FOR EXPERIMENTAL PHARMACOLOGY LABORATORY*

By

S. K. SHARMA

Department of Pharmacology, Jawahar Lal Nehru Medical College, Ajmer.

This short communication incorporates very simple, yet, inexpensive modifications of the conventional equipments used in the experimental pharmacology classes.

A. In the experiments on the isolated mammalian tissues, like rabbit intestine, rat uterus, dog tracheal muscle ring, etc., performed with the usual type of organ bath, the problems encountered are: i. Ineffective clamping device for the rubber tubing. Mohr's pinch clamps are inefficient since the discs for thumb and finger - rest invariably give way. ii. Breakage of glass parts, viz. organ bath (inner vassel), oxygen or delivery tube and/or storage reservoir for physiological solutions for which Marriotte's bottles or separatory funnels are usually utilised. Some favour the use of polyethylene wash bottles. iii. Difficulty of maintaining a uniform temperature of the water of bath and that of the fresh bathing fluid used for replacement, resulting in lack of steady 'control' tracing. iv. Interruption of continuous marking by the conventional frontal-writing lever on the smoked surface at the time of significant contraction and/or relaxation of the tissue in response to drugs.

The following is a brief description of how the problems were overcome:

i. Discarded artery forceps (on account of their failure to secure bleeding points) but with intact locking arrangement, were procured from the hospital. They turned out to be not only leak-proof but also made the manoeuvrability easy. Although Harnath's (1964) improvisation enhanced the life of Mohr's clamp it does not make the clamp leak-proof. Recently a plain clamp of spring-steel but without the discs of Mohr's clamp was tried on latex rubber tubing with very good results.

ii. Unbreakable polyethylene appliances, as indicated below, were got prepared (Gamco, Delhi-6.)

a. Organ bath inner vessel. Polyethylene (high density) baths were semi-transparent and thus there was some difficulty in noting the level of physiological saline. In this department we have now been able to fabricate a perspex (transparent) inner bath (Fig 1).

b. Semi-separatory funnel type of reservoir with a removable funnel top (Fig 1).

c. Plexiglass/perspex oxygen or delivery tube (prepared in the department only Fig. 1). A tube was bent into a 'Z' shape by dipping it in hot liquid paraffin and then sealing the smaller

*Received 16-8-1970

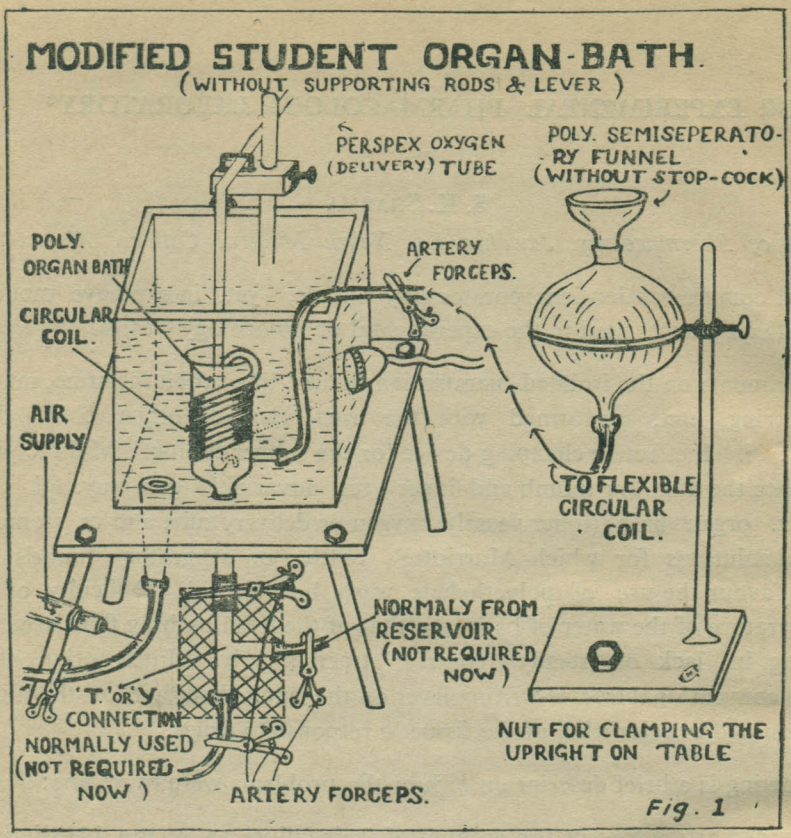

Fig. 1
Schematic improvised set up of an organ bath.

limb which entered the inner vessel. A groove was prepared and a hole was drilled at the bottom. (The material was obtained from United Trades Agency, Calcutta).

iii. Flexible circular coil in position (Fig.1) permitted the bathing fluid to attain the same temperature as the water in the outer bath. Air was allowed to enter in the rubber tubing attached to the drainage nozzle provided in the bath and had the effect of maintaining a constant temperature in the outer bath as is obtained by electrical stirrer (available in the more expensive 'Two Unit Thermostatic Assemblies'.

iv. Lateral-writing straw lever (Fig.2a) was fabricated in the department. The materials required were thick art paper (like the cover of this Journal), discarded surgical gloves, stillette of hypodermic needles, rubber solution and adhesive paste (Durofix, Araldite, etc.). Rubber membrane was placed within a pair of identical paper rectangle, using rubber solution and the stillette secured on one side with adhesive. Similarly, the other side was secured to the straw. The tracing was obtained in the form of an arc. This lever

offered all the advantages over the conventional frontal lever. The cost was hardly 15-20 paise.

B. *Modified heart levers* (Fig. 2b).

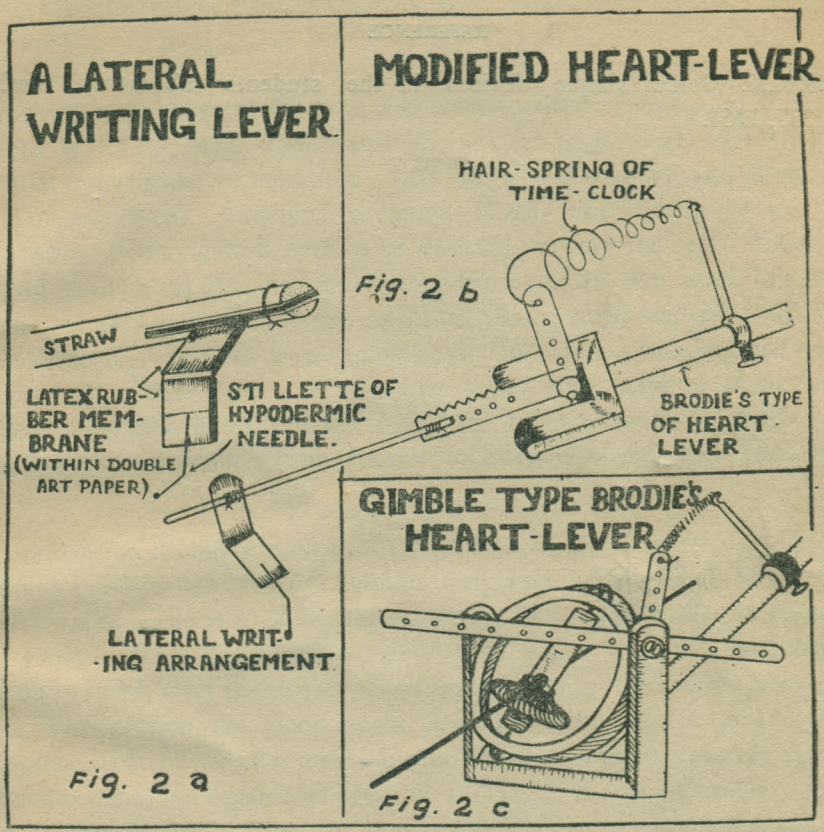

Fig. 2

(*a*) *A lateral writing straw lever.*
(*b*) *Improvised Brodie's heart lever.*
(*c*) *Diagrammatic construction of a modified gimble-type Brodie's heart lever*

The conventional heart levers (Starling or Brodie type) usually give smaller excursions. Not only is this due to the friction produced by the celluloid writing point but also due to the high tension spring provided. With a lateral-writing arrangement and the use of 'hair-spring' of the time clock, bigger and frictionless excursions were obtained. However, hair-spring could only be used with the Brodie type rather than the Starling type of heart lever.

(Recently Inco, Ambala, were able to fabricate a gimble type of Brodie Heart lever with a special low tension nickle-silver spring, as per specifications provided to them (Fig 2c).

ACKNOWLEDGEMENT

The author wishes to express his gratitude to Dr. (Mrs.) V. Madan for her assistance during the fabrication of few of the above appliances.

REFERENCE

Harnath, P.S.R.K. Some simple devices in the students laboratory. *Ind. J. Physiol. Pharmac.*, 8:237, 1964.