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A Mouse Holder for Securing Tail Blood.*

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In order to obtain blood from the tails of several hundred mice for biochemical analyses,[1] it became imperative to devise a satisfactory holder for the animals. Cages made of glass tubing shaped in the general form of a Gooch crucible holder have proved their usefulness for more than two years. The animal is confined comfortably within the tube, projecting its snout into the stem by which in turn the tube is held by a clamp attached to an iron support. This form of cage is an adaptation of holders for rats made from bottles from which the bottoms have been cut, and which have been used in this laboratory over a number of years.

Unlike the cloth case of Shadle and Sharupinski[2] which exposes only the head of the animal, the glass holder illustrated allows the use of the unrestricted tail from which, when punctured, blood may be drawn easily and quickly into micropipettes. In terms of the blood sample taken, accurate analytical results depend upon not only the exactness of the calibration[3] of the pipettes used, but also the speed with which a sample of blood may be obtained, measured, and delivered; for mouse blood clots very quickly. An efficient holding device for mice is essential to success in securing blood samples with speed and accuracy. The cage here described meets these requirements adequately and also makes assistance unnecessary.

Eight sizes of holders have been needed to accommodate mice from 40 days of age and at 40-day intervals throughout life. The stems of all the cages are 3 cm. long; the diameter of the stems of the small holders is one cm. while for the large tubes 1.5 cm. was found to be a more satisfactory width. The smallest tube, for mice of about 12 gm., has a body 4 cm. long and 2 cm. in diameter. A holder for mice weighing in the neighborhood of 35 gm. has corresponding measurements of 7 and 3.3 cm. In operation the animal instinctively tries to draw in its tail, hence, excess space,

* Aided by a grant from the Josiah Macy, Jr., Foundation.

1 Francis, L. D., and Strong, L. C., in preparation.

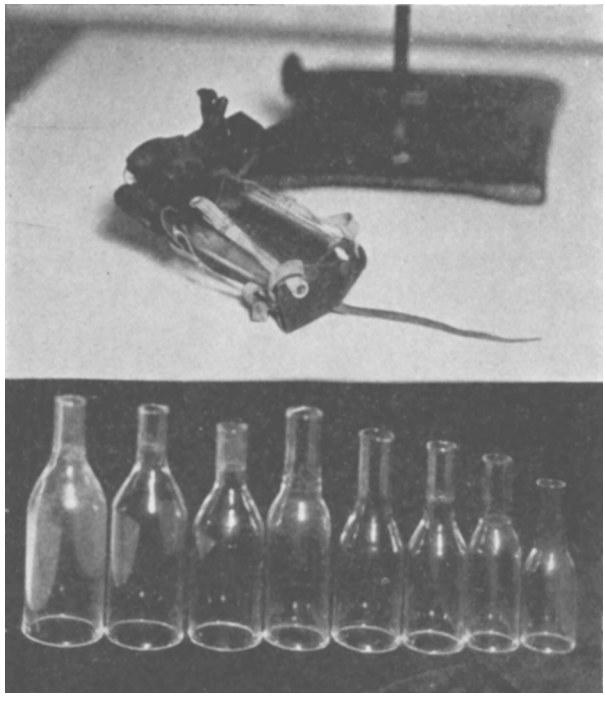
2 Shadle, A. R., and Sharupinski, I., *Science*, 1935, **82**, 335.

3 Francis, L. D., *J. Lab. and Clin. Med.*, in press.

which prevents confining a mouse too closely for its well being, is better allowed in width than in length of tube.

The harness which holds a mouse in place and keeps the tail outside the cage consists of 2 squares of pliable leather fitted with metal eyelets at the corners and having a hole cut in the center of each square. One of the pieces of leather is slipped over the stem of a holder and rests on its shoulder. The other square of leather fits over the wide end; it should be larger than the width of the tube in order to prevent a mouse backing out. The center hole of this caudal square of leather, if about one cm. in diameter, gives space sufficient to avoid pressure on a mouse's tail.

Four lengths of narrow elastic are threaded through the eyelets so as to connect the 2 pieces of leather. Ends are fastened securely, one at each corner of the square to be slipped over the stem end of a holder. Each of 3 of the 4 ends attached to the caudal piece of leather is tied loosely in place.



Having in hand a holder loaded with a mouse, the harness is slipped first over the stem, the mouse's tail is then threaded through the hole designed for it, the loose end of elastic is fastened in place and the other 3 ends previously loosely tied, are adjusted

so that the caudal square of leather is held snugly against the wide end of the tube. The stem is then clamped at an angle (see illustration) which facilitates work upon the exposed tail. A mouse is thus securely but comfortably confined, hence the operator's undivided attention may be given to securing a satisfactory sample of blood.

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Arrest of Experimental Convulsions by Acetylcholine in the Cat.*

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Following a control series of experiments (15 cats) in which (1) the minimal convulsive dose of camphor monobromide,[1] (2) the total number of such dosages, (3) the total number of convulsions which could be elicited before the animal succumbed, and (4) the total amount of the drug which could be intravenously administered with 15-minute intervals between the dosages, had been established, a series of 25 cats was studied in which after establishing the minimal convulsive dose of camphor monobromide, varying dosages of acetylcholine (anhydrous solution, Chevretin-Lematte) ranging from $1:1 \times 10^{-7}$ to $1:1 \times 10^{-3}$ gm. per kilo weight were injected intravenously just before the administration of the camphor monobromide, to determine how, if at all, the convulsions would be affected.

Results. It was found: 1. That a concentration of 1×10^{-6} gm./kg. was the smallest dose of acetylcholine which would arrest the clonic convulsion following a minimal dose of camphor monobromide. 2. That while the *first* dosage at such a concentration would arrest clonic convulsions, a repetition of the same dosage after an interval of 15 to 30 minutes would only delay the onset of the clonic convulsions, for an interval of from 30 seconds to 10 minutes, and it was necessary to employ a greater concentration of acetylcholine before a complete arrest of clonic convulsions was again obtained. 3. A concentration of acetylcholine of 1×10^{-4} to

* The cost of these experiments was defrayed by a grant from the Committee on Scientific Research of the American Medical Association.

1 Wortis, S. B., Coombs, H. C., and Pike, F. H., *Arch. Neurol. and Psychiat.*, 1931, **26**, 156.