

may learn some "valuable facts regarding the danger of chloroform, and the circumstances which modify it." These may be summed up as follows:

1. A large number of the deaths occurred at an early stage of the administration—before the commencement of the operation.
2. The deaths have occurred chiefly among males.
3. The average age at which these deaths have taken place is about 30; no death is recorded under 5 years of age; one death took place at 60, and one at 65.
4. The more healthy and vigorous the patient the greater is the danger from chloroform.
5. The largest proportion of deaths has occurred in cases of the most trivial operations.
6. The great proportion of deaths has been in cases wherein but little chloroform has been inspired (Sansom); in 7 cases collected by Dr. Sansom the amount used was only half a drachm or less.

The "diseased conditions" which are found to increase the danger from chloroform are intemperance, fatty degeneration of the heart, poisoned conditions of the blood as uræmia, pyæmia, and delirium, shocks, hysteria, and nervousness. A large number of deaths has taken place in patients with fatty degeneration of the heart. A large number of deaths has also resulted from the administration of chloroform in cases of habitual intemperance or chronic alcoholism.

SIGNS OF DANGER.—In examining the records of cases in which signs of danger occurred under the influence of chloroform, we find that out of 64 cases in which signs of danger occurred, there was cessation of the pulse in 19 cases; muscular excitement in 15; embarrassed respiration in 13; pallor of face and lips in 11; cessation of hæmorrhage from wound in 2; and vomiting followed by immediate death in 2 cases. The signs of embarrassed respiration, it is found, seldom or never occur except in cases of chronic alcoholism and in the later stages of the administration, where the profound influence of the chloroform is indicated by irregular breathing and stertor. According to Dr. Sansom "the history of all (fatal cases) is that the heart's action ceased before the breathing; that, in fact, death was due to syncope, *i. e.*, paralysis of the heart." Out of a total of 3058 cases in which chloroform was administered, alarming symptoms occurred in 21 cases; of these 5 occurred within half a minute of the commencement of the inhalation.

POST MORTEM APPEARANCES.—From 51 post mortem examinations in cases of death from chloroform, it was found that an "almost constant sign

was darkness and fluidity of the blood," and that a "frequent sign was, accumulation of blood in the right chambers of the heart.

MODES OF DEATH.—In animals, death from chloroform, according to Dr. Sansom, "occurs in a definite manner by that form of asphyxia which is due to the suspension of the motor power supplied to the muscles of respiration; death may be said to commence in the brain. In man, death occurs by a more complex mode modified by general conditions of the system; by emotional influences and by the methods by which chloroform is administered. Death in the human subject may take place (from chloroform) by syncope, by asphyxia and by necremia."

RESUSCITATION.—The treatment of apparent death from chloroform has also occupied the attention of the Medical and Surgical Society of England, as well as the Medical Society of Emulation of Paris. From their experiments and investigations we learn that the only perfect stimulus to the "failing heart" is "sufficiently aerated blood" and that "the only mode of producing it is the excitation of respiration." (Sansom.)

The Committee of the Medical and Surgical Society report on this subject as follows:

"From experiments on animals, and also from a consideration of cases of accidents with chloroform in the human subject, the Committee is strongly of the opinion that the first and most important means of resuscitation is artificial respiration." * * *

"It is of the most pressing importance that artificial respiration should be commenced the moment the alarming symptoms exhibit themselves. The delay even of a few seconds, will doubtless, in some cases, destroy the only chance of life. Artificial respiration should be practised in the manner known as Dr. Sylvester's method and as recommended by the Committee on Suspended Animation." * * *

"Mouth-to-Mouth insufflation is a most valuable method of resuscitation. By it several good recoveries have been effected, a large quantity of nearly pure air being blown into the chest at each insufflation. In all cases in which it is employed the nostrils should be closed and the larynx should be pressed against the spine, to prevent the escape of air down the œsophagus."

Dr. Sylvester's method of producing artificial respiration, recommended by this Committee for cases of apparent death from chloroform, is also recommended by the Royal Humane Society as the best method of inducing respiration in cases of apparent death from drowning, still-birth, noxious gases, &c. This method may be briefly described as follows: The patient is placed without delay, on his back, on the floor, couch or table, with an im-