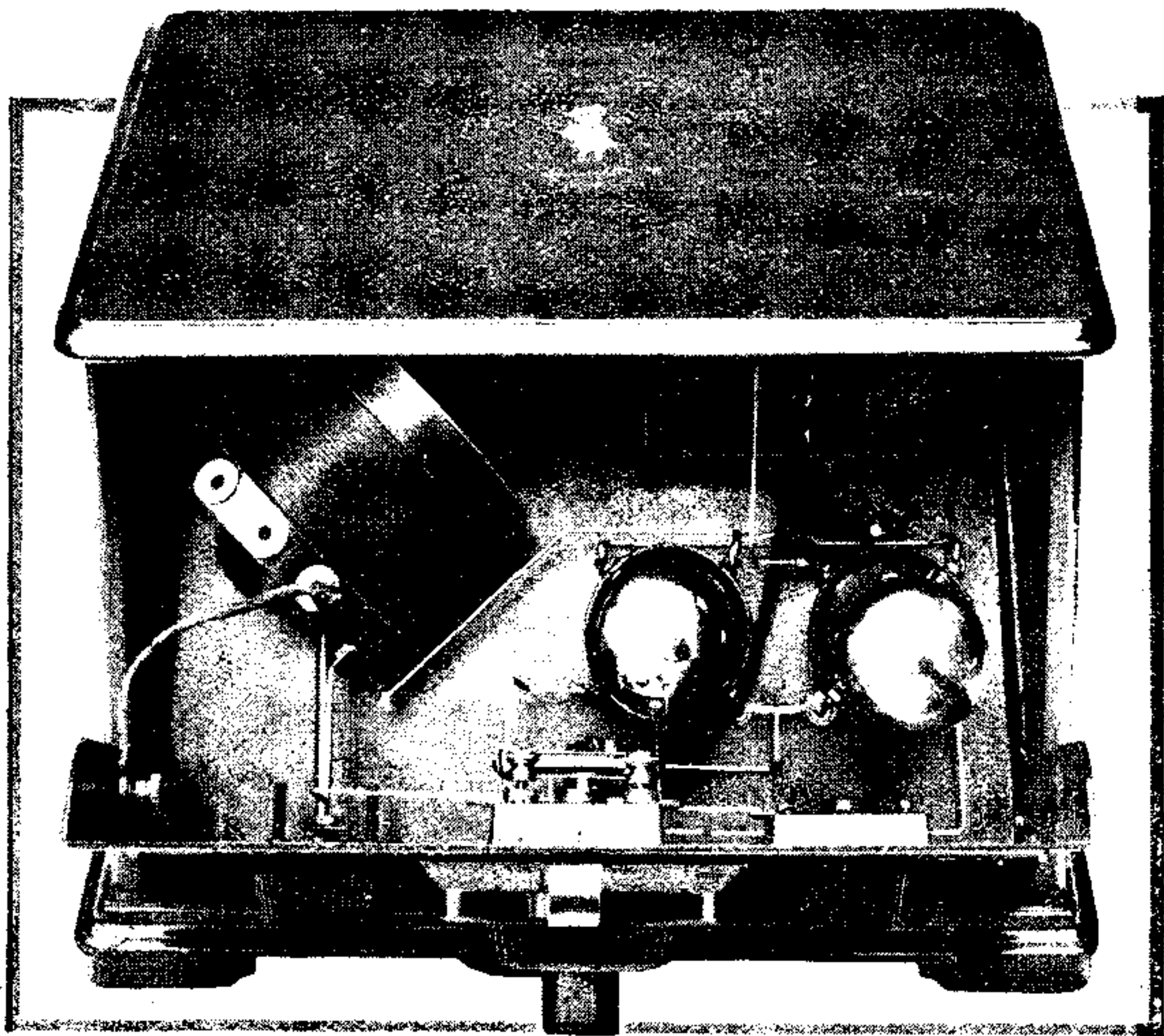
Tested at a distance of approximately four miles from 2LO and sixty-five miles from Daventry, ample loud-speaker volume was obtained from both stations, and on the former station the reaction control had to be reduced to zero and the set slightly detuned to prevent overloading the last valve. Several Continental stations were also received on the 300- to 500-metre wave-band with the aid of critical reaction, but the somewhat uneven distribution of capacity over the condenser scale increases tuning difficulties when searching for distant stations.

The loud-speaker volume is excellent for two valves,

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but the quality was characterised in the particular specimen under test by a peculiar metallic ring which could not be eliminated by any adjustment of the diaphragm or of the controls in the receiver. However, it is difficult to be hypercritical in view of the extremely reasonable price of the whole outfit, and the performance of the set as a whole is sure to give satisfaction in the market for which it is intended.

A three-valve set known as the G.R.C. Type 17, incorporating a further stage of L.F. amplification, is available for use at considerable distances from the nearest broadcast station or where greater volume is required. The price of this set complete with equipment is £15, and both this and the two-valve set may be purchased on the instalment plan. The address of the manufacturers is General Radio Co., Ltd., Radio House, 235, Regent St., London, W.1.



An interior view of the receiver with the hinged front panel pulled forward. Simplicity and sturdiness are outstanding features of the design.