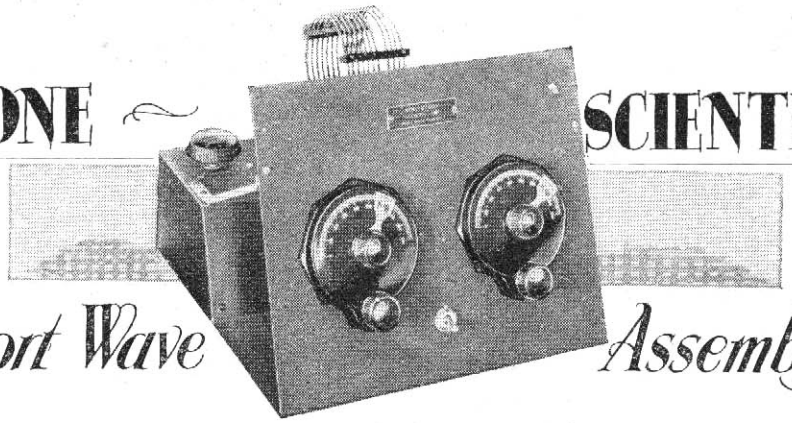
EDDYSTONE SCIENTIFIC TWO



Short Wave Assembly

IT is rather surprising that short-wave work is more neglected than any other branch of wireless reception; without suggesting for a moment that it provides a thoroughly reliable and entirely consistent supply of long-distance signals, it is certain that nothing else offers so much in this respect at so little cost. Though perhaps rather less attractive to the amateur in this country than to the temporary exile abroad, a short-wave receiver may be regarded as a most useful addition to his equipment, and can be depended upon for a great deal of entertainment.

A two-valve detector-L.F. circuit, as embodied in the Eddystone Scientific Two, is still the most popular arrangement for short-wave reception. In this particular case the design is straightforward and simple, with a minimum of complications. Aerial coupling is direct to the high-potential end of the tuned grid coil, through a very small variable condenser, by means of which the effect of aerial loading may be controlled as required. The detector valve functions, as usual in a set of this class, on the grid principle, and reaction between its grid and anode circuits is regulated by a condenser in the conventional manner.

A pentode output valve is specified, and is coupled by a Ferranti A.F.8 transformer. Output to the loud speaker—or head phones—is direct. A triode may be substituted, but the pentode, which gives more magnification, is generally to be preferred, and will afford sufficient signal strength for loud speaker reproduction when conditions are fairly good.

It would have been better if the on-off L.T. switch had been arranged in some other way; as things are, the valve filaments may be burnt out if an accidental short-circuit takes place between H.T. positive and any part of the metal chassis when this switch is "off."

A well-devised pressed-metal chassis is supplied as a foundation for the receiver, and is ready drilled, so that nothing more than assembly and wiring is required from the constructor. The tuning and reaction condensers are operated by slow-motion dials fitted to spindle extensions which are "broken" electrically by insulating sleeves. These components, as well as the tuning coil, are mounted so that they may be remote from the operator's hand, in order to avoid capacity effects. The metal base plate is folded in such a way that, as an additional precaution, the condensers are screened.

Apart from the advantage of screening, this method of construction provides a protective cover for the tuning condensers, and, in consequence, there is no need for a cabinet except, perhaps, on the grounds of appearance. Actually, it is very convenient to operate the set in a "stripped" condition, as the aerial coupling condenser, which must occasionally be manipulated when receiving the shortest wavelengths (say 15-25 metres) is then quite accessible.

A regenerative short-wave set stands or falls on the behaviour of the reaction control; in the Eddystone receiver this works unusually well, especially on the middle range, where the detector valve may be maintained on the verge of self-oscillation over the whole tuning scale with the reaction condenser dial at settings intermediate between 39 and 42 degrees—a variation of 3 degrees only, which is as near constancy as one is likely to get. On the higher wave-range control is nearly as good; it tends to become slightly "patchy" below about 25 metres.

Actual "threshold" L.F. oscillation, often a serious handicap to short-wave reception, does not occur at any frequency, and is barely perceptible in its incipient form at the lowest wavelength of the set.

In spite of its simplicity, the set, when directly compared with a standard of similar but more complicated design, proved to have a high degree of sensitivity. Hand-capacity effects, even when using phones, are only troublesome when receiving the shortest waves.

An Easily Assembled Set of Parts for Building an Effective Short-wave Receiver.

SPECIFICATION.

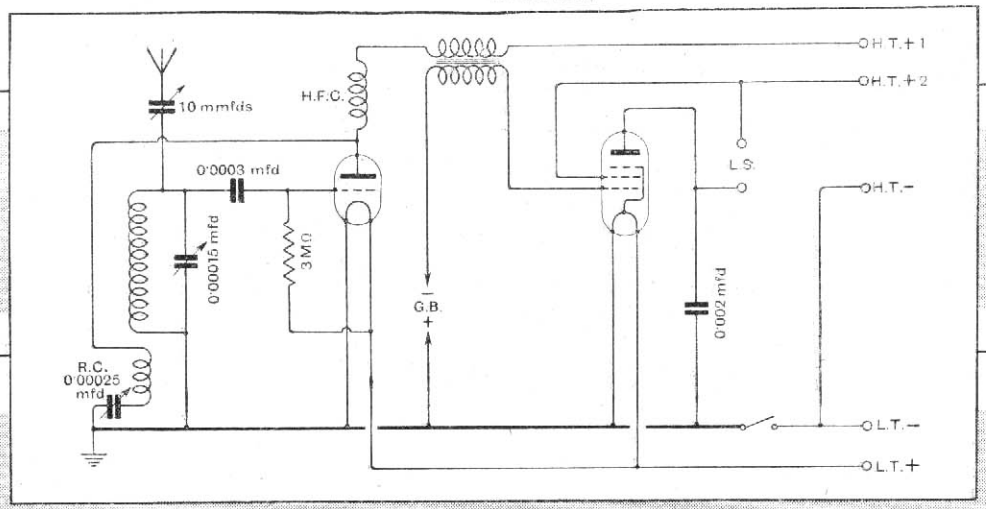
GENERAL: Battery-operated receiver, for use with open aerial and for reception of wavelengths between 15 and 93 metres. Three tuning ranges covered by plug-in coils:—15-36 metres; 27-55 metres; 46-93 metres.

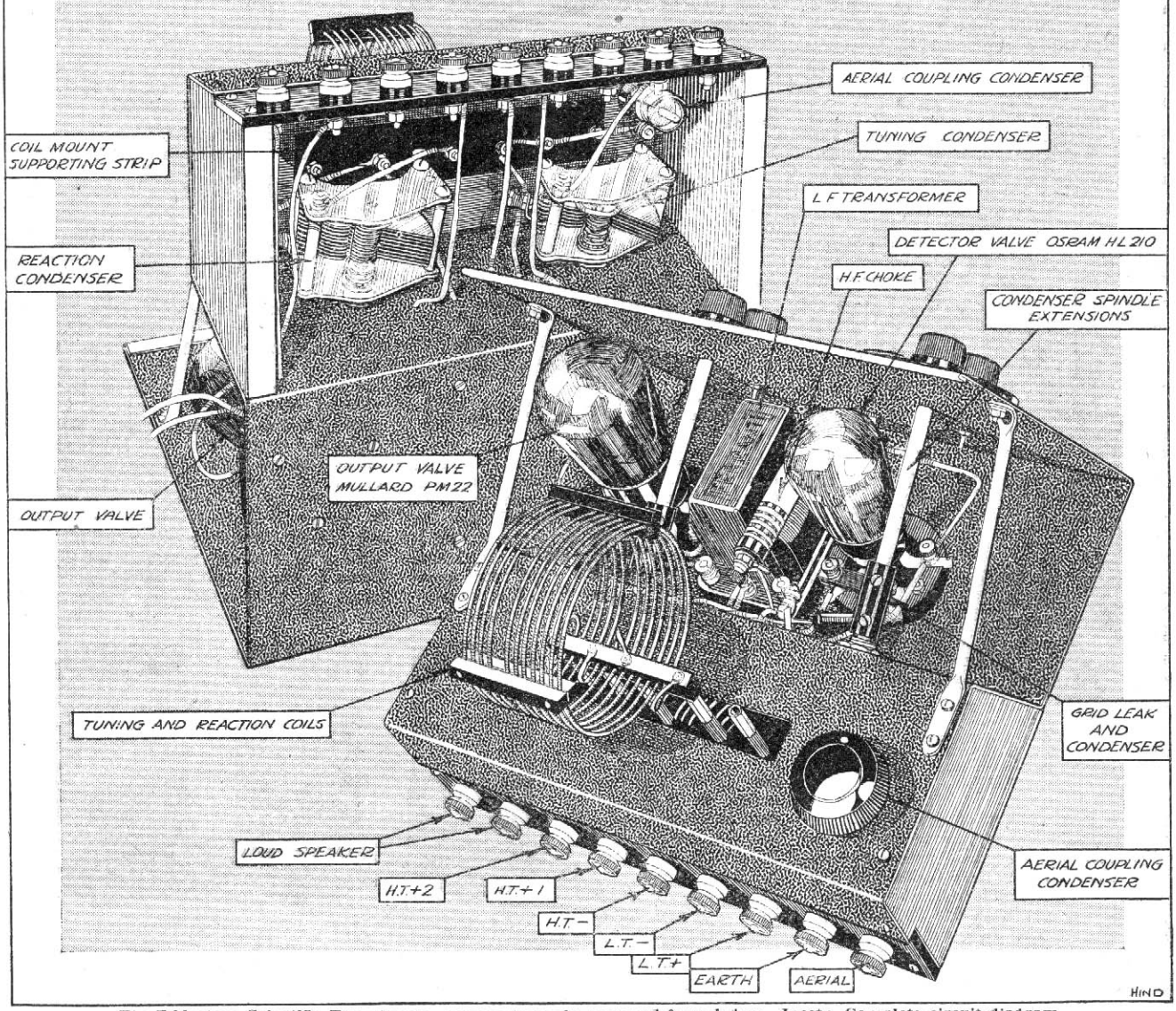
CIRCUIT: Regenerative detector followed by transformer-coupled pentode valve. Directly connected loud speaker.

CONTROLS: Tuning and reaction condensers; aerial coupling condenser; on-off switch.

PRICE: £4 5s. for the complete set of parts.

MAKERS: Stratton & Co., Ltd., Broms Grove Street, Birmingham.





The Eddystone Scientific Two chassis, as seen from the rear and from below. Inset: Complete circuit diagram.