

method was not very applicable in surgical operations, as they could not tell how much would evaporate without being inhaled, and consequently, would be liable to fall short of the effect. When he, Dr. Snow, administered chloroform, he seldom produced complete insensibility in less than two minutes, as he never used the water-bath at a higher temperature than 60°, and if the patient breathed deeply, he opened the valve a little to dilute the vapour still further with external air.

He preferred chloroform on the whole to ether in the cases of adults, and had given it to young children with the most satisfactory results, yet he preferred the less powerful agent in the cases of children, as chloroform acted with still greater rapidity on them than on grown people. Ether rendered children insensible to any operation in the space of two minutes, and its effects on them were extremely favourable; but it required an apparatus by which the vapour could be exhibited very gradually at first, otherwise it caused them to hold their breath, as, indeed, did chloroform. He considered that an anæsthetic agent, which could be safely administered on a sponge or handkerchief by medical men, with no special experience, to all patients, young and old, was still a desideratum. He had lately applied benzin in St. George's Hospital, and its action was very efficient and favourable in four cases of tooth-drawing, where its effects were only carried to the second degree; but in an amputation where narcotism to the third degree was induced, it caused some convulsive tremors, and, consequently, although it totally prevented the pain, and was followed by no ill consequences, yet it did not seem applicable to important operations. The benzin he used was prepared by Mr. Bullock, by distilling benzoic acid with slaked lime. About the same quantity as of chloroform was expended, as about a drachm was used in each of the cases of tooth-drawing, and two drachms in the amputation; but being less volatile, it produced its effects less quickly. Benzin was the same liquid, under another name, as the bicarburet of hydrogen which Dr. Faraday had previously discovered and obtained from condensed oil-gas. It consisted of six atoms carbon and three atoms hydrogen, and had a rather pleasant aromatic odour. He placed on the table an apparatus which he had contrived and used for the administration of chloroform. It consisted of two cylinders placed one within the other, and partially lined with bibulous paper, which absorbed the liquid and gave it up again to the air which passed over its surface. These cylinders were enclosed in a third one containing a water-bath. The inhaler was about the size of a half pint bottle, and when in use was suspended by means of a short tube and screws to the face-piece which formed part of his ether apparatus.—*London Med. Gaz.*, Jan. 1848.

46. *Effects of Chloroform on the Blood.*—Mr. T. B. Toon, who amputated the leg of a patient under the influence of chloroform states, (*Prov. Med. and Surg. Journ.*, Feb. 9th, p. 62,) "one circumstance which particularly arrested my attention during the process of securing the vessels, was the highly venous appearance of the blood issuing from the arteries," and I further remarked, "that in proportion as the special effect of the chloroform passed off from the patient, the blood from the small muscular branches resumed its arterial character."

47. *Means of Reviving those Rendered Insensible by Chloroform.*—M. PLOUVIEZ has communicated to the French Academy of Sciences, an account of an experiment on a dog with chloroform. A small dog, weighing about eight pounds, was made to inhale a gramme and a half of chloroform. At the expiration of ten or fifteen seconds the animal was in a state of insensibility. The breathing was soon difficult, and in a short time the animal was dead. The time that elapsed between the exhibition of this dose (about the twentieth of an ounce) and death was a minute and a half. On dissection there was nothing to indicate the cause of death. Dr. Plouviez, in order to ascertain what course could be taken in the event of such an accident occurring to a human patient, made several experiments with various animals, which were ceasing to breathe after the use of chloroform. He introduced air into the lungs in the same way as is done with persons, who have been suffocated by the fumes of charcoal, by stimulating the act of respiration, and from time to time slightly compressing the chest. By adopting this means all the animals speedily resumed their former state. In some cases he even waited until the breathing had entirely ceased, and the animals were apparently

dead. In various periods of time from thirty seconds to four minutes, he was able to bring them to life.

M. BLANCHET has shown by experiments on animals that oxygen gas introduced into the lungs is efficacious in recovering animals poisoned by chloroform.—(*Comptes Rendus*, 20th Dec., 1847.)

The following means are recommended for adoption in cases where an overdose of chloroform has been taken, by the Editor of the *Month. Journ. and Retrospect of the Med. Sci.*, (March, 1848.) The patient should be laid on the floor, with his head, if possible, near a current of fresh air. The breathing may be assisted by compressing the chest, and a little cold water ought to be thrown on the face and chest. If the symptoms continue notwithstanding these means, artificial respiration should be diligently practised, and the extremities briskly rubbed with hot cloths. The friction promotes the capillary circulation, and in this manner, undoubtedly contributes powerfully to restore the action of the heart and lungs. In extreme cases electro-galvanism should not be neglected; shocks may be transmitted through the chest, so as to assist the efforts at artificial respiration, and in the case of syncope, a powerful galvanic current should be transmitted through the heart. A very powerful and rapid means of rousing the sinking powers of life, and one readily obtained, is found in the application of boiling water to the chest. This is effected by filling a glass or cup with boiling water, over the top of which a towel is placed, and then inverting the vessel on the breast of the patient. The efficacy of this application has been repeatedly displayed in the practice of M. Rayer of Paris. Individuals who, from disease, were so near death as to be completely insensible and speechless, have thus had intelligence and speech restored, while life was prolonged for a considerable time. Of course, it is understood that we only suggest its use in extreme cases. Dr. Simpson directs attention to the impropriety of administering stimulant liquids by the mouth, when, from the state of insensibility, the power of swallowing is lost. The danger of their covering the aperture of the glottis, or entering the larynx, and so hastening death by suffocation, is indeed imminent. When the saliva is secreted in large quantity, it will be advisable to place the patient on his side, to prevent it acting injuriously in the same way. The loss of the stimulants is scarcely to be regretted, as the other means above proposed are infinitely more efficacious.

The procedure here indicated is equally applicable, whatever view may be entertained as to the immediate cause or mode of death. This point is not yet satisfactorily determined. As with other cerebro-spinants, the death seems to be of a mixed kind, partaking both of the characters of asphyxia and syncope, the one or other predominating according to the dose, mode of exhibition, idiosyncrasy, &c. Experiment has shown that, when a small proportion of air is inhaled with the chloroform, asphyxia plays a prominent part in the symptoms.

48. *Opinion of M. Roux relative to the use of Ether Inhalation.*—The *Gazette des Hôpitaux*, (Nov. 11 and 16,) contains an interesting lecture on this subject, by M. Roux, delivered at the opening of his clinical course for the session 1847-48. The lecturer considers pain in three points of view:—

1st. As a symptom in many diseases, in which it constitutes a valuable element of diagnosis, and in which it serves as a characteristic phenomenon.

2d. As inseparable from surgical operations.

3d. As a therapeutic means capable of producing a favourable modification of the diseased organism.

In treating of pain as inseparable from surgical operations, the distinguished surgeon thus notices etherization:

"We no longer resort to etherization as we thought it our duty to do when it was first discovered. Then it seemed necessary that we should hasten to see its effects; we had to multiply cases,—we took advantage of all cases which offered themselves to us. Now that thousands of facts have been collected, we see that ether should be *only* used for serious operations, where pain is very much dreaded."

49. *M. Blandin's opinion of Etherization.*—M. BLANDIN, in a clinical lecture, (*Gaz. des Hôp.*, Nov. 23,) remarked: "Like all active medicaments ether, with