vomiting. The rectal or even oral administration of normal saline to the point at which the patient complains has proved to be an effective measure, which may be further enhanced by the addition of glucose. The patient should be moved as little as possible on his return to bed. . . . Apart from any other consideration, anoxaemia seems to be a pronounced predisposing factor in the causation of vomiting. Postoperative sedation should be applied, and the use of suppositories—e.g., nembutal—should not be forgotten. Vomiting which is actually occurring may be treated by a variety of remedies. Drinks of hot water, to which 10 to 15 grains of sodium bicarbonate may be added, strong hot black coffee, Lugol's iodine, and sips of champagne all have their measure of success. Lenevitch (1892) advised washing out the stomach with warm alkaline solution (sodium bicarbonate). Though suggested at such a relatively early date, this line of treatment has proved most efficacious, especially in cases of persistent vomiting." 4 references.

J. C. M. C.

GURNEY, RAMSDELL: *Some Recent Contributions to the Physiology of Respiration.* M. Rec. **154**: 255–256 (Oct. 1) 1941.

"Respiration is one of the more spectacular of physiological phenomena, owing for the most part to its ever presence, its subjective necessity and its striking variations. . . . I should like to mention four aspects of respiration which are much emphasized in the literature of today. Only through the understanding of these can some of the disturbances in breathing, with ensuing effects on the whole body, be interpreted. . . .

"The question of oxygen deficiency, or anoxia, has been a confusing one for many years. Oxygen lack invariably depresses whatever tissues are subjected to this deficiency and yet it is every day knowledge that diminished oxygen pressure stimulates respiration. This is well seen in high altitudes or in a pressure chamber where the atmospheric pressure is gradually reduced. Here, then, is a serious conflict—stimulation of respiration in anoxia as opposed to the fact that oxygen-lack ordinarily depresses. Although explanations were given for this phenomenon, none was satisfactory until the Belgian School, led by Heymans, discovered the functions of the carotid and aortic bodies. Through brilliant experimentation it seems proven without question that oxygen-lack stimulates the sensory nerve end fibers in these bodies which carry impulses to the respiratory center and which, in turn, is stimulated as a result of these impulses and not because of the anoxia directly. Such a conception of a reflex does no violence to the physiological truism that oxygen-lack depresses. Further evidence for this is that if the anoxia is severe enough, the respiratory center is acutely depressed, then being unable to respond to the increased stimuli coming to it from the carotid and aortic bodies. Likewise, this conception does not oppose the evidence for the ultrasensitivity of the center itself to carbon dioxide or changes in pH as a result of changes in carbon dioxide. . . .

"The relation between stimulation of the respiratory center by carbon dioxide and the reflex effect of lowered supply of oxygen is well demonstrated in a group of experiments by Henderson. . . . The stimulating effect of carbon dioxide on respiration is now taken advantage of in the operating room and following surgical procedures. It seems hardly necessary to mention . . . the great usefulness of increased pulmonary ventilation following a period of lessened lung mobility. It seems without question that many cases of

postoperative atelectasis have been avoided by the inhalation of this gas. The understanding of the relation of breathing to the pH of the blood is essential in the interpretation of chemical findings during changes in respiration. As Hasselbach and Henderson showed, the crucial formula in the present conception of the acid base balance of the blood is as follows: The hydrogen ion concentration of the blood is equal to a constant times the ratio of the amount of carbon dioxide in the form of carbonic acid in simple solution in the blood, to the alkaline reserve or $BHCO_3$, this ratio being in the proportion of 1 to 20. The amount of carbon dioxide in solution is merely a function of the partial pressure of the gas and can be increased by diminished ventilation or decreased by greater ventilation. . . . Thus, breathing by its control on carbon dioxide is one of the important factors in the preservation of the hydrogen ion concentration of the blood. . . .

"The nervous control of respiration has been reinvestigated and much new information has been obtained with some of the newer technical devices: for example, the number of impulses passing over the vagus nerves can be determined by an oscillograph. . . . Lastly, the discovery of a new enzyme has done much to clarify the rapid conversion of carbon dioxide to carbonic acid in the red cell. This enzyme is called 'carbonic anhydrase.' As you may remember, when carbon dioxide enters the blood it immediately passes for the great part into the red blood cell where carbonic acid is formed. It seemed almost inconceivable that a purely chemical reaction, such as this, could occur so rapidly without the assistance of an enzyme. The discovery of carbonic anhydrase makes possible such a reaction and gives further confidence in the chemical and physiological conceptions of carbon dioxide transport."

J. C. M. C.

THORSON, J. A.: *Intratracheal Anesthesia in Head Operations.* J. Iowa M. Soc. 31: 465–471 (Oct.) 1941.

"With few exceptions, intratracheal anesthesia is indicated in all operations of the head and neck where general anesthesia is preferred. . . . Active inflammatory disease or new growths in or adjacent to the larynx contraindicate tracheal intubation. The consensus of opinion is against endotracheal anesthesia in goiter work except where pressure on the trachea causes gross respiratory embarrassment. . . . Tracheal intubation assures patency of the airway so that constant adequate oxygenation minimizes rigidity. Endotracheal anesthesia likewise prevents spasm of the glottis which leads to anoxemia, respiratory exhaustion and shock. . . . Safety against intrathoracic sequelae is assured by the existing intratracheal avenue for the removal of mucus and exudate. There is ever present a functioning equipment for artificial respiration and the set-up permits very rapid variations in the depth of anesthesia and the maintenance of extraordinary light levels without adverse reaction. Definitely less anesthetic is used. . . .

"As to disadvantages, Clement states that the use of a laryngoscope . . . requires a deep plane of anesthesia to avoid injury to teeth and the soft structures of the mouth and throat. . . . Clement also mentions the possibility of epistaxis from inserting a Magill tube through the nose, and damage to the throat or vocal cords if an oversized catheter is used or if undue roughness is exerted during the insertion. . . . The question of premedication must be settled by the individual operator. . . . Tuohy advocates spraying the nose with a local anesthetic. . . . The technic