A simple flow recorder

SIR,—We have designed a simple flow recorder based on the emptying of known volumes of fluid by a syphon to measure flow of fluids, such as in the rabbit ear perfusion, the rat hind limb perfusion or urinary flow. This apparatus, which does not appear to have been described hitherto, has the advantage of simplicity over the conventional electronic or mechanical types of flow recorders at present in use (see references).

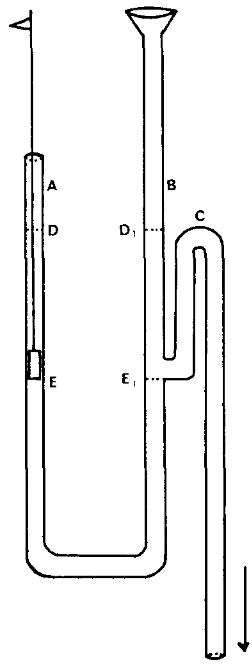

FIG 1. Diagrammatic sketch of the simple flow recorder.

In Fig. 1 the limb "B" of the U-tube is the receiver of the perfusion fluid. The apparatus is first filled with water to the level $E - E_1$. As the outflow collects in the limb "B", the level of the liquid also rises in the limb "A", carrying with it the float and writing point. When the level of the liquid reaches $D - D_1$, the syphon comes into action, bringing back the level of the liquid to $E - E_1$, and simultaneously the float drops to the original point. In this way a record of the emptying of each selected volume may be marked on a drum. The duration is conveniently marked with a time marker and, in this fashion, rate of flow may be measured.

By selecting the diameter of the tubes and the length of the syphon system, the instrument can be used to record flows ranging from a few drops to large volumes. The tubes are calibrated before use.

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The effect of hemicholinium on the depletion of catecholamine induced by reserpine

SIR,—Reserpine-induced depletion of catecholamines from the adrenal medulla has been attributed both to a direct effect on the organ and to an effect secondary to stimulation of centres in the central nervous system (CNS). Callingham & Mann (1958) and Stjärne & Schapiro (1959) concluded that the depletion was due to a direct action on the organ, while Brodie, Olin, Kuntzman & Shore (1957), Holzbauer & Vogt (1956) and Mirkin (1961) showed that depletion occurred only indirectly. In the experiments demonstrating a direct effect, rats were used, whereas in those indicating the involvement of a neural component rabbits were most often used. It is possible that the differing results are explainable by a species difference.

Feldberg, Minz & Tsudzimura (1934) have shown that acetylcholine is the neurotransmitter liberated during splanchnic stimulation of the adrenal gland. Recent work in our laboratory (Stitzel, Campos & Shideman, 1965) has indicated that hemicholinium (HC-3), an inhibitor of acetylcholine synthesis, mimics the effect of splanchnic nerve section and impairs the depleting action of reserpine in rabbits. A similar experimental design is now used to examine the extent of CNS stimulation in the depletion caused by reserpine of catecholamines from rat adrenal medulla.

TABLE 1. EFFECT OF HEMICHOLINIUM (HC-3) ON RESERPINE-INDUCED CHANGES IN CATECHOLAMINE CONCENTRATIONS IN TISSUES OF THE RAT AND RABBIT. The results are based on 4–7 measurements and are expressed as means ± s.e.m. The heart and brain levels are expressed as μg/g of tissue, while those of the adrenal gland are expressed as μg/gland. For experimental details see text.

Treatment	Heart	Brain	Adrenal
Rats			
Control	0·99 ± 0·05	0·51 ± 0·07	22·3 ± 0·02
Reserpine	0·27 ± 0·04	0·33 ± 0·05	14·3 ± 0·03
HC-3 + Reserpine	0·20 ± 0·08	0·28 ± 0·07	12·0 ± 0·05
Rabbits*			
Control	2·13 ± 0·10	0·64 ± 0·10	83·8 ± 8·9
Reserpine	0·40 ± 0·05	0·20 ± 0·02	26·0 ± 7·0
HC-3 + Reserpine	0·41 ± 0·09	0·20 ± 0·03	67·1 ± 7·6

* Taken from the data of Stitzel & others (1965).