biturate . . . combined with 1/32–1/24 of dilaudid or 1/6–1/4 grain of morphine plus 1/100–1/150 grain of atropine 45 minutes before the administration of the anesthetic. . . . Sacral block anesthesia for operations in the perineal region is superior in many ways to any other form of anesthesia. . . . The patient may be placed in any position desired by the surgeon immediately upon completion of the block; nausea and vomiting, during the operation, are rare; it is the longest lasting of the various block anesthetics; there is no distortion of the operative field, as occurs in infiltration anesthesia; it wears off slowly, permitting the administration of morphine before sensation returns, making the postoperative course more comfortable to the patient; the toxic effects of general anesthesia are reduced; there is seldom any postoperative nausea and vomiting; postoperative headache is eliminated; catheterization of the patient is not necessary as frequently as in spinal anesthesia; the contributing factor of anesthesia to pneumonia is eliminated; shock is rarely encountered; electrical apparatus may be used freely and safely; fluids by mouth may be given freely, . . . without untoward effect. . . .

"In spinal anesthesia either procaine or metycaine is used. The preoperative preparation is essentially the same as for sacral block. A vasoconstrictor drug, perferably ephedrine, should be administered in the higher spinals. . . . Spinal anesthesia offers advantages for many types of operations impossible to obtain with any other anesthetic. . . . The abdominal block of the anterior abdominal wall, using one-half to 1 per cent procaine, is beneficial, especially in debilitated subjects and for prolonged operations within the abdomen. . . . Brachial plexus and cervical blocks are, at the present time, the least used and the least satisfactory of the block anesthetics due to the fact that it is impossible to obtain perfect anesthesia in some cases. . . . Infiltration anesthesia by using 1 per cent or 2 per cent procaine solution injecting with different length needles into the tissues surrounding the part or through which the sensory nerves pass to the part to be operated is applicable to tumors of the skin and subcutaneous tissues, fractures, finger and toe operations, circumcisions, etc."

J. C. M. C.

DRAPER, W. B., AND WHITEHEAD, R. W.: *Chances of Resuscitation after an Overdose of Ether, Divinyl Ether and Chloroform.* Lancet 1: 442–444 (April 11) 1942.

"An anaesthetic death may be regarded as the end-result of two successive accidents. First a potentially lethal overdose is administered, and afterwards there is failure to resuscitate. The varied and complicated circumstances which always surround death under anaesthesia usually provide a plausible explanation for the tragedy, but in the final analysis the same ultimate cause can be seen to have operated: there was failure to resuscitate. Safety in anaesthesia, therefore, depends to some degree on success in resuscitation. . . . Although certain of the properties which make resuscitation possible—such as the effect of the drug on the various components of the circulatory system and the rate of its elimination—have been intensively studied, no one so far as we are aware has made a systematic attempt to determine the probability of resuscitation from a standardised lethal dose of an inhalation anaesthetic. . . .

"Doses of ether, divinyl ether and chloroform, measured per kg. bodyweight, were administered to dogs. . . . The dose given was the minimal amount required to produce an apparently permanent respiratory arrest in the

particular dog used in at least 2 out of 3 consecutive administrations. . . . By this means the dose was assessed for each dog in the series. . . . After the respiratory paralysis had lasted 10–15 sec. the mask was removed and the dog was resuscitated by artificial respiration and the administration of oxygen. All experiments were conducted by a standardised technique which made them identical to each other with the exception of the anaesthetic used. . . .

"Data from 600 cases were as follows: after 250 respiratory arrests produced by ether there were 2 (0.8%) failures to resuscitate; after 137 arrests produced by divinyl ether there were 4 (2.9%) failures; after 213 arrests produced by chloroform there were 22 (10.3%) failures. Thus respiratory arrest produced by chloroform is much more likely to prove fatal than that produced by ether or divinyl ether. Resuscitation after an overdose of an inhaled anaesthetic is made possible by the fact that respiratory arrest develops before circulatory failure. We have termed the period separating respiratory arrest from failure of the circulation the resuscitation interval because it is only during this interval that resuscitation is likely to be successful. The longer this interval is the greater is the probability of resuscitation. Unless the circulatory volume per minute at the time of respiratory arrest is sufficient to provide effective transport of gases between the lungs and body tissues artificial respiration will not be effective. In general, rapid elimination of an anaesthetic is associated with rapid recovery from overdose, but mere speed of elimination is not synonymous with certainty of resuscitation. Anoxaemia is synergistic with the toxicity of anaesthetics. Thus satisfactory oxygenation at the time of respiratory arrest favours resuscitation. Spasm of the vocal cords or food in the stomach (which may be expelled into the pharynx during artificial respiration) may prevent adequate ventilation of the lungs by artificial respiration and seriously prejudice the chances for resuscitation. Analeptics in general are uncertain stimulants of the paralysed respiratory centre and in fact may do harm. The most important method of treating respiratory arrest is prompt artificial respiration, supplemented by oxygen." 4 references.

J. C. M. C.