

A NEW TRANSPORTABLE *Amplion Battery Model*

A Long-range, Self-contained Receiver.

Of late there has admittedly been a tendency among radio technicians to concentrate their efforts on the development of mains-operated broadcast receivers; those who have not access to an electrical supply system may feel, with some slight justification, that they are being neglected. But so long as carefully designed battery-fed sets with as good a performance as that of the Amplion "Cabinet Portable" are available, there will be few real grounds for complaint, because, with regard to sensitivity and quality of reproduction, it compares well with mains-operated sets of similar design. There is the additional advantage that, although the set is not really a portable in the generally accepted sense of that expression, it is light and compact enough to be taken almost anywhere, and is independent of any external source of current supply.

Being primarily intended to be moved from room to room, the set is mounted in an upright cabinet of polished walnut, which is fitted with carrying handles. All controls are grouped on a horizontal panel at the top, and, as a hinged lid is provided, these mechanical details are not obtrusive. A turntable is fitted to the cabinet, so that full advantage may be taken of the directional properties of the frame aerial.

The medium- and long-wave frame aerials are connected in series, a similar arrangement being adopted for the tuned anode coils which serve as a coupling between the first two valves. The second H.F. amplifier is linked to the detector by a choke; grid rectification is used.

Electrostatic Reaction.

Elaborate precautions are taken to separate H.F. and L.F. components in the detector anode circuit, and at the same time provision is made for passing back a sufficient proportion of the detector circuit H.F. energy for reaction effects. Regeneration takes place between this circuit and the second H.F. valve grid, and is controlled by a small variable condenser. It will be seen from the accompanying diagram that, so far as H.F. energy is concerned, the detector anode circuit is "returned" to an artificially located

centre point in the valve filament circuit by means of a potentiometer. It is claimed that this rather unconventional

arrangement provides good reaction control on both wave bands without affecting tuning. It would also seem probable that it greatly increases the real effectiveness of the aperiodic H.F. stage.

Matched Output Circuit.

Straightforward transformer coupling is used between the detector and pentode output valve, in the anode circuit of which the windings of a balanced armature loud speaker drive unit are connected. These windings are specially designed with a view to the relatively high impedance of the pentode.

As all the apparatus is mounted in close proximity to the built-in frame aerials, it will hardly be necessary to say that extremely thorough metallic screening is provided. Components associated with each individual H.F. circuit are mounted in separate boxes of tinfoil, the joints of which are soldered. Separate screening is provided for the valves, and it is noticed that the loud speaker is connected by wires with braided metallic covering.

Mechanical interconnections for the "ganged" wave-range and on-off switches are cleverly devised; and, in view of the trouble that is so often given by defective contacts, it is reassuring to note that these components show no tendency to develop intermittency.

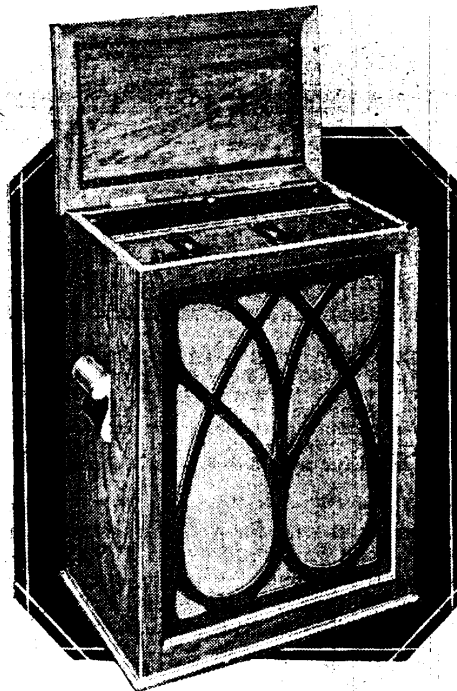
Regarding operation conditions for the valves, anode voltages actually recommended are indicated on the circuit diagram. The pentode grid is worked at 9 volts negative; this rather high bias voltage accounts for the fact that total anode current consumption is restricted to some 12 milliamperes. The L.T. accumulator cell is of the Exide unspillable type, and has a capacity of 24 ampere-hours.

SPECIFICATION

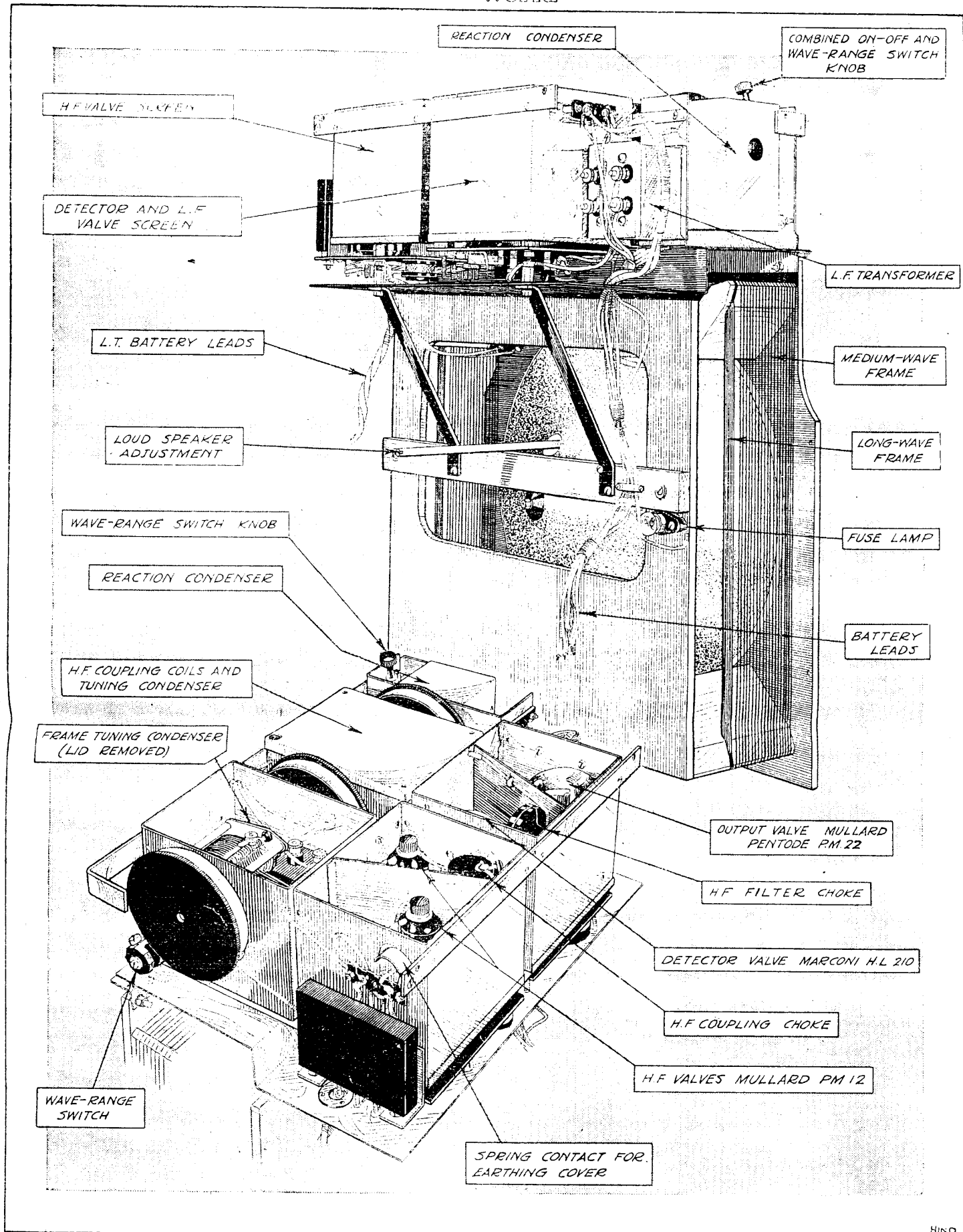
GENERAL: Completely self-contained, battery-operated receiver with built-in frame aerial and loud speaker.

CIRCUIT: Two H.F. stages (one tuned, one untuned), followed by grid detector and transformer-coupled pentode output valve.

CONTROLS: Two tuning condensers, reaction, and combined on-off and wave-range switch.



Front view of the receiver, with lid open.



Complete chassis of the Amplion cabinet portable and, below, plan view of the receiver unit.

A New Transportable.—

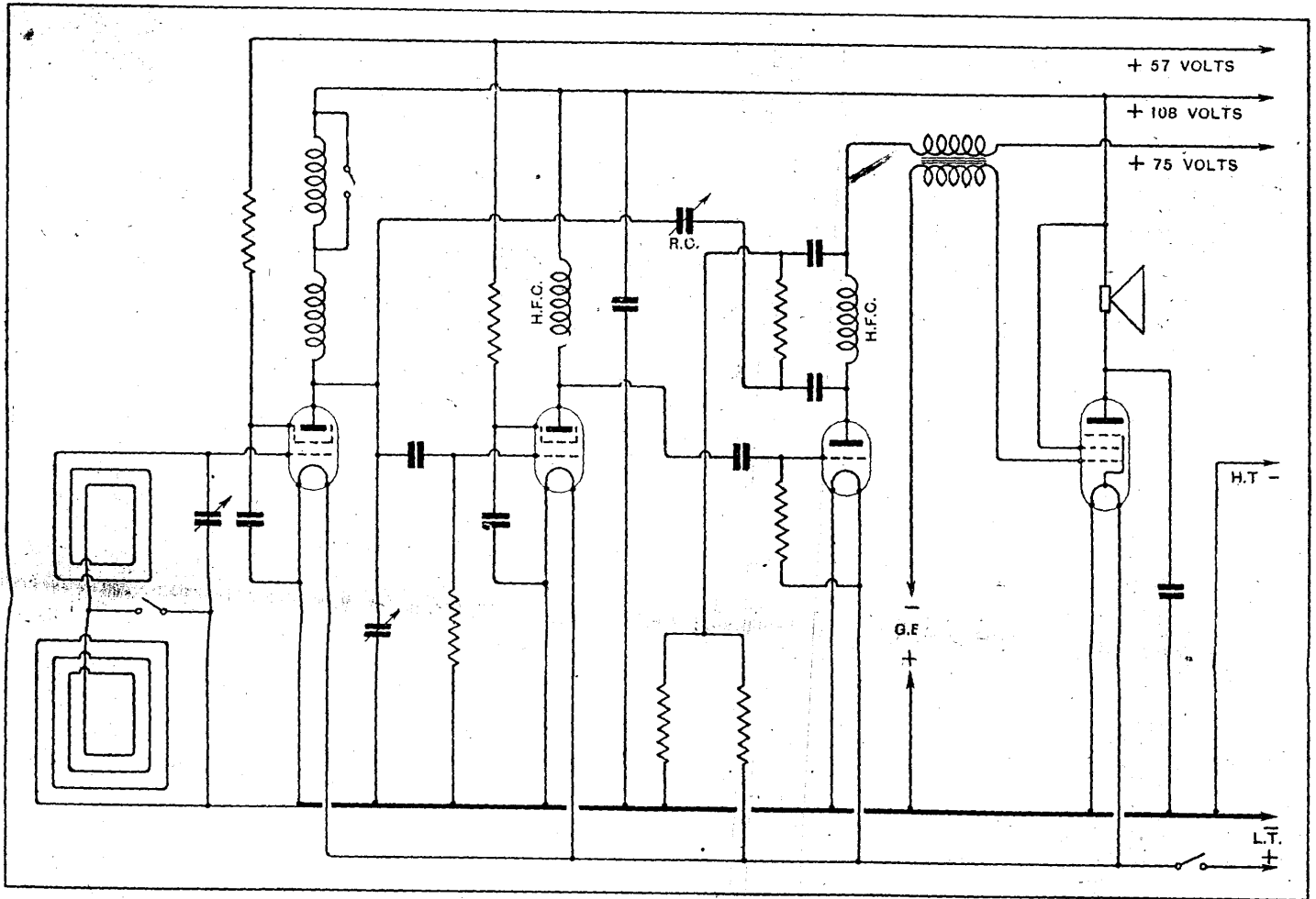
A multiplicity of controls has been avoided, but those fitted seem to be quite sufficient, and one does not feel the need for making any adjustments for which provision is not made.

Edgewise dials mounted on a horizontal panel might at first sight seem inconvenient, but actually they are easily manipulated, although the process of tuning can hardly be carried out properly except when the operator is standing up.

Range is distinctly good, particularly on the long wave-band, and any greater sensitivity than is provided by the set could seldom be usefully employed. Reaction

impedances must have been skilfully done, as there is a good bass response, together with a sufficiently well-marked upper register to give brilliancy to reproduction. No resonances are so pronounced as to be objectionable, and, considering the modest anode wattage, volume is highly satisfactory.

It is seldom that the directional properties of a frame aerial can be turned to better account than in the case of the Amplion set as an aid to avoiding interference. This feature, in conjunction with the natural selectivity of the tuned circuits, allows the receiver to be operated successfully in the neighbourhood of a high-power station.



Circuit diagram of the Amplion receiver. A fuse lamp (not shown) is interposed in the negative H.T. lead.

is there to be used, but, except for real long-distance work, there is no need to adjust this control critically. The unconventional system embodied in this receiver proves to be highly satisfactory, as changes in feed-back capacity do not introduce any serious variations in tuning. There is no trace of overlap on either band, and constancy over the tuning scale is well above the average.

Judged in comparison with other battery-fed portables, no complaints whatever can be made on the score of quality. Matching of valve and loud speaker

It is a somewhat laborious process to remove the receiver chassis from its container for test or repair, but, as construction throughout is sound and robust, the need for doing this should seldom, or never, arise, even if the set is subjected to much rougher treatment than a transportable of this type should ever receive. In any case, most ordinary circuit tests may be made by taking off the top and rear covers.

The receiver is made by Graham Amplion, Ltd., St. Andrew's Works, Slough, and its price, complete with all batteries and valves, is 22 guineas.

Next Week's Set Review:—BON MARCHÉ "SUPER-SIX" RADIOGRAM.