

OPERATING INSTRUCTIONS

DESIGN AND CONSTRUCTION

The instrument consists of a moulded panel on the inside of which are mounted the whole of the switching apparatus, resistors, shunts, transformer, rectifier, etc., together with the movement. The panel fits into a robust moulded case, the joint being rendered dust proof, whilst a carrying strap is provided to facilitate portability. The main switching is accomplished automatically by means of two knobs which indicate on the engraved panel, the range in use. These switches are of generous and robust design, the contacts being arranged to 'make' before 'break' on adjacent ranges; a feature which provides a factor of safety in use.

When the instrument is set for operation on d.c., the moving coil is associated with a universal shunt and series multipliers, whilst on a.c., diodes and a transformer are also introduced.

RANGE CONTROLS

The left-hand knob provides all the d.c. current and voltage ranges (except 2,500 V.) and the right-hand knob the a.c. ranges (except 2,500 V.) and also the resistance ranges. These knobs are electrically interlocked so that d.c. readings can only be made after the right-hand switch has been set to d.c., and the left-hand switch to the range selected, a.c. readings call for the left-hand switch to be set for a.c. (it must not be left at RESISTANCE) and the

right-hand switch at the range required. Resistance tests require the left-hand switch to be set to RESISTANCE and the right-hand one to the desired range.

If the switches are inadvertently left to actual ranges simultaneously, there is no circuit through the meter, and it is thereby safeguarded against accidental damage or misleading readings.

The main ranges are engraved on the panel around the switches, and arrow heads on the knobs indicate the actual range selected. The 2,500 V. a.c. and d.c. ranges are available by means of the two special terminals so marked.

Wide coverage in resistance has been achieved by having a fundamental range as marked on the scale, together with ranges of $\times 100$ and $\div 100$ to supplement it.

In addition, a 200-megohm range marked 'INS' is available, using an external d.c. voltage source or the Resistance Range Extension unit described on page 13.

THE MOVEMENT

The moving coil consists of an aluminium alloy former wound with copper wire and supplemented with Constantan in order to reduce temperature error. Additionally compensation is provided by a thermistor. The moving coil is pivoted on hardened and highly polished steel pivots between conical spring-loaded jewels, and swings in a gap