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AN ELECTRONIC DEVICE FOR USE WITH THE TIPPING BUCKET TYPE OF DISTANT RECORDING INTENSITY RAINGAUGE

Distant recording intensity raingauges using a tipping bucket and a Bibby type impulse recorder (Venkiteshwaran et al., 1954, Indian J. Met. Geophys, 5, 3, pp. 262-266) use at a few stations in India. In this instrument, the electrical impulses are caused by momentary closing of the circuit by a mercury switch tilted by an arm attached to the tipping bucket. This arrangement needs careful balancing of the switch and the bucket with its tilting arm. These attachments could be dispensed with and the mechanical construction simplified by adopting electronic devices to provide the impulses due to the tilting of the bucket. This arrangement is described below.

The bucket when at either of the two positions and is collecting rain, rests on an insulated contact, and connects through its tilting axis a negative bias voltage to a thyratron grid. During tipping from one position to the other, there is a momentary break in the bias voltage. The break brings down the thyratron negative grid bias voltage and

it immediately fires. As the thyratron stops conducting only when the plate voltage drops down below the extinction value, a suitable resistance-condenser combination is provided in the plate circuit to the desired pulse length. Since the tipping bucket contacts have to make and break only the biasing circuit which draws extremely low current, there are no serious problems of providing any special type of contact points. However to ensure good contact and avoid vibrations and intermittent contacts, a fine stainless wire fixed at either end of the bucket, dips into mercury cups.

Fig. 1 shows the diagram of the electronic device which is kept near the Bibby type impulse recorder. Only two lines are taken from the recorder to the tipping bucket exposed in the observatory enclosure. A bias of—115 volts is applied to the thyratron grid to prevent spurious response due to power line fluctuations. It has been found that this value of negative grid bias voltage makes the instrument not sensitive to disturbances in the power line.

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