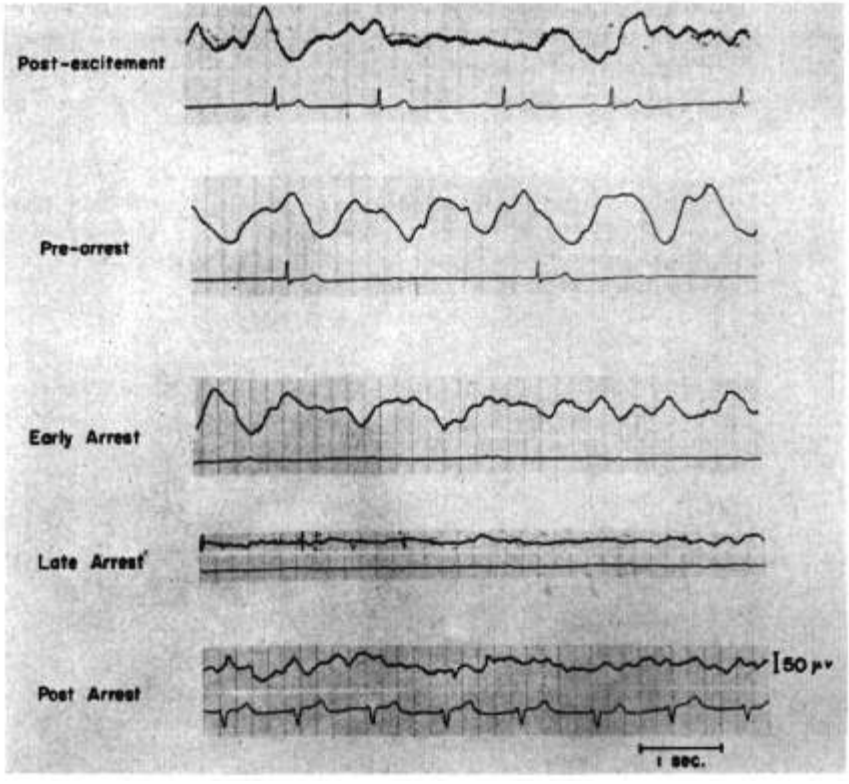
reported by Bellville, Artusio, and Glenn (Surgery **38**: 259, 1955) during acute cerebral ischemia. In the cases reported by these authors there was a sudden striking change from the fast activity of ether analgesia to the slow, regular activity associated with inadequate cerebral blood flow. This prominent change in the electroencephalogram was immediately apparent. In the case reported here the transition from the effects of anesthesia to those of cerebral ischemia, if such the prearrest tracing really represents, was superimposed on electroencephalographic activity already quite slowed, and, therefore, was not easily recognizable as indicating dire emergency.

These findings indicate that circulatory failure might occur during anesthesia before severe deterioration of the electroencephalogram becomes readily apparent. As experience with the electroencephalogram grows, one may be able to interpret subtle changes more accurately. It would seem prudent, however, for the individual with limited electroencephalographic experience to utilize the electroencephalogram as an additional tool during anesthesia, supplementing but not supplanting other standard measurements and observations.



Simultaneous electroencephalogram (upper line) and electrocardiogram (lower line) tracings before, during, and after cardiac arrest.

REACTION TO IMPROPERLY CLEANED ENDOTRACHEAL CATHETER

Dr. H. B. Keenleyside of Montreal, Canada, reports that various chemical agents are frequently used to sterilize endotracheal tubes. If these tubes are inadequately rinsed before use, the chemicals may cause laryngeal edema or tracheitis (Ransom, S.: Brit. Med. J. 1: 222, 1947; Smith, R. M.: Anesth. & Analg. **32**: 102, 1953). Formaldehyde is one of these agents that can cause glottic edema. The following case report illustrates that

formaldehyde remaining on an endotracheal tube may also provoke a reaction consisting of severe bronchospasm and pulmonary edema.

A right middle lobectomy was performed on a 20-year-old woman with pulmonary tuberculosis. The patient was healthy apart from the pulmonary lesion. Preoperative medication consisted of secobarbital, 100 mg., meperidine, 100 mg., and scopolamine 0.4 mg.

Anesthesia was induced with thiopental and decamethonium bromide. The larynx and trachea were anesthetized with 2 per cent topical tetracaine, and intubation carried out. Anesthesia was maintained with nitrous oxide-oxygen, thiopental, and decamethonium bromide, using controlled respiration. The patient was placed in the left lateral position for operation. Within a short time severe bronchospasm gradually developed, but only in the left lung. Numerous rhonchi and râles were heard throughout the left lung. The surgeon noted that the mediastinum was deep and moved very little with respiration. The right lung was always overdistended to an annoying degree because of overloading with anesthetic gases as a result of bronchoconstriction in the under lung. A positive pressure of 25 cm. of water did not produce adequate tidal exchange because of increased resistance. Systolic blood pressure fell from 120 to 80 mm. of Hg, and the radial pulse was weak. Small doses of atropine and methoxamine were given with little effect. Bronchospasm and hypotension persisted throughout the operation, which lasted four hours. At the end of operation the patient was having respiratory difficulty, and copious frothy fluid was repeatedly suctioned from the lung. Artificial respiration with oxygen was necessary for a short time, but four hours after operation the patient no longer coughed up frothy fluid, and the rhonchi and râles had disappeared. The remainder of the postoperative course was uneventful.

It was learned that the endotracheal tube used had been sterilized by exposure to paraformaldehyde but had not been rinsed with water afterward. Paraformaldehyde occurs in the form of a white powder and is employed as a convenient form for generating small quantities of formaldehyde gas for disinfecting purposes (The Dispensatory of the United States of America, ed. 25. Philadelphia and Montreal, J. B. Lippincott Company, 1955, pp. 588–591). Only the left lung was affected because, in the lateral position, formaldehyde-laden secretions would gravitate into the dependent lung.

Formaldehyde in the respiratory passages caused bronchoconstriction, flooding of the trachea and bronchi by fluid, and circulatory depression. This response resembles somewhat that in poisoning by neostigmine or diisopropylfluorophosphate. Treatment consists of large doses of atropine and artificial respiration with oxygen.

NONEXPLOSIVE LUBRICANT

Dr. Stephen A. Chilian, Jr., of St. Mary's, Pennsylvania, believes that he has discovered a lubricant which meets five of the following six requirements: (1) absolute nonflammability, (2) no deleterious effect on the patient, (3) efficient lubrication, (4) availability, (5) low cost, and (6) electrical conductivity.

Heretofore, the flammability of all available lubricants precluded their safe use on oxygen equipment or anesthesia machines. Two that have been developed, he tested and discarded as unsafe. These were, first, the so called "greaseless lubricant" which was developed by one of the manufacturers of such equipment, and second, Dow-Corning silicone lubricant. The former is a wax base material of high flammability, while the latter is a synthetic product, which although flammable ignites with much more difficulty than grease or wax and burns more slowly, leaving a chalky residue. Neither of these, however, is satisfactory. Powdered graphite was considered, but was immediately discarded, since it not only is highly flammable in a Bunsen flame but dirties equipment and hands out of proportion to the amount used.

The substance Dr. Chilian recommends is powdered mica. This in the form of a white powder of pearly lustre and with a decidedly "greasy" feel to the fingers. It is probably mainly Muscovite, the most commonly used of the micas, and is a complex and variable orthosilicate of aluminum together with alkalies, basic hydrogen, and occasionally