STOMACH FEEDING IN MICE.[1]

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To be able to feed mice absolutely quantitatively has long been the desire of many experimentors. Of the many methods which have been devised for this purpose only one, that of Ehrlich[2] (feeding with prepared cakes), still survives. This method depends, however, upon the hunger or eating capacity of the individual mouse. The procedure which we present herewith is both quick and most easily performed. Since the introduction of this method, in this Laboratory under the direction of Professor Max Neisser, nearly a year ago, it has been in constant use for many different purposes, all of which form the subject of following papers, with the exception of the lethal and maximum dose of several drugs, which we present herewith.

Method.—The tube employed (Fig. 1) was made for us by the firm of F. and M. Lautenschläger, of this city. It consists of a silk rubber tube with a syringe needle head, being six and one half centimeters long. The forward end is rounded, as in the human stomach tube. The needle head projects very little into the lumen of the tube. With reasonable care these tubes may be kept for a long time. It is advisable to wash out the lumen with alcohol after using, in order to prevent clogging. In order to pass the tube the mouse is held in the following position. An assistant grasps between the thumb and first finger of the left hand the loose skin as far down over the nose as possible, the thumb being in line with the right ear of the mouse. The tail is now grasped

[1] Received for publication, October 28, 1907.

[2] *Deut. Med. Woch.*, 1891, xvii, 976.

with the right hand, the mouse drawn straight, then the tail is passed and held between the ring and little finger of the left hand (Fig. 2). The assistant now passes closed, with the right hand, a small thin bladed forcep, into the mouth, then allows the forcep to open, which movement forces the jaws apart. Care must be taken to have a forcep which does not open too widely (Fig. 3). The tube is now wet with water, grasped about its middle, by the operator, and passed downwards and a little to the side, until its length is lost in the digestive tract and mouth (Fig. 4). Force even of the slightest nature must never be employed. If the mouse is held correctly, and if the tube is placed correctly, only gentle guidance is necessary. The syringe holding the desired quantity is now quickly inserted into the needle head, and the piston forced down. The syringe is quickly removed, and after a little water or salt solution has been drawn in, again inserted into the needle head, and its contents injected. This last procedure washes out all the remaining fluid in both the syringe and tube, and insures the entrance into the stomach of the exact quantity. The tube is removed by one quick upward movement. Mice have not the power of vomiting and are therefore especially adapted for feeding purposes.

MAXIMUM AND LETHAL DOSES.

General Remarks.—We undertsand by the term "Maximum Dose" the largest dose which failed to kill one, from a great number of mice, between seventeen and twenty-five grams in weight. We do not pretend that it is the medicinal dose, or that it can be borne upon successive occasions at short intervals. However, from our experience with the substances mentioned below and with other substances, we can state that as a general rule, if a mouse bears a given dose, by this method, or by intraperitonel or subcutaneous injection, once it can bear the same quantity upon succeeding days.

Calomel.

Owing to its insolubility the giving of this drug, by this method, is not so satisfactory. We have employed it however in suspension, with the following results:

Lethal Dose	0.005 grm.
Maximum Dose	0.002 grm.

Dilute Hydrochloric Acid.

The finding of the lethal dose of hydrochloric acid was due to the fact that we desired to use it as a solvent for quinine, which follows:

Lethal Dose ..... 0.5 c.c. from a 6 per cent. solution.
Maximum Dose .. 0.5 c.c. from a 5 per cent. solution.

Quinine Hydrochlorate, in 3 Per Cent. Hydrochloric Acid.

Lethal Dose ..... 0.1 grm.
Maximum Dose ..... 0.08 grm.

Iodide of Potassium.

Lethal Dose ..... 0.03 grm.
Maximum Dose ..... 0.01 grm.

Sodium Salicylate.

Lethal Dose ..... 0.035 grm.
Maximum Dose ..... 0.02 grm.

Sodium Sulphite.

Lethal Dose ..... 0.2 grm.
Maximum Dose ..... 0.09 grm.

Sodium Sulphate.

Lethal Dose ..... 0.2 grm.
Maximum Dose ..... 0.08 grm.

Magnesium Sulphate.

Lethal Dose ..... 0.4 grm.
Maximum Dose ..... 0.2 grm.

Antipyrine.

Lethal Dose ..... 0.04 grm.
Maximum Dose ..... 0.01 grm.

Bichloride of Mercury.

Lethal Dose ..... 0.0007 grm.
Maximum Dose ..... 0.0004 grm.

Strychnine Nitrate.

Lethal Dose ..... 0.00005 grm.
Maximum Dose ..... 0.00003 grm.

Atoxyl.

Lethal Dose ..... 0.04 grm.
Maximum Dose ..... 0.02 grm.

Sodium Acetyl-paraamido-phenyl-arsenic Acid (Ehrlich).

Lethal Dose ..... 0.3 grm.
Maximum Dose ..... 0.1 grm.

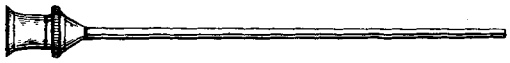

FIG. 1.

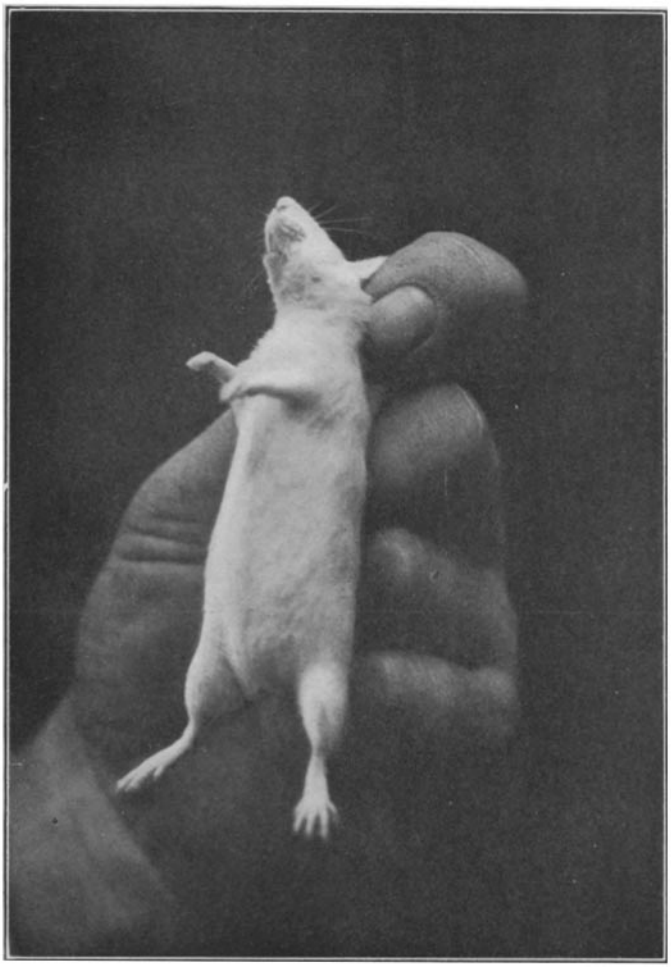

FIG. 2.

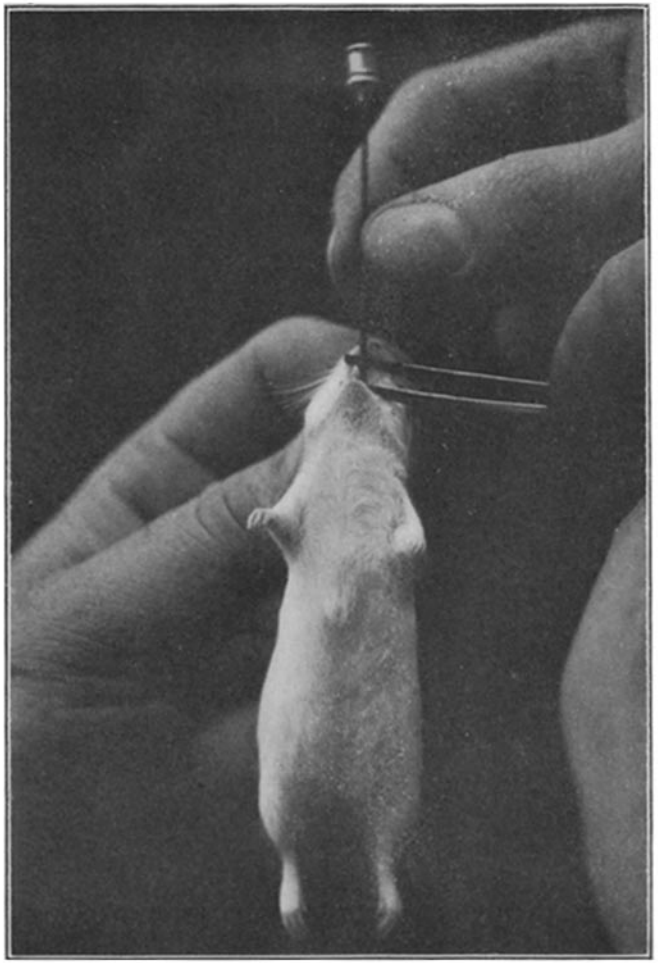

FIG. 3.

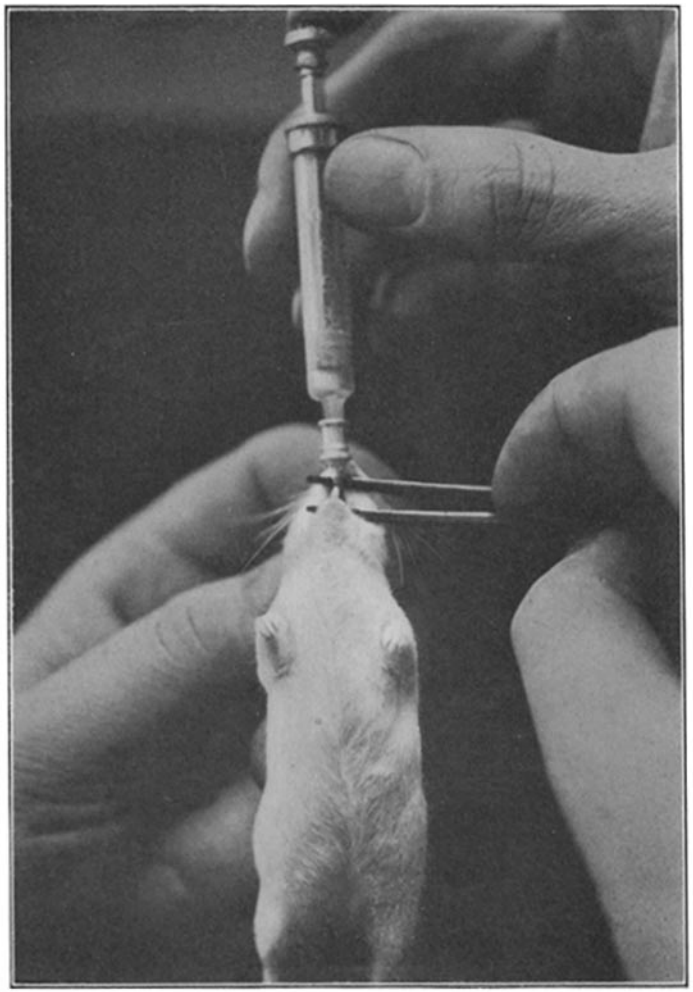

FIG. 4.