

other agents, and for studies requiring measurement of spontaneous activity, such as in drug addiction.

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### A Gas Machine for the Anesthetization of Small Laboratory Animals.\*

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In connection with a problem dealing with the effects of various anesthetic gases on small laboratory animals (rabbits), it was necessary in the interest of safety and economy to construct an apparatus which could be attached to any standard clinical gas machine. After considerable difficulty, an apparatus meeting these requirements was designed. This apparatus makes it possible to supply anesthetic gases to the animal in rather constant concentrations.

The apparatus (Fig. 1) consists of a small soda-lime cannister and 2 flutter valves, mounted on a base 8 by 6 inches. Accurate quantities of the gases are measured by a large gas machine and are delivered into the small machine through the inlet tubing (A). The gases then pass over the flutter valve (B) and are delivered into the face mask. The exhaled gases pass through the flutter valve (F) and then through a small soda-lime cannister into the rebreathing bag. On inspiration, the mixture of gases from the rebreathing bag passes through the inspiratory flutter valve (B) to the animal. The small chamber above this flutter valve acts as a mixing chamber for the fresh and the rebreathed gases.

This constitutes a closed carbon dioxide absorption circuit and allows rebreathing of the anesthetic gases. The flutter valves (B and F) alternately open and close on inhalation and exhalation, thus compelling all gases to pass in one direction only. The rebreathing bag is a small rubber bag of 400 cc capacity. The metal bell-shaped face mask is covered with a rubber diaphragm in the center of which is a small opening to admit the nose of the animal. The tubing has an inside diameter of 8 mm. This apparatus permits small animals to be anesthetized with a minimal amount of anesthetic gases. The resistance of the gases passing through the machine is less than 2 cm

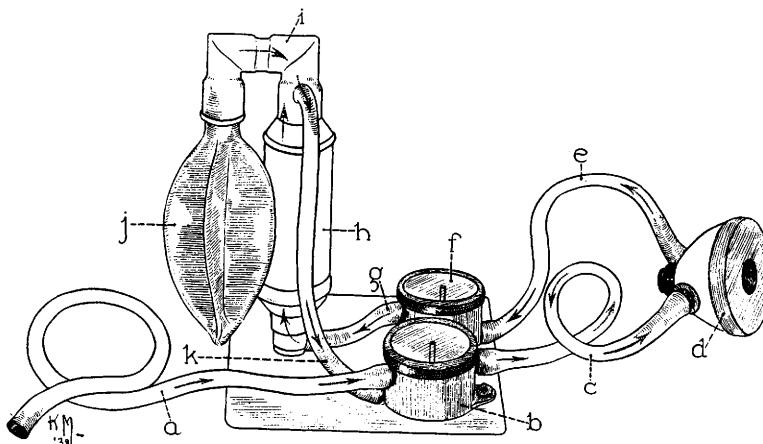


FIG. 1.

Gas machine for anesthetizing small laboratory animals.

- (A) Intake tubing
- (B) Intake flutter valve.
- (C) Soda-lime cannister.
- (D) Face mask.
- (E) Exhaling flutter valve.
- (F) Rebreathing bag.
- (G) Inlet for gases from rebreathing bag.
- (H) Soda-lime cannister.
- (J) Rebreathing bag.
- (K) Inlet for gases from rebreathing bag.
- (The arrows mark the course of the gases in the rebreathing circuit.)

water pressure, thus allowing the animal to breathe with a minimum of exertion. The use of the apparatus in experiments on rabbits proved highly satisfactory and with slight modification of the face mask, the apparatus can be used on any other small laboratory animal. We believe a similar machine can be satisfactorily adapted to the anesthetization of very small children.

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### Blood Pressures in Experimental Hydronephrosis.

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The studies of numerous investigators<sup>1, 2, 3</sup> have suggested that reduction in the amount of functioning renal tissue in dogs is ac-

<sup>1</sup> Passler, H., and Heineke, D., *Verhandl. d. deutsch. path. Gesell.*, 1905, **9**, 99.

<sup>2</sup> Mark, R. E., *Z. f. Exp. Med.*, 1925, **46**, 1; 1928, **59**, 601.

<sup>3</sup> Friedman, L., and Wachsmith, W., *Arch. f. Exp. Path.*, 1930, **101**, 173.