

air-passages. Such dangers are peculiarly apt to arise in all operations upon the mouth, nose, and upper air-passages. In these cases, whether chloroform, infusion of ether or hedonal, or colonic etherization is adopted, the method used must enable the patient to retain his laryngeal reflex, otherwise foreign material will invade the lungs. It is urged in favour of the insufflation and pharyngeal methods, that such an accident is impossible; and were the technique of these plans less difficult, there is no doubt that one or the other would give the patient the best chance of avoiding these accidents.

The method of prolonged nitrous-oxide administration, with or without oxygen, whether by the nasal route or by one of the many good apparatuses provided with a safety valve, is less safe than when employed for one brief inhalation. A severe strain is imposed upon the respiration; and the heart and blood-vessels, unless healthy, are overtaxed as the blood-pressure becomes raised.

Intratracheal insufflation, so far as we know at present, presents great possibilities; but even slight errors of technique may cause serious interference with the pulmonary circulation, through prolonged plus pressure being maintained in the lungs, although obviously this is not a necessity of the method.

The methods of colonic etherization are valuable, both for operations on the air-passages and on the thorax, lungs, and pleura. They prove most dangerous unless the air-ways are kept patent, and also when the colon has been weakened by disease, and especially if ulceration has existed. If liquid ether enters the bowel, serious proctitis will ensue; and excessive injection of the vapour has caused meteorism, and even rupture of the bowel. The ether-in-oil (75 per cent) method of Gwathmey is yet on its trial; it has been recently shown to be less free from danger than was originally supposed. Patients at times remain unconscious for many hours, nor has the method been free from fatalities.

The danger of intermittent dosimetric methods in the use of chloroform has long been recognized, but recent work has shown that unless complete anaesthesia is induced, cardiac fibrillation is produced. Vandell Henderson believes the condition is really due to asphyxia; but whatever theory we adopt to explain the phenomena, there is no doubt that methods which bring about this condition are fraught with grave danger to the patient. However, chloroform given by a dosimetric system is certainly safer than when an open method is employed. The depth of narcosis can be controlled by dosimetry, since it is as easy to employ a high as a low percentage value of vapour. It expects to restrict the strength to values of 2 per cent or less, it is because evidence exists which proves these values are the safest. In some instances it may be requisite to employ a vapour of higher percentage strength, but the prognosis of any strength above 2 per cent is certainly not favourable.

With regard to the methods of giving ethyl chloride, it may be said that the open plan much used by Hornibrook in Melbourne is reputed