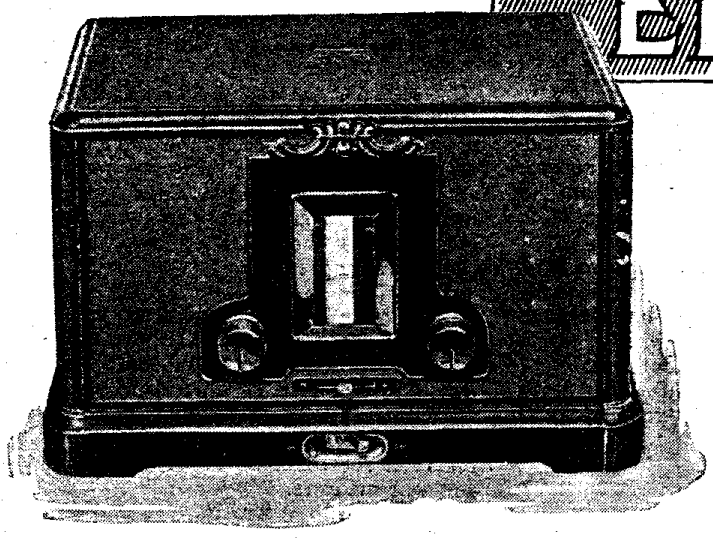
EKCO A.C. Model 312

A Popular Two-valve Set Tested.



THOSE listeners whose requirement is only that of local station reception are completely served by the two-valve set. To use more valves is to induce interference, bring heterodyning into evidence and appreciably add to the cost. The popular set of to-day is the two-valve local station receiver which, if mains operated, affords the most reliable outfit for delivering the broadcast programme whenever required. It is true to say that the fewer the valves the less the chances of distortion, while the simplicity of the set almost entirely removes the chances of maintenance costs and breakdown. The following technical description deals with one of the best-known receivers in the two-valve class—the Ekco set.

Adequate Station Separation.

In brief, it is an all-mains operated set working from A.C. supply giving essentially the alternative local programmes and delivering ample power to the loud speaker for ordinary home conditions with a quality of reproduction which few could criticise. Looking over the circuit we find no unusual features, the arrangement following well-tried practice. The first valve is a leaky-grid detector with capacity reaction, coupled by a transformer to an output pentode valve with a filter feed to the loud speaker. An indirectly heated valve used in the detector stage, the Mullard P.M.354V, renders the set particularly sensitive while its generous signal handling properties reduce overload distortion to a minimum.

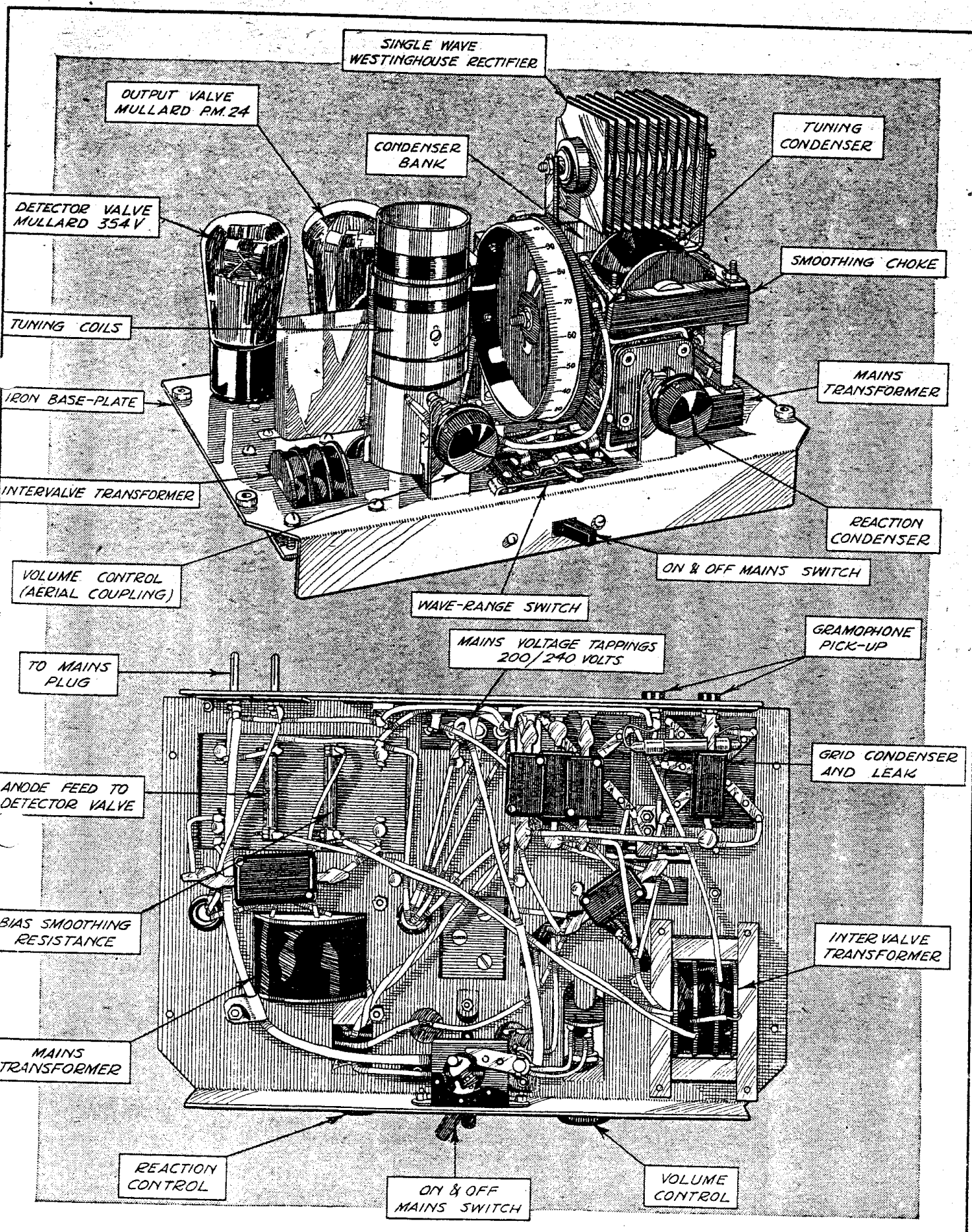
The principal problem in the design of the two-valve set is that of providing adequate station separation as a high degree of selectivity cannot be obtained. For local station reception however, this, perhaps, is not a requirement and all one expects is the avoidance of interference between the two transmissions of a dual programme station. In the Ekco set every reasonable step has been taken, within the limits of simple apparatus, to give the required selectivity, three aerial terminals being fitted so that when near to the transmitter signal strength can be sacrificed for selectivity, and when distance from a station removes the interference difficulty and the signal strength has declined, the selectivity may be reduced and the sensitivity increased. Of the three aerial terminals provided, two can act through alternative values of aerial coupling condenser to a swingabout coil set up in the centre of the tuned grid circuit of the detector. By rotating this coil a balance may be obtained between signal strength and the extinction of an interfering transmission. This adjustment is, in effect, the volume control giving a smooth variation of output from maximum volume to extinction. Reception on both medium and long waves is arranged by a change-over switch which short circuits either the medium or long-wave portion of the tuned circuit about its centre point. Tracing out the circuit it was to be noticed that a short circuit is applied to part of the medium-wave coil at the same time as the long-wave coils are short circuited out of action, a minor detail no doubt introduced to provide smooth reaction in consequence of the particular disposition adopted for the windings.

Other circuit details show the use of a metal rectifier connected merely in series with one of the transformer secondary leads and feeding a charge to a 4 mfd. condenser. A single choke is used for smoothing, a tapping point being taken off at some distance along the winding to supply a negative biasing potential to the output pentode. A voltage-dropping resistance feeds the detector circuit which, in conjunction with a bridging condenser, provides both decoupling and supplementary smoothing. Both the heater of the detector and filament of the pentode, a Mullard P.M.24, are fed from a common winding on the transformer, and the precaution has been taken of fitting an adjustable potentiometer across this winding with the object of preventing mains hum.

Construction has been arranged to render assembly easy and inexpensive, making no sacrifice in values or dimensions, yet avoiding the folly which lies in the way of the easiest course of construction, of that of being over generous. A pressed-out iron frame forms a chassis on which the components

SPECIFICATION.

Two-valve set with two range tuning and reaction. Indirectly heated detector (Mullard PM.354V) and pentode output (Mullard PM.24). Westinghouse metal rectifier. Capacity reaction. Volume controlled by loose coupled aerial. Transformer intervalve coupling. Filter fed output to loud speaker of 500 milliwatts. Durable bakelite case. Price complete with valves, £14 10s.



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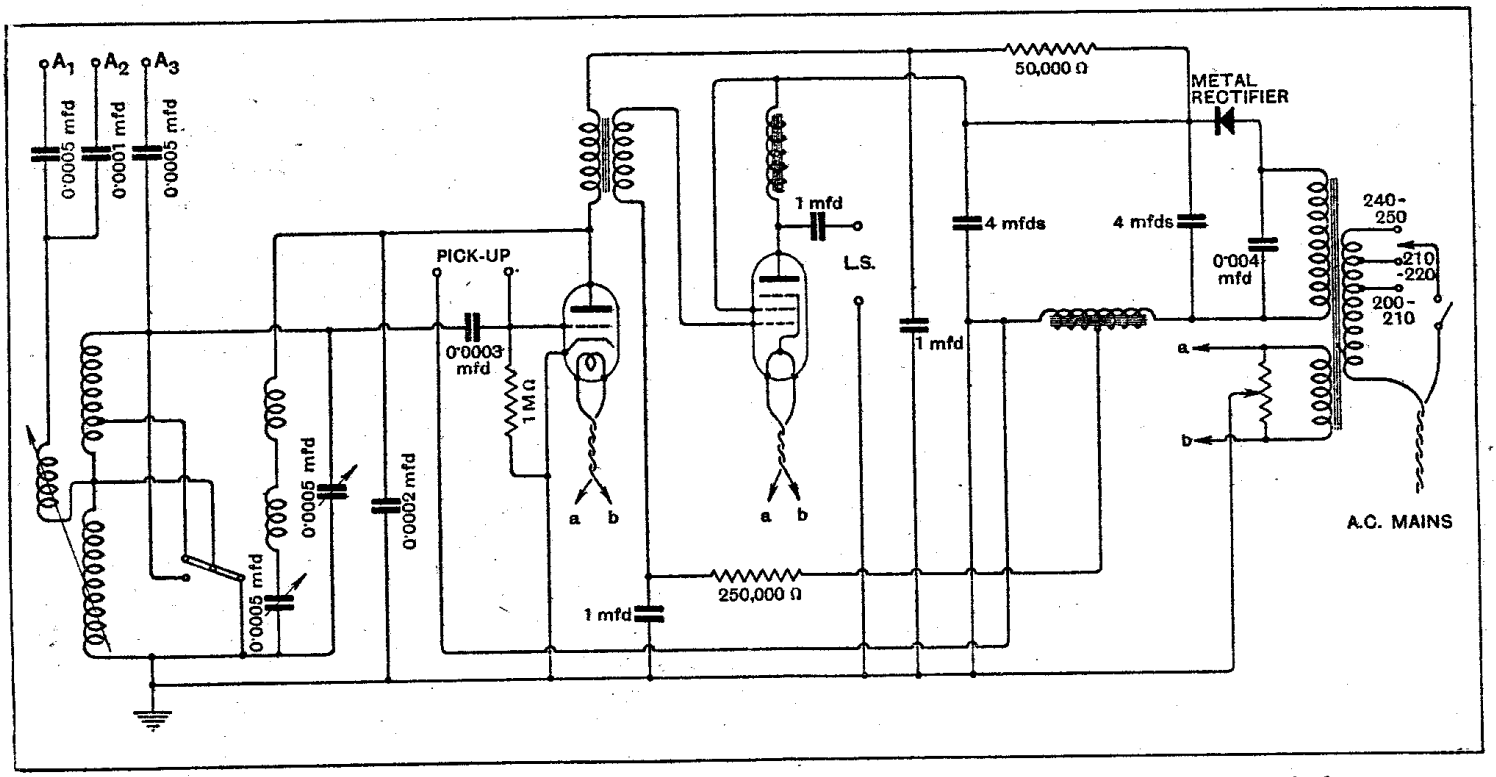
Constructional features of the Ekco A.C. set. Model 312.

Ekco A.C. Model 312.—

are assembled, carrying the transformers, chokes, smoothing condensers and rectifier on its upper side and the wiring with the smaller condensers and resistances in the recess underneath. Some of the components are secured by rivets, a most reliable method, and others with screws and spring washers. Tuning and reaction condensers are of the compact solid dielectric type, and by the way of removing any prejudice which may be held against these small condensers, it is pointed out that the performance of the set would be precisely the same were the customary large-type air-spaced condensers substituted.

The first impression on test is that the set is just what one would recommend when asked for an easy-to-operate set, even if the enquirer made good quality his first essential. In spite of the precaution taken by the manufacturers to fit a hum-reducing potentiometer, not the slightest hum will be experienced when using a reed-driven cone, the type of loud speaker which is intended for the set. To test the station-separating properties the set was tried out at a distance of five miles from the Brookmans Park transmitters. Using the most selective aerial tapping with the volume control turned down from maximum the transmissions were readily separated, while the output valve was delivering nearly its full rating of 500 milliwatts, it having first been ascertained that this valve was receiving its rated H.T. potential and grid bias, the measured values being 150 and 14 volts respectively. Two or three other stations were heard as well as numerous carriers, but it was necessary to wait until the closing down of the local transmitters before intelligible reception could be obtained from foreign transmitters. On the long waves Daventry 5XX came in well, but on the lower part of the tuning scale both local transmissions were heard quite strongly. This is a common property of simple two-valve sets and is of little consequence, for the long-wave station will not be required when the same transmission can be obtained from a nearby Regional.



Circuit details include selectivity adjustment, two range switching, pentode with choke filter output and single unit Westinghouse rectifier.

Next Week's Set Review:—EDISWAN POWER PENTODE 2.

Catalogues Received.

Ferranti, Ltd., Hollinwood, Lancashire.—Descriptive booklet dealing with the three-valve A.C. receiver, models 31 and 32. Also technical details of the A.F.8 L.F. transformer and construction broadsheet of the 1931 model Screen-grid Four Receiver.

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Standard Battery Co., 184-188, Shaftesbury Avenue, London, W.C.2.—Illustrated folder describing the Wates Rotary Converter for operating A.C. receivers from the D.C. supply mains.

Bakelite, Ltd., 68, Victoria Street, London, S.W.1.—Illustrated brochure dealing with the production and various uses of bakelite varnish.

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Darwins, Ltd., Fitzwilliam Works, Sheffield.—Illustrated catalogue describing the Cobalt Steel permanent magnets for incorporating in the construction of moving-coil loud speakers.

Le Carbone, Ltd., Coventry House, South Place, London, E.C.2.—Illustrated catalogue dealing with the "A.D." electric cell for low-voltage power work. In remote country districts it should afford a trouble-free source of L.T. current for a wireless receiver.

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F. C. Hill and Co., 154, Compton Road, Wolverhampton.—Illustrated leaflets dealing with "Hexa" mains transformers, L.F. chokes, and moving-coil loud speakers.