An electrical drop recorder / by P.P. Laidlaw.

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An electrical drop recorder. By P. P. Laidlaw.

It is often convenient to record the rate of a secretion, or the rate of venous outflow in drops. In the case of a slow flow, with comparatively long time intervals between the drops, a number of recording methods are available. When, however, a fast rate of outflow has to be dealt with and the drops follow upon each other very quickly, considerable difficulty is experienced in obtaining an accurate record.

The instrument described in this note was devised to meet this difficulty.

The advantages claimed for this instrument are

(1) Simplicity in construction. All the materials used in its manufacture are obtainable in a physiological laboratory.

(2) The instrument is sensitive. Small drops are as readily recorded as large ones.

(3) The return to the position of rest is quick, so that drops following each other at short time intervals are recorded accurately.

Any rate of flow up to nine drops a second can be recorded. In testing the speed limit of the instrument it was found to be impossible to obtain a faster rate than this from a single orifice. A faster flow gave an intermittent stream instead of separate drops.

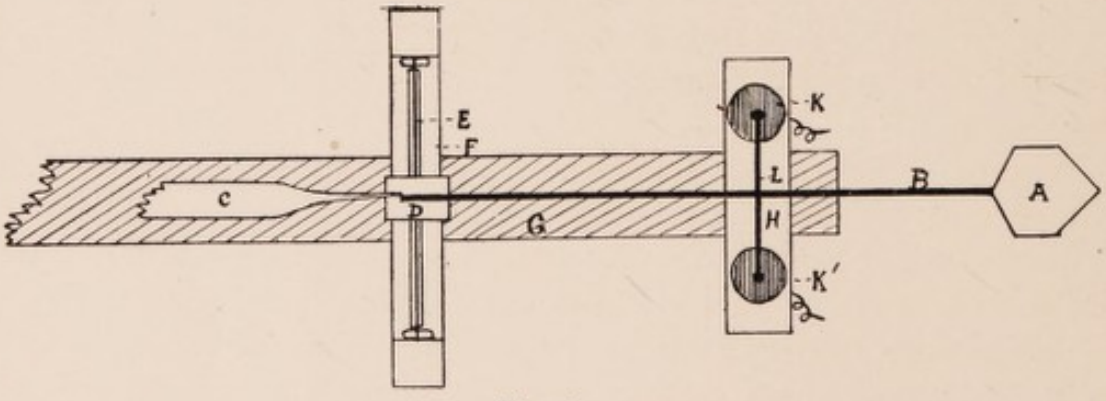

Fig. 1.

The instrument is shown in Figs. 1 and 2; the lettering represents the same parts in each figure; it consists of a light lever *B* at one end of which is fixed a small celluloid plate *A* on which the drops fall. The other end of the lever *B* is fixed on to a small cork plate *D*

which in turn is fixed to a short length of glass tubing through which a needle is passed, forming the axis of the lever. A short glass spring *C* (which is made by drawing out a piece of glass rod) presses upon the cork plate just beyond the axis of the lever, and maintains the lever in the horizontal position. A short piece of metal is fixed at right angles to the lever at *L*. From either end of this cross piece two wires *P*, P^1 descend vertically to two mercury cups *K*, K^1. One of these wires has a flattened end and is sufficiently long to be permanently immersed in the mercury of its cup. The other has a sharp platinum point which is just above the surface of the mercury. This mercury cup K^1 has a levelling screw *S*. The mercury cups are embedded in a block which is fixed on to a bar *G*. The axle of the lever is fixed in another support *F* which is in turn supported by bar *G*.

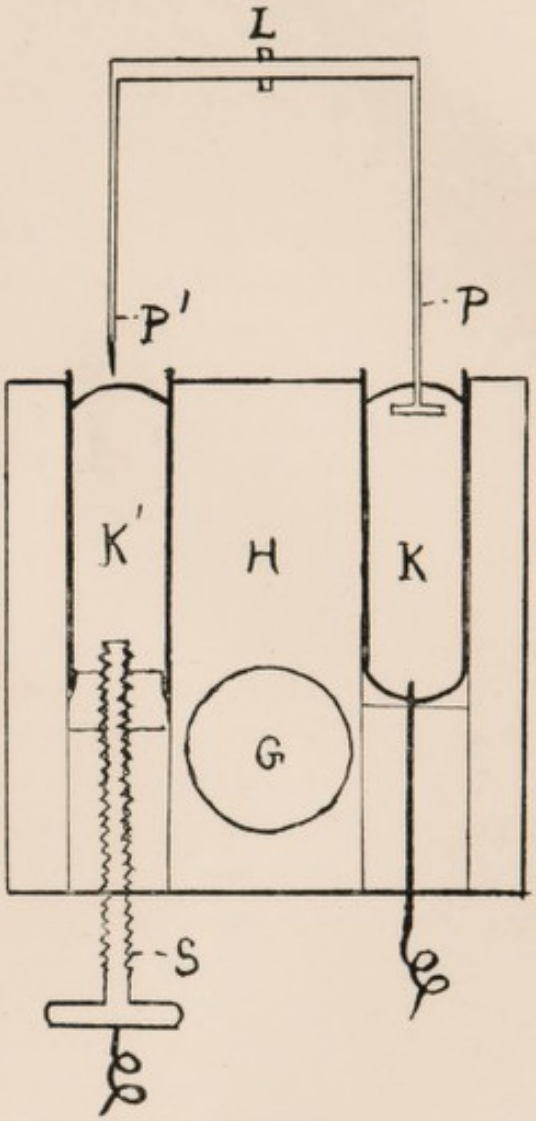

Fig. 2.

Bar *G* and glass spring *C* are attached to a stand by means of boss heads.

A drop hitting the celluloid plate causes a downward movement of the lever and a connexion between the mercury cups. These are put in circuit with an electric signal and a suitable battery.

Adjustment of the mercury level just below the platinum contact point ensures a single contact for each drop. The delicacy of the instrument is increased by using a fine glass spring and decreased by using a stouter one.