

whilst should the acceleration of the moving coil, due to overload, be excessive, a different portion of the mechanism comes into play and the breaker contacts may even be released before the pointer has traversed one-third of the scale length.

The user is, however, warned against gross negligence, for although the overload mechanism gives almost complete protection to the meter, it cannot be guaranteed to fulfil completely its function in the very worst cases of overload, such as the mains being connected across the meter when set to a current range.

It should be noted that mechanical shock to the instrument will sometimes trip the cut-out mechanism. The cut-out should normally be reset with the instrument lying face upwards.

Whilst the overload mechanism operates on a.c. overloads, the user should be particularly careful to avoid them, for in such instances the rectifier may become punctured.

The Movement

The moving coil consists of an aluminium former wound with copper wire and supplemented with Constantan in order to reduce temperature error. It is pivoted on hardened and highly polished steel pivots between conical spring-loaded jewels, and swings in a gap energised by two powerfully magnetised and aged alnico blocks associated with mild steel pole pieces. Two phosphor bronze hair springs are fitted for the purpose of conveying current to the moving coil, and to provide controlling torque. A knife edge type of pointer is fitted enabling very fine readings to be taken, whilst the whole movement is perfectly balanced and reasonably damped so that the pointer quickly comes to rest.

Scaling

The scale plate has three sets of markings, each approximately 5" in length, the outer one being for resistance measurements and marked 0-1,000. The middle scale is for current and voltage measurements, both a.c. and d.c., and is marked 0-120 with divisions approximately 1 mm. apart. The third scale is calibrated 0-480 in major steps of 50, these being subdivided into ten divisions. This scale is only used in conjunction with the 480-volt ranges marked on the switch knobs. Each scale is individually selected to agree with the readings of standard instruments, and the plate has an untarnishable mirror to prevent parallax errors.