Wireless World

AUGUST 26th, 1931.

Ecko R.S.3

ALL-ELECTRIC CONSOLETTE

Single Dial Tuning with Station Identification Scale.

A COMPLETE departure from their previous sets and embodying many radically new features not to be found in other receivers, the new four-valve Ecko model represents a considerable advance in radio design and fashion. Simplicity of operation has been the governing influence, and, as a result, the number of controls has been reduced to three, being the tuning adjustment, volume control, and tone regulator.

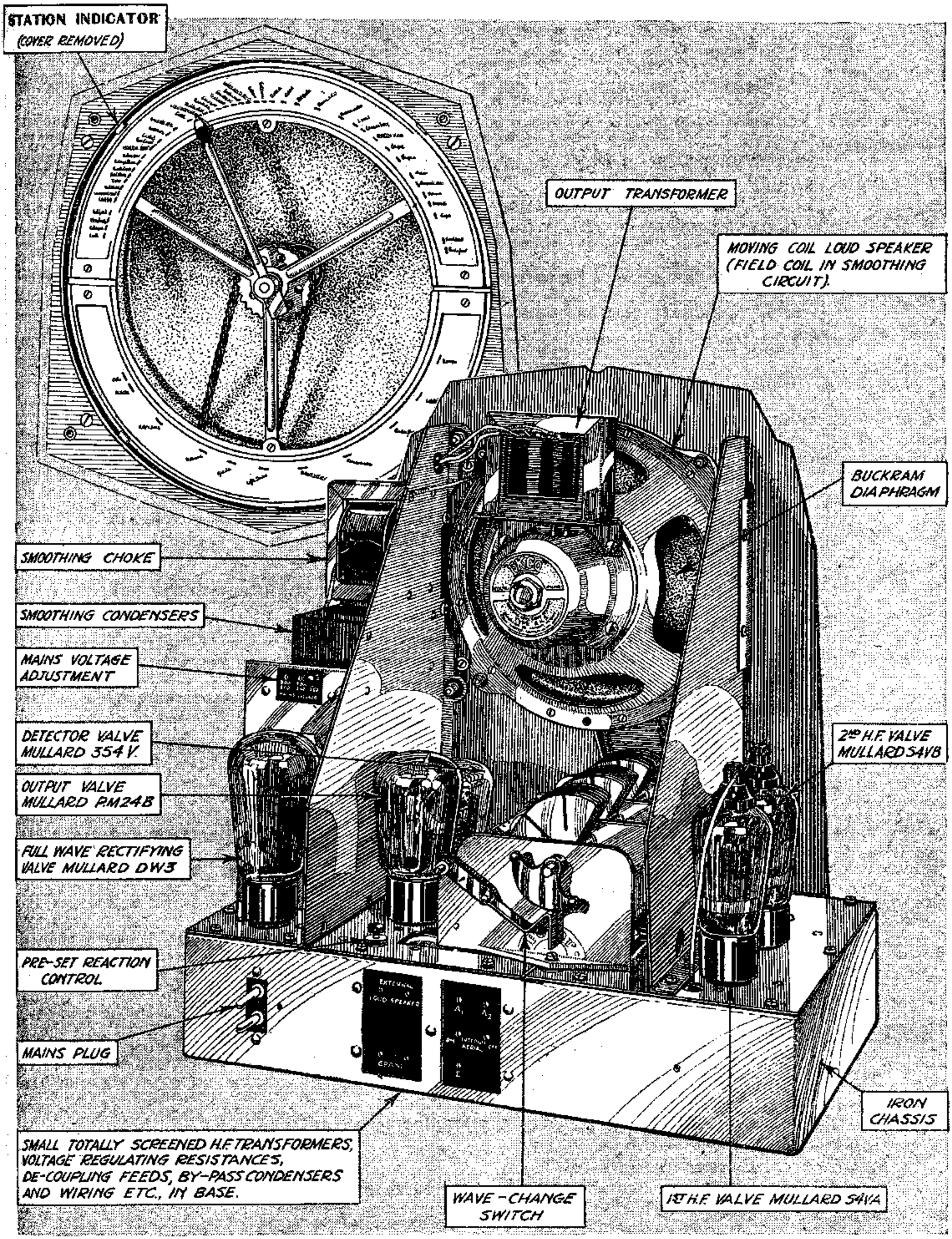
The outstanding feature is the station indicator taking the place of the graduated disc, a legacy of pre-broadcasting days. In the place of the inconvenience of dial readings, a pointer travels around the edge of the loud speaker grille and points by name to the station being received. While reference charts to station settings are all very useful, the making of the cross reference is troublesome, there is always doubt as to the correctness of the indication. A set that bears direct readings not only takes into account the relative tuning positions, but is based upon a knowledge of the stations that can be heard, relieving the user of the troublesome business of deciding which stations may be neglected. As the single tuning control is operated the pointer traverses the station scale, and on completion of the medium waveband automatically switches over to the long-wave range. At the point of switching over, there is a small interval where the pointer passes behind a cover, and, in this position, where no station is indicated, the gramophone pick-up is thrown into circuit. In addition, therefore, to the direct indication of station identity, wave change and gramophone to radio controls are dispensed with. Very different is this method of tuning from the one where perhaps two dials may need to be operated, giving an indication in divisions or, at the best, approximate wavelength, owing to the inclusion of a reaction control.

SPECIFICATION.

Four-valve A.C.-mains operated set.
Two transformer coupled H.F. stages with compensation for constant reaction.
Two wave ranges with automatic switching including the introduction of gramophone pick-up operated from tuning control.
Single knob tuning with station indicating scale.
Volume control applied both to aerial and biasing circuits.
Ganged tuning condensers and switches.
Leaky grid detection.
Transformer L.F. coupling to power pentode output valve.
Moving coil loud speaker. Full-wave valve rectification. Chassis built on iron frame. Bakelite cabinet.
Valves: Mullard S4VA, S4VB, 354V, PM24B, DW3 rectifier.
Price 24 Guineas. (Available 1st September.)

By the use of two H.F. stages, in which the properties of the tuned circuits have been carefully adjusted, the control of reaction is avoided, regeneration pulling its weight all round the dial making the set as sensitive as possible without self-oscillation being encountered. Transformer coupling is used in the H.F. stages, followed by a leaky grid detector, transformer coupled to a power pentode. Mullard valves are used throughout, and are the S4VA, S4VB, the 354V, the PM24B pentode, and the full-wave valve rectifier used in this all-mains operated model is the DW3. Several interesting features are revealed from close examination of the circuit, indicating not only an up-to-date knowledge of principles, but the carrying out of that essential to successful design, laborious tests by trial and error. This is evidenced in the volume control, the H.F. inter-valve couplings, and the constant reaction arrangement. For instance, the control of volume is effected by a single 5,000-ohm potentiometer connected in the cathode return circuit of the pair of H.F. valves. Increase in the value of this resistance advances the negativeness of the grid bias and reduces the effectiveness of the valves. Such a method of volume control in itself is objectionable, as a strong signal now falling on the curved characteristic of the over-biased valves gives distortion and interference by rectification. This condition is avoided, however, by connecting one end of the potentiometer across to the aerial so that as the grid bias is increased a shunt is applied between aerial and earth, weakening the initial signal applied to the grid.

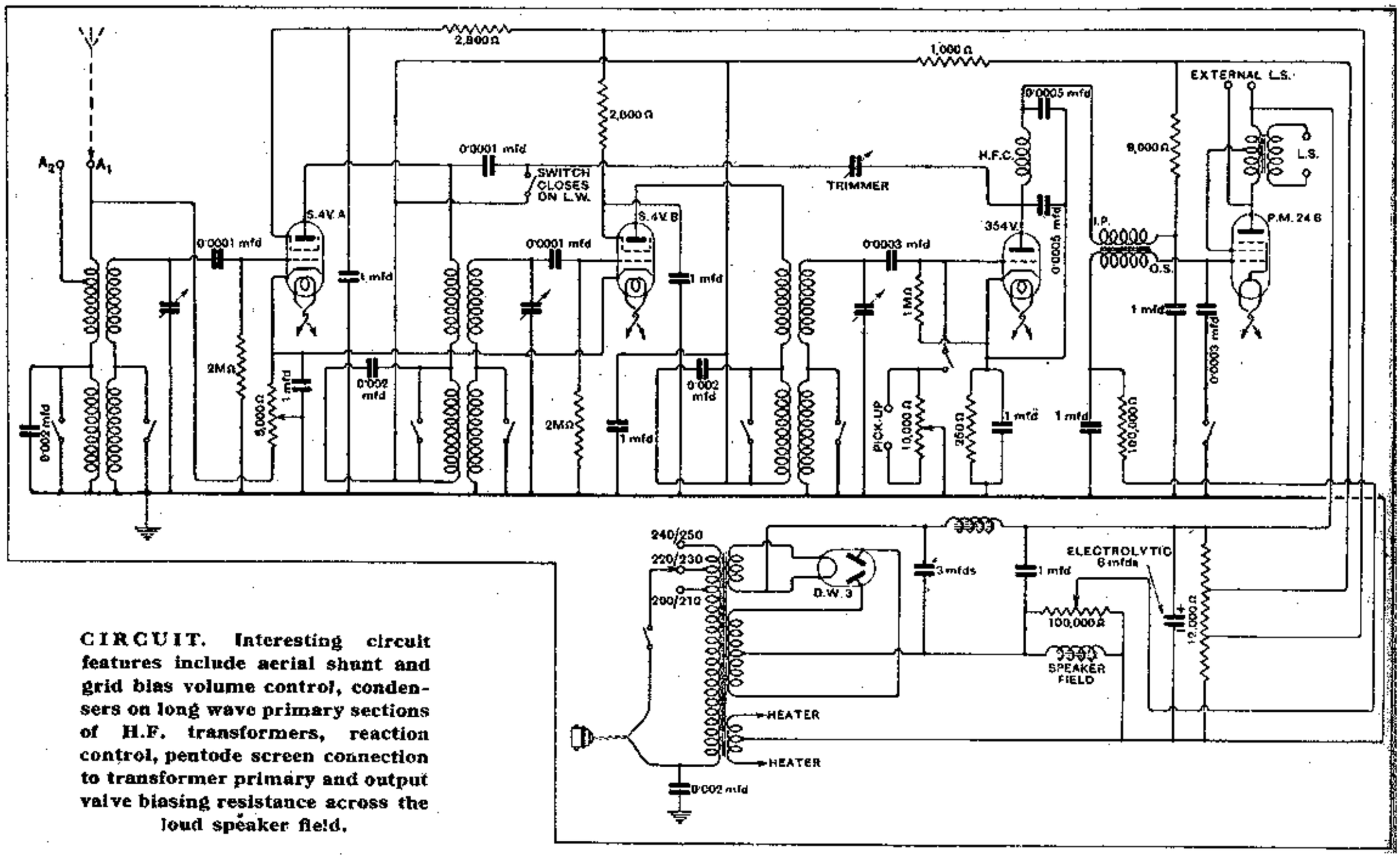
Short-circuiting switches are applied to the long-wave sections of the H.F. couplings, but it is interesting to note the inclusion of a shunt condenser across each primary long-wave section, the aim probably being



Ekco 1931-32 Consolette. Model R.S.3.

Ekco R.S.3. All-Electric Consolette.—

that of making the set no more sensitive on the long waves than on the broadcast band. In this way self-oscillation, which usually occurs when switching over to the long waves, is avoided. Again, there is a stabilising adjustment of feed-back between the anode of the detector and the first H.F. intervalve coupling controlled by a pre-set condenser. On switching over to the long waves this feed-back is taken to earth, owing to the greater magnification which occurs with circuits tuned to the higher wave range. A potentiometer is included in the grid circuit of the detector, which is gang operated on the volume-control spindle coming into operation to regulate the output from the gramophone pick-up as the switch contacts pass from



CIRCUIT. Interesting circuit features include aerial shunt and grid bias volume control, condensers on long wave primary sections of H.F. transformers, reaction control, pentode screen connection to transformer primary and output valve biasing resistance across the loud speaker field.

medium to long wave, at the same time bringing negative biasing in the cathode lead into operation.

Bias for the output pentode is obtained from a tapping point on a resistance connected across the loud speaker field winding which forms part of the smoothing circuit. A potentiometer bridges the H.T. supply, delivering measured voltages of 180 and 70 to the anodes and screens of the H.F. valves and 275 to the anode of the pentode. Decoupling resistances are introduced in most leads. Down the primary of the output transformer there is a potential drop of some 25 volts, and into this primary is tapped the screening grid of the pentode, an arrangement which produces the necessary tone correction required with the pentode output valve.

Sheet iron, stiffened by bending, is used for building up the chassis, a base compartment housing the coils, resistances and condensers and shielding most of the wiring. The cabinet, which is artistically shaped, is of bakelite moulding. Unlike wood, bakelite for cabinet work never shows signs of wear, though it is highly costly in the matter of tools when large and detailed mouldings are considered. An oxidised copper grille provides a mounting for the station indicator.

On test the station-getting properties of the set were found to be entirely up to the standard of two H.F. stage receivers. In daylight, under average conditions, only local British stations are received on the broadcast band but, as is usual, the long wave stations come in well. After dark stations came in at close intervals around the scale, their identity at once being recognised from a nearby clue on the indicator. Volume control is smooth and does not produce the marked change of tone so often met with. Heterodyning on distant station reception was greatly reduced by the use of the tone control switch, but it was felt that even more severe adjustment of tone would not be out of place. The cost of running per 1,000 hours is 5s., multiplied by the number of pence per unit. Quality is good, carrying a full deep bass without drumminess, combined with a bright upper register. Mains hum is inappreciable, and when not tuned into a station the set is sufficiently silent to suggest the advisability of fitting some form of visual indicator, such as a pilot lamp to illuminate the station scale or loud speaker grille. Being attractive from the artistic standpoint, mechanically unique and electrically reliable, this 1931-32 model at 24 guineas is likely to prove exceedingly popular in the coming season.