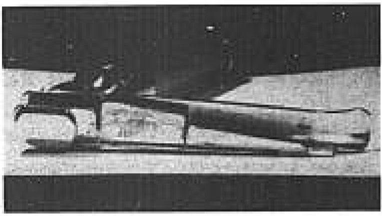

FIG. 2.

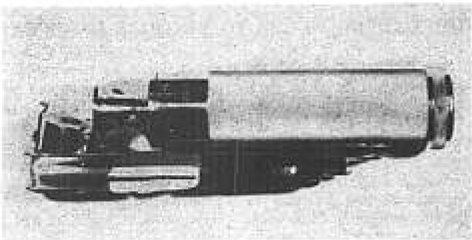

FIG. 3.

depressing the freed portion for about 7 mm.* (figs. 1 and 2). A softer piece of tissue may then be placed in the resulting gap. A strip of rubber or a wad of gauze is shaped to fill the depression and maintained in place by adhesive tape (fig. 3).

This modified laryngoscopic blade has been found to be satisfactory for endotracheal intubation. It affords good visualization of the larynx and better protection for the teeth than does the usual laryngoscope.

* The modification of the laryngoscopic blade was done, under our direction, by the Foregger Company.

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A NONREBREATHING MASK

Some three years ago in this Journal (1) a description appeared of a nonresisting, nonrebreathing valve for use particularly in pediatric anesthesia. The attributes claimed at that time for this particular technic have been borne out by adequate clinical application (2).

(1) Efficiency. The thin, resilient, rubber flaps, attached by their center to the underlying seat, are leakproof and yet function capably in any position. Water vapor is not precipitated on them during use, and thus there is not the tendency for them to stick and develop resistance, as may occur with metal valve disks. The mechanical simplicity of the apparatus is a favorable asset.

(2) Minimal resistance. In tiny infants less than a month old, anesthesia can be maintained with this mechanism for two or three hours at a time without the development of fatigue. At a flow rate of 15

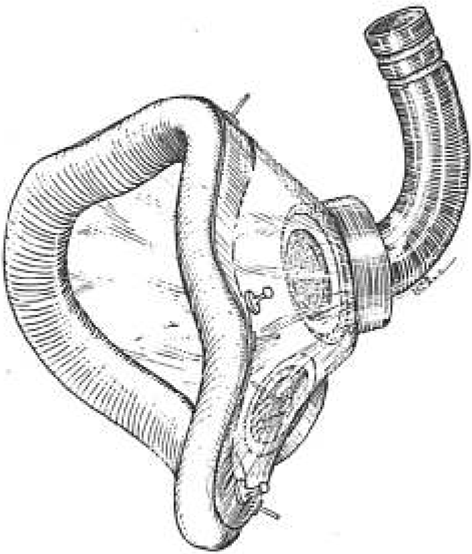

FIG. 1.

liters per minute, the resistance to inhalation is 1.75 cm. of water and that to exhalation is 1.0 cm. of water (2).

(3) Minimal dead space. With the most recent modification the dead space is reduced to 9.0 cc. Even in the smallest child this is negligible. The efficiency of the valve prevents any rebreathing, and hence any accumulation of carbon dioxide.

(4) Safety. The valve flaps are arranged in such a way that assistance may be given to inspiration, or artificial respiration may be instituted at a moment's notice.

One of the criticisms leveled at this nonrebreathing method has been the necessity of employing an endotracheal tube. It was thought in some shorter cases that intubation was a needless hazard for the patient. For this reason thought has been directed toward the creation of a nonrebreathing mask which would tend to retain the advantages of the technic and be clinically practical.

The principal problem to overcome was that of dead space. In any mask built to fit several age groups of children, dead space in a certain percentage was bound to be a complicating factor. With the help of Dr. Richard Foregger, however, a small-sized Bennett mask has been adapted so that clinically it serves the purpose well (fig. 1).* It will be noted that the inhalation valve is at the inlet to the mask, while the exhalation valve has been built into the plastic face piece. The latter is in such a position that the upper fingers of the hand which is holding the jaw may also close off the exhalation valve intermittently, so that, when desired, assisted respirations may be instituted by pressure on the reservoir bag (fig. 2).

This mask is of such a size that it can be used with good effect on children between 6 months and 9 years of age. It must be

* Such masks may be obtained from the Foregger Company, New York City.

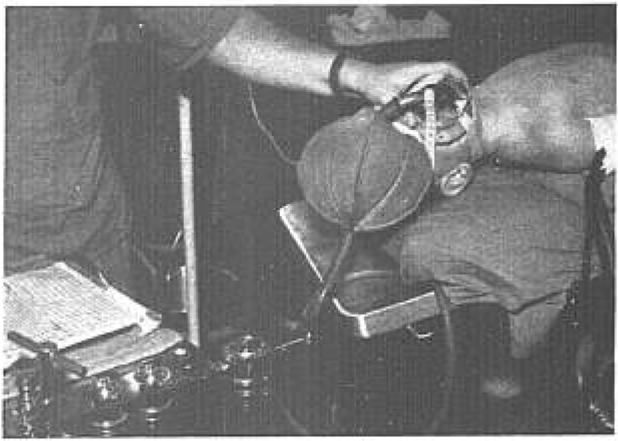

FIG. 2

strapped to the face tightly so that the anesthetic mixture is not diluted by air. A 2.5 liter bag is a sufficiently large reservoir bag.

In younger children, rebreathing from the dead space created by the face mask has been more than a possibility. As far as clinical observation can detect, this menace has been overcome by squeezing and emptying the reservoir bag completely through the mask every five minutes. By this maneuver the air under the face piece, as well as most of the gas in the reservoir bag, is driven out through the exhalation valve.

In other respects the mask behaves efficiently. The same rubber flaps are used as in the nonrebreathing valve, and so resistance to respiration is minimal. Of course, the worry of maintaining a perfectly clear airway is added to the other duties of the anesthetist. Anesthesia has been maintained with this mask, employing nitrous oxide with ether, trichlorethylene or pentothal; ethylene with ether or pentothal or, in the very young, a combination of ethylene and cyclopropane with or without pentothal.

Mention should be made that it is difficult with this nonrebreathing technic to induce anesthesia with nitrous oxide-ether and carry anesthesia to surgical planes. It is virtually impossible to build up in the system a sufficiently high concentration of ether for this purpose. However, once the patient is saturated with ether, as he can be in five or ten minutes by the open drop technic, this mask can be used to advantage in maintaining anesthesia with any one of the several combinations of agents enumerated.

SUMMARY

Objections have been raised to the necessity of employing endotracheal tubes with the nonrebreathing technic.

A description is given of a nonrebreathing mask which tends to overcome this problem in children.

This mask allows a variety of agents to be employed for maintenance of anesthesia.

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CORRESPONDENCE

To the Editor:

Occasionally the anesthesiologist is called to insert gastric tubes on the ward using laryngopharyngoscopy Often, because of anatomic variations in patients or because of irrational, uncontrollable patient behavior, this task is extremely difficult. Recently, we have had several patients who were disoriented and in whom gastric distention had developed. Because of this distention, we were reluctant to give pentothal sedation, believing that with the resulting depression the patients might suddenly regurgitate and aspirate (this has occurred in patients whose stomachs, although supposedly empty, suddenly emptied themselves of large amounts of fluid after only small amounts of pentothal had been administered).

A very helpful and entirely satisfactory method of nasal gastric intubation was devised. A firm yet flexible Magill rubber endotracheal tube of oral length is inserted transnasally to the hypopharynx. The head is then flexed sharply on the chest to direct the gastric tube into the esophagus. The Levin tube is then lubricated and threaded through the Magill tube. This sheathing action of the Magill tube prevents kinking of, or endotracheal intubation with, the gastric tube.

With this maneuver, we have found it easy to insert gastric tubes in difficult cases.

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