

its effect is commonly associated with a superadded asphyxial effect. This, however, is concomitant rather than essential, so that when it is obviated the power of nitrous oxide to induce insensibility is in no way limited. It would thus appear that this anæsthetic, when used for brief periods and when concomitant asphyxia is prevented, has an extremely favourable prognosis. In cases in which excessively high blood pressure exists, or where there is marked impediment to respiration, *etc.*, in *anima Ludovici*, its use would have a serious prognosis.

MIXTURES OF ANÆSTHETICS, such as H. A.C. (1 volume of alcohol to 9 of chloroform), the C.E. (2 of chloroform to 3 of ether*), and the A.C.E. (1 of alcohol, 2 of chloroform, and 3 of ether), act variously and variably according as they are administered by one method or another. In hot weather chloroform and ether mixtures given by an open method produce mainly an ether effect at first, and later a chloroform effect. A closed or semi-closed method promotes a chloroform effect, modified by the dilution due to the other ingredients of the mixture. It is not safe to assume that true antagonism exists in such mixtures, since the component anæsthetics evaporate individually and at different temperatures. Further, they possess a various coefficient of spread when sprinkled upon an absorbent surface such as lint or gauze, and the rate of evaporation may be taken roughly as varying directly as the spread and inversely as the wetting. While the heavier vapours sink towards the reclining patient, the lighter rise and escape into the atmosphere of the room. Schäfer, however, has demonstrated that the alcohol-chloroform mixture is, in fact, more reliable, so that a certain amount of antagonism is existent. This was assumed in the case of the A.C.E. mixture also, and it is probably true, though to a less extent, although the ether component acts as a diluent, not as an antagonist, to the chloroform. It will be observed that when alcohol, ether, and chloroform are shaken together, heat is generated, a fact which appears to indicate a more intimate association than exists in simple solutions. In the case of mixtures, the risk to life—*to wit*, the prognosis—is influenced more by such extraneous conditioning factors as temperature, method of administration, amplitude of respiratory movements, than in the case of single anæsthetics. This is because no administrator can be sure what is the actual percentage strength of chloroform vapour being inhaled at any given moment.

The employment of *mixtures of the vapours* themselves, by some method such as that suggested by Gwathmey, removes many of these objections. Such elaborations as Scheideh's or Wertheim's solutions are too infrequently employed to need analysis.

Gaseous mixtures, such as that of nitrous oxide and air or oxygen, fall into another category. Here the oxygen or air merely supplies

* *For example*, 1 volume of alcohol, 2 of chloroform, and 3 of ether, 1 volume of alcohol, 2 of chloroform, and 3 of ether, 1 volume of alcohol, 2 of chloroform, and 3 of ether.