

Percentage Halothane Delivered with 5 Liters/  
Minute Oxygen Flow Through Ohio Vaporizer  
at 23° C.\*

Dial Setting	Jar One-half Full	Jar Full	Jar 4 mm. Above Full
Off	0	0	0
0.5	0	0	0
1.0	0	1.0	0
1.5	0.5	2.2	0
2.0	0.6	3.0	9.9†
2.5	0.6	3.4	11.9†
3.0	0.6	3.4	11.9†

\* The mixture of gases exiting from the vaporizer was passed into a Model E2 Beckman Oxygen Analyzer. The zero adjustment was set with 100 per cent cyclopropane at a flow of 250 ml. per minute and the span adjustment set with oxygen at the same flow rate. The percentage halothane was obtained by subtracting the subsequent reading from 100 per cent.

† At this dial setting oxygen bubbled through halothane.

that overfilling the jar 4 mm. above the 'full' line resulted in concentrations three to four times those indicated by the dial setting (see table). In contrast, with the halothane level below the 'full' line the concentrations remained lower than the dial setting and essentially unchanged regardless of the dial setting. Even with the jar filled to the mark the concentrations delivered were inaccurate. It was discovered that the same vaporizer had been used in the other case of sudden pulselessness which had occurred during spontaneous breathing a day earlier.

Human error is an important factor in anesthetic mortalities, particularly in teaching institutions where personnel with varying degrees of training utilize the same equipment. A vaporizer which can deliver lethal concentrations merely because of inadvertent overfilling should either be prohibited or redesigned.

## GADGETS

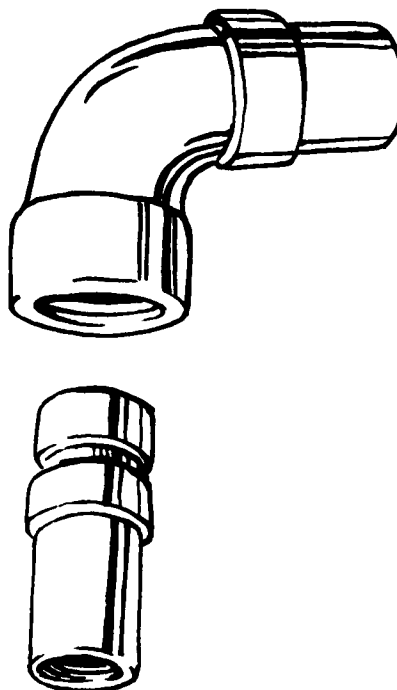
### The Swivel-Joint

Dr. Joseph Galasso of New York City has devised a new means of connecting the endotracheal catheter to the gas apparatus assembly. He calls the device the "Swivel-Joint."

The joint consists of a male adapter for insertion into the endotracheal catheter (it comes in sizes 18F through 42F) and a female adapter which connects the male adapter to the gas apparatus assembly.

The female adapter is "universal" in that it fits all sizes of the male counterparts. It does not have to be twisted manually for assembly or disconnection; just a little snap will suffice.

Furthermore, it can be rotated 360 degrees in any direction. This maneuver enables the anesthesiologist to keep his hands away from the sterile field during head and neck surgery and eliminates obstruction of the airway caused by twisting of the endotracheal catheter. It is leakproof.



### "Y"-Piece Adaptor

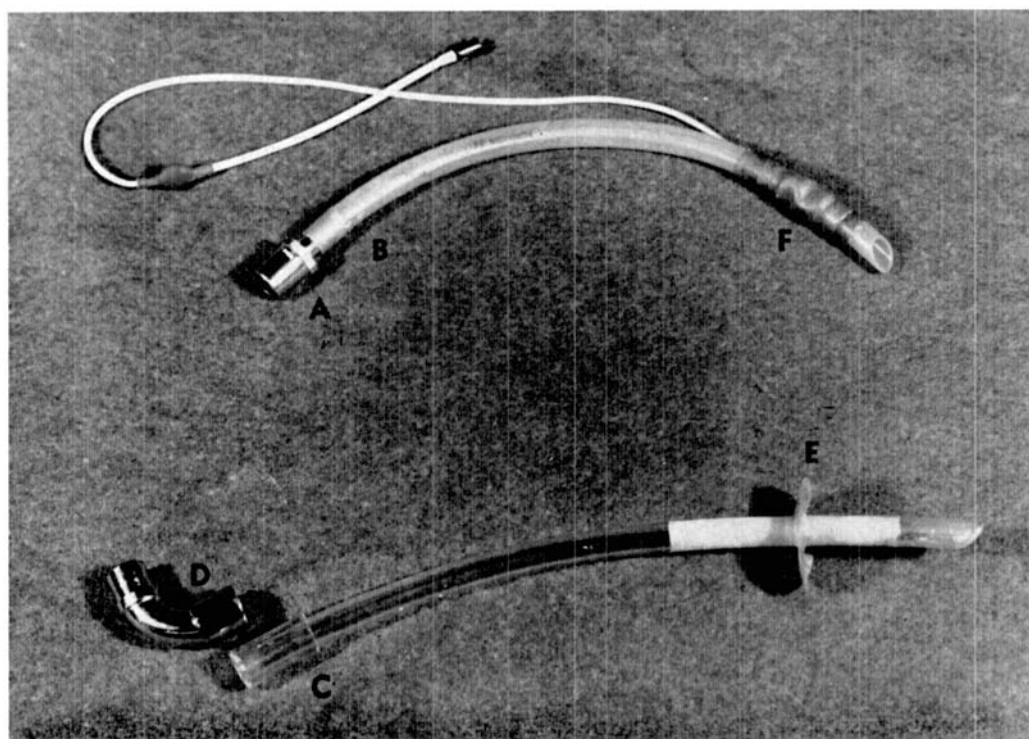
Dr. Alan Van Poznak of the Cornell Medical Center, New York City, believes that occasionally there is a need for a small light weight endotracheal "Y"-piece. This is useful for operations about the head and neck, when conventional adapters may be too large or heavy. A light weight adapter is useful for posterior fossa operations, to minimize the weight tending to pull the endotracheal tube out of the mouth. The illustrated adapter weighs 46 Gm. Its 15 mm. slip joint opening is on the side to allow close placement of the adapter beneath the drapes. The adapter has been found useful for neurosurgical, facial and plastic, and similar type procedures where space for the anesthesia connection is limited.



### The Modified Disposable Endotracheal Tube

Dr. Samuel Z. Weiss of Montefiore Hospital in New York City notes that the usual endotracheal tube needs a metal adaptor (A) (see illustration), one end of which is inserted into the tube (B) and the other connected to the

anesthesia machine. This diminishes the diameter of the airway and may slip out during the anesthetic procedure. Time is also wasted in matching the adaptor to the chosen size of tube. The cuff (F), when inflated, may exert



Usual endotracheal tube with cuff and disposable tube with disc.

undue pressure on the mucosa of the trachea. Furthermore, this endotracheal tube with the metal adaptor and cuff is too expensive to be manufactured for disposable use. Washing, cleaning and sterilizing are time-consuming, expensive in manpower and damaging to the life of the tube.

Dr. Weiss developed a disposable endotracheal tube, as shown. The male adaptor which is fixed on the tube (C), is of the same material as the tube itself and fits into the standardized size of the female connector (D). The inflatable cuff (F) is replaced by a disc (E) of thin, soft latex of the diameter of the larynx, which is placed distal to the vocal cords. Since there is positive pressure during the respiratory cycle, this disc acts like a valve and seals off the space around the endotracheal tube. No continuous pressure on the larynx

wall is exerted. The endotracheal tube itself is a transparent plastic.

Experience shows that the disc does not obstruct vision during intubation if it is at the proper distance from the distal end of the endotracheal tube (1½–2 inches). The soft, thin latex disc must be pushed through the larynx (which is as easy as passing the usual cuff in a relaxed patient) and then pulled slightly back until a faint resistance is felt, placing the disc just distal to the vocal cords. Immediately after intubation, there is often a leak by the latex-disc valve but it usually adapts itself after a few respirations and seals off the space tightly.

This plastic endotracheal tube is transparent and nonkinkable. With the built-in connector and a disc replacing the cuff, it is inexpensive and disposable.

## CORRESPONDENCE

### Vomiting and Aspiration During Anesthesia

*To the Editor.*— I have very much enjoyed reading the article entitled, "Vomiting and Aspiration during Anesthesia" by Drs. Bannister and Sattilaro (ANESTHESIOLOGY 23: 251, 1962). It contains, however, one substantial error of fact, which should, I think, be corrected. On page 258, it is stated:

"Mendelson reported that liquid vomitus was aspirated in forty of forty-five *fatal* cases." Referring to the original paper, I find that what Mendelson actually said was:

"The character of the aspirated material in the forty five *recorded* cases was liquid in forty and solid in five." (Mendelson: C.L.: Amer. J. Obstet. Gynec. 52: 191, 1946.)

Speaking of mortality, he says (p. 195):

"The two deaths in the series were due to suffocation from complete obstruction by solid, undigested food." Later, speaking of the forty patients who aspirated liquid vomitus, he says (p. 202):

"The majority of patient had an afebrile recovery, with complete clearing of the chest, in seven to ten days."

I think you will agree that this gives quite a different idea of the outlook in Mendelson's syndrome than that given by Drs. Bannister and Sattilaro.

E. T. THOMAS, F.F.A.R.C.S.  
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### Correction Factor for Wright Spirometer

*To the Editor.*—I was interested to read the article of Hall and Reeser,<sup>1</sup> in which they propose a correction factor for the Wright respirometer<sup>2</sup> when used to measure tidal flow. Their factor was based on the intermittent flow of air into a Palmer pump. The inflow into our own Palmer-Starling 'ideal'<sup>3</sup> pump is associated with a higher response than that

found with other pumps and is, indeed, higher than with the outflow phase of the same pump. Thus the inflow of the Starling pump is rather a special case and is therefore perhaps an unsuitable model for deriving a correction factor for general application. We are in agreement with the statement in the Manual produced by British Oxygen Company that