tion. The relative cost of paraldehyde analgesia and perineal anesthesia in our hands is approximately 9 to 11 cents per delivery, a financial factor of some importance in many institutions. We agree with Greenhill that this method should not be used in the presence of local inflammation or in nervous, high-strung individuals. The contraindications for general anesthesia in obstetrics are the indications for perineal anesthesia. This is well exemplified . . . where forms of analgesia other than paraldehyde were used, but all cases were terminated with perineal anesthesia."

J. C. M. C.

HEIDRICK, A. F.; ADAMS, W. E., AND LIVINGSTONE, H. M.: *Spontaneous Pneumothorax Following Positive Pressure Intratracheal Anesthesia.* Archives Surg. **41**: 61–65 (July) 1940.

Since the introduction of intratracheal anesthesia by Elsberg in 1909, this method has increased in popularity, especially in thoracic surgery. Elsberg mentioned the difficulty in determining the size of the catheter to produce the desired distention in the lung. The determining factor is the freedom of outflow around the catheter.

There is no agreement as to the amount of positive pressure which may be safely used. Coryllos, using an E and J Resuscitator upon humans and dogs, concluded that no trauma to the lungs occurred with pressures varying from plus 14 mm. to minus 9 mm. of mercury. He states that in order to rupture the lung of a dog, a positive pressure of 52–58 mm. of mercury is needed. In a study on cats, Macklin found that positive pressure intratracheally could produce mediastinal emphysema, pneumothorax, and subcutaneous emphysema. With relatively small catheters, it was more difficult to produce a pneumothorax.

Eisenbrey showed a wide variation between the pressure registered on the apparatus and that existing in the trachea. With a free outflow between the trachea and catheter, only 1–2 mm of mercury pressure was produced with a machine pressure of 20–50 mm. of mercury. Stoppage of the outflow immediately raised the intratracheal pressure to a dangerous level.

Bradshaw reports subcutaneous emphysema and pneumothorax in a baby (18 mos.) following intratracheal anesthesia; later an uneventful mask anesthesia was given and the operation performed, which was the removal of a large intrathoracic neurofibroma.

In 1936 Stephens reported three cases of contralateral pneumothorax complicating intrathoracic surgical treatment. Subcutaneous emphysema and mediastinal emphysema were present in one case. Positive pressure through the mask was used in two of these cases.

We wish to report a case of spontaneous pneumothorax following positive pressure intratracheal anesthesia. A 19 year old woman was being operated upon for relief of pain in the hand. A preganglionic sympathectomy in the upper part of the thoracic region was done. Anesthesia was produced by intratracheal administration of ether and oxygen after an ethylene-oxygen induction. A no. 8 Magill tube was introduced through the nose and into the trachea easily under direct vision. Anesthesia was maintained by the semi-open method and later manual pressure was used on the bag when a hole was made in the pleura. A positive pressure of 12 mm. (Hg) was maintained. Just before closure of the chest, oxygen was given through a machine and the lung seemed to expand well. Blood pressure, pulse, and respirations show no marked variation during the operation.

Postoperatively, the patient com-

plained of difficulty in breathing when she woke up, but was not dyspneic. Fourteen hours later there was subcutaneous emphysema over the right side of the head and neck, extending below the scapula and over the right temple. The patient was dyspneic. A roentgenogram showed a total pneumothorax with complete collapse of the left lung, but no shift of the mediastinum. Air was aspirated in small amounts at frequent intervals for 24 hours with relief of symptoms. In the second postoperative day emphysema was less marked and there was no difficulty in breathing. There was little febrile reaction and the subsequent convalescence was uneventful. On the seventh postoperative day roentgenograms of the chest were normal.

C. B. H.

WATERS, RALPH M.: *Anoxia: The Anesthetist's Point of View.* J. A. M. A. **115**: 1687–1690 (Nov. 16) 1940.

By derivation, the meaning of anoxia is "without oxygen," a condition incompatible with life and therefore scarcely a suitable word to use in clinical discussions. For want of such a word as "hypo-oxia" or "hypoxia," anesthetists are in the habit of using the clumsy expressions "oxygen want," "oxygen lack" and "oxygen deficit."

Illness, injury and the exigencies of surgery cause pain and often an associated oxygen want. Pain relieving drugs have side effects which interfere with the mechanism of respiration. Hence, if suffering is to be safely abolished or even minimized, the prevention and treatment of oxygen want must go hand in hand with drug administration.

The circumstances which embarrass oxygen transport with which anesthesiology is concerned may be classified in four groups:

1. The condition of the patient before anesthesia.
2. The pharmacologic characteristics of drugs other than pain relief.
3. Disturbances of physiology due to technical difficulties of drug administration.
4. The contributions of surgery.

The Condition of the Patient

Because of his illness or injury, the oxygen transport mechanism of the surgical patient is frequently defective. Consciously or unconsciously, the anesthetist must evaluate every patient's physical status in terms of ability to deliver oxygen to the central nervous system. The normal patient tolerates temporary oxygen deficit surprisingly well. Pre-existing defect in transport reduces tolerance in geometric proportion to the gravity of the defect. The chart is searched for evidence of defective oxygen delivery. Is there evidence of hypersensitive autonomic reflexes or attacks of syncope? What is the blood count? Are the lungs normal? A preanesthetic record of temperature, pulse and respiratory rate and blood pressure is important as a control with which to compare observations made during and after anesthesia. Administration of anesthetics for so-called emergency operations without preliminary examination has led to frequent morbidity and mortality due to oxygen lack which, if anticipated, might have been prevented. Insistence on preoperative hospitalization for twenty-four to forty-eight hours has saved many lives.

Pharmacology

Sedatives and narcotics administered orally or hypodermically, as well as anesthetic agents which are injected or inhaled for the prevention or relief of pain, have similar effects on the mechanism of respiration. Almost without exception they depress the respiratory center, decreasing minute-volume exchange, the extent varying with the dose of the drug and the susceptibility