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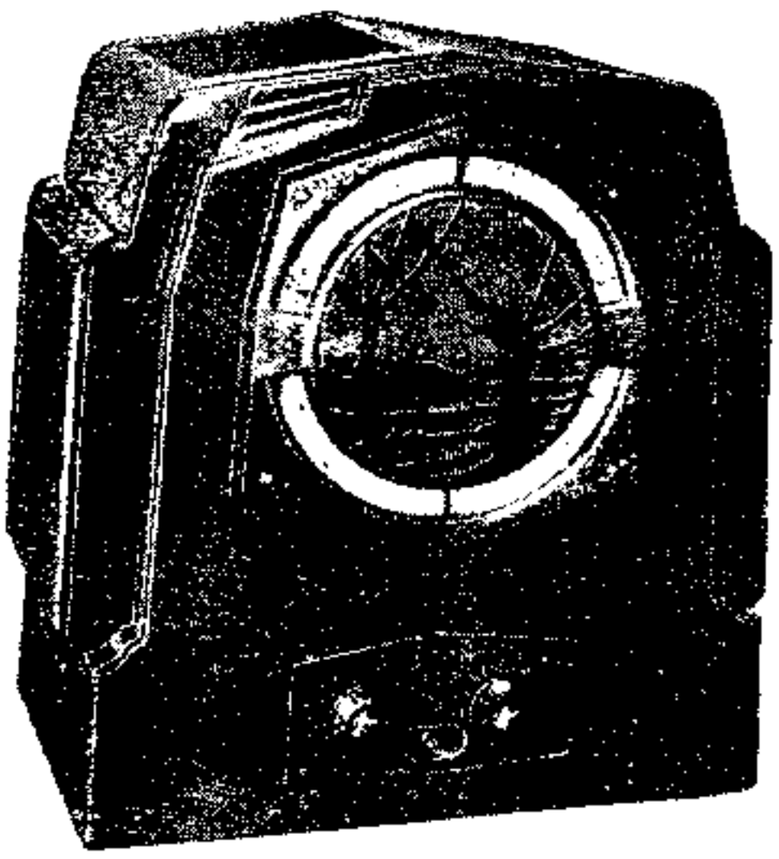


EKCO SH25 SUPERHETERODYNE

A Self-contained Station-calibrated A.C. Receiver

THE popularity of the superheterodyne has now established itself as firmly in the small, self-contained receiver as in the more ambitious instrument of the radio-gramophone class. In spite of its apparent complexity when compared with a straight receiver, it is actually easier to build a superheterodyne of good performance than a straight set within the confined space of the usual cabinet, for it is far less prone to instability, and it does not suffer in the same way by having its components placed in close juxtaposition. Thus, while the performance obtainable from this type of set is particularly pleasing to the user, the latitude which is permissible in the layout commends it to the designer, so that it is small wonder that the straight set now appears to be slowly dying.

Five valves are employed in the Ekco superheterodyne, and it may be said at once that a very satisfying performance has been obtained. The quality of reproduction is definitely good, and the high notes are very well reproduced. The bass is present, but appears at a somewhat lower level, owing to the small baffle area provided by the containing cabinet. It is good to see a design, however, in which the temptation to include a false bass by speaker and cabinet resonance has been resisted, and the net result is very pleasing quality with no trace of boominess.

Background Noise Absent

The selectivity is well up to the standard of the average small superheterodyne, and stations up to about 18 kc. from the local can be received without interference. Since stations closer to the local than this are always apt to be spoilt by sideband heterodyning, the selectivity may be said to be sufficient for most practical purposes.

The sensitivity, too, is entirely adequate, and, in fact, during the tests the volume control never had to be set to maximum for even the weakest signal. Background noise is low, and whistles—the chief defect of many superheterodynes—are almost entirely absent. The two usual points of second channel interference are found for the two locals, of course, but other whistles are very few in number indeed. The volume control, in conjunction with the Local-Distance switch, offers a smooth, continuous, and distortionless variation of volume from maximum to silence on all stations, including the locals, and, in fact, the range of control is unusually wide.

Mechanically, the receiver is very well constructed indeed, and the steel chassis is exceptionally rigid, while the layout of components and the general design bear witness to considerable thought on the part of the designers. The cabinet is of bakelite, and the well-known Ekco tuning scale is fitted around the speaker fret. This, of course, takes the form of a circular strip on the outside of the speaker cone, over which a chain-driven pointer travels to indicate, by wavelength and by name, the station to which the set is tuned. The accuracy is reasonably good, and no difficulty was found in identifying stations by the dial reading, even although the pointer did not always happen to coincide exactly with its marking.

FEATURES

General.—Five-valve A.C. superheterodyne with built-in moving-coil loud speaker. Special station indicating and wavelength calibrated tuning scale. Provision for the use of an external speaker and for the connection of a gramophone pick-up. A mains aerial is provided.

Circuit.—Variable-mu first detector and I.F. stages, with a separate triode oscillator and a triode second detector; pentode output. The pre-selector is coupled by mutual inductance, and a special rejector is included to prevent I.F. interference.

Controls.—(1) Tuning control. (2) Volume control. (3) Local-distance switch. (4) Combined wavechange and radio-gramophone switch. (5) Tone control switch. (6) Mains on-off switch.

Price.—24 guineas.

Makers.—E. K. Cole, Ltd., Ekco Works, Southend-on-Sea.

Electrically, the circuit is arranged as a variable-mu first detector, preceded by a two-stage inductively coupled band-pass filter for the pre-selector. Individually screened coils are not used in this filter, and the coupling is by mutual inductance, for the primary and secondary are actually wound end to end on the same former—a very simple and effective arrangement. A separate triode oscillator valve with a tuned anode circuit is used, and the coupling to the first detector is arranged by including the oscillator grid coil in its cathode circuit. The oscillator coils are completely screened, and, moreover, a screen is fitted to the oscillator valve itself.

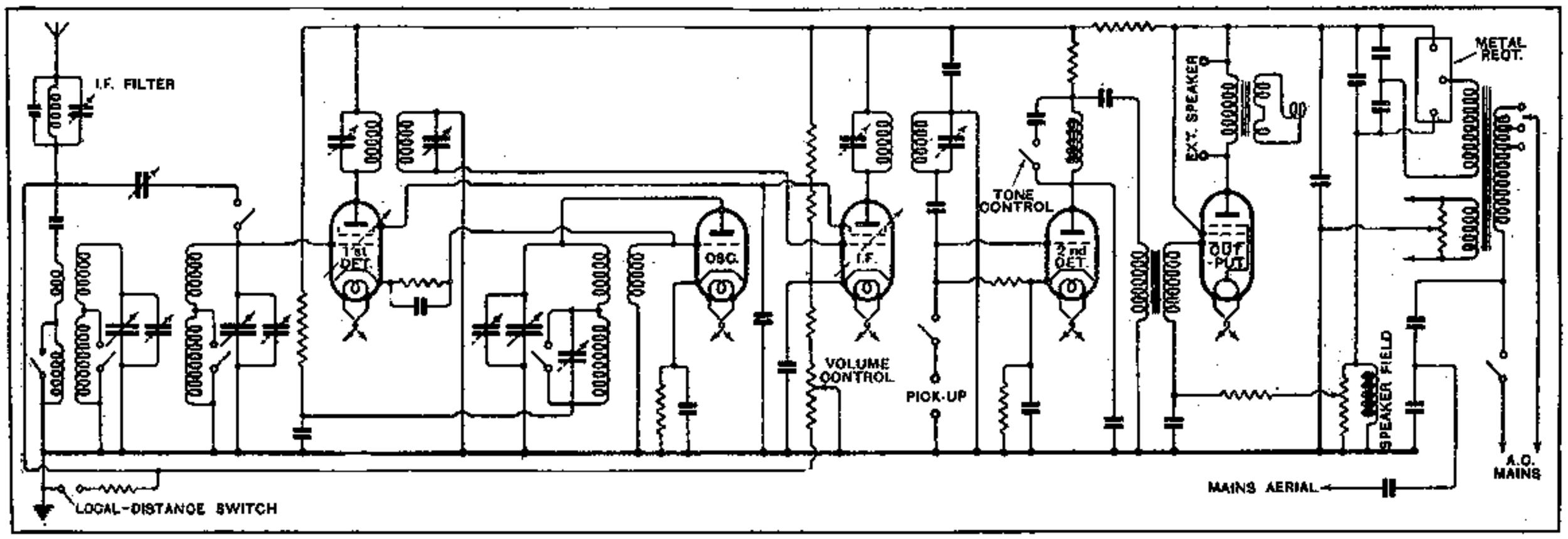
A single variable-mu H.F. stage is used, and the two I.F. couplings are each of the band-pass type, there is thus a total of four tuned I.F. circuits, and it is these which provide chiefly the adjacent channel selectivity. Here, again, complete screening of the circuits is provided, both for the purpose of ensuring complete stability and of preventing the direct pick-up of morse working on the wavelength to which the I.F. amplifier is tuned. Indeed, so important has this latter feature been deemed that a special tuned rejector circuit has been included in the aerial circuit to prevent such signals from forcing an entry by this path.

The second detector is another triode acting on the power grid principle, and it is resistance-transformer coupled to the pentode output valve, which in turn feeds the moving-coil loud speaker in the usual way through a transformer. The speaker field is energised from the mains equipment where it also serves as a smoothing choke. The speaker field alone, however, is not relied upon for smoothing, and an additional choke is included, together with large-capacity electrolytic condensers, and the net result is an exceptionally low level of hum in the output. A metal rectifier is used to provide the H.T. supply.

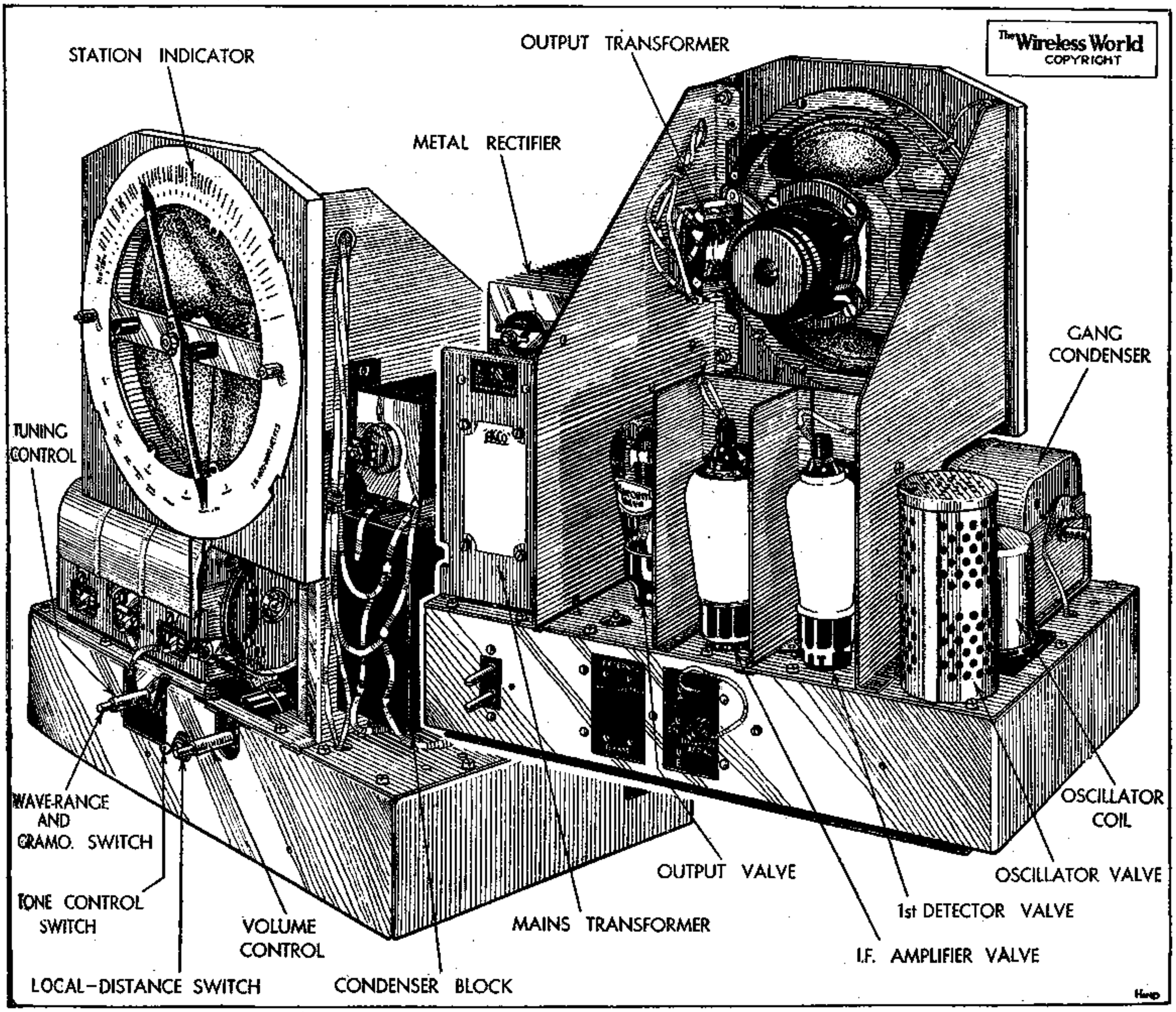
Sockets are fitted to the rear of the chassis for the connection of an additional external loud speaker and also for a gramophone pick-up, while a plug permits a mains aerial to be employed. There are two main controls on the front of the cabinet—the tuning control and the volume control—and these are provided with large-diameter knobs. Concentric with these knobs are two smaller controls, one operating the Local-Distance switch, and the other the combined wavechange and radio-gramophone switch. The mains on-off switch is fitted to the rear right-hand side of the chassis and is readily accessible. There is in addition a tone control switch, which connects a filter circuit to the second detector valve and permits the higher musical frequencies to be severely attenuated when heterodyne whistles and atmospherics render such a course advisable.

The appearance of the receiver, with its moulded bakelite cabinet and its unobtrusive tuning scale, is particularly pleasing, and is calculated to satisfy the tastes of the majority as is also the oxydised metal speaker grille.

Modern Superheterodyne Practice



Complete circuit diagram. Points of interest are a variable-mu first detector, a rejector to prevent I.F. interference, and a two-valve frequency changer.



Two views of the chassis, which is of robust all-metal construction.