

operations, the last two for brief ones. Before making a selection I may say a word about the comparative mortality from chloroform and æther, the two anæsthetics in common use. A recent report to government in Paris gives the mortality from chloroform as 1 in 1236, and that from æther as 1 in 13581. During the last 3 years 41 deaths have been reported in England from chloroform, and 3 from æther. Surgeon-major Lawrie informs us that he has given chloroform 40,000 times in India without a death from it. The climate must influence the mortality, or he is a very fortunate man. It has been contended with much force that chloroform should be given to children, to aged people, to alcoholics, to excessively obese persons, and in operations where the actual cautery is employed. In all other operations I think it decidedly safer to make use of æther. Knowing that deaths may take place during the exhibition of *any* anæsthetic, the anæsthetist cannot be too careful, *his finger should be ever on the pulse and his eye on the breathing*. Neglect of this precaution has doubtless caused many deaths. The moment he detects heart failure he should remove the anæsthetic,—should the breathing fail do the same, draw out the tongue and resort to artificial respiration. Every thing about the patient should be loose, he should lie in a horizontal position, and preferably on his back, and his stomach should contain little or no food. *On no account should he be allowed to inhale the drug while struggling*. If forced upon him when taking a deep inspiration, he may receive into the lungs a poisonous dose. I wish to emphasize this precept. Though this precept has been recently combatted by Dr. Kirk of Glasgow, who declares that the anæsthetist should use the drug freely, and contrary to the general belief, he accepts pallor as an indication for more chloroform. And the operating surgeon should never administer the anæsthetic; he cannot watch its effects and do his work.

When Hippocrates recommended that wounds should be dressed with water having been previously boiled, he foreshadowed the antiseptic treatment. But it must be acknowledged that the "germ theory" of disease, gave rise to the brilliant experiments and teachings of Sir Joseph Lister, which have so revolutionized the treatment of wounds. For however much his theory and the details of his system may be disputed, it must be acknowledged that the mortality from wounds has been vastly lessened as a result of his

teaching. Believing that putrefaction in wounds is caused by the germs that are constantly floating in the atmosphere, he devised a system to exclude the access of air from them, to drain them, and to disinfect every thing that can come in contact with them. While his antiseptic theory dominates surgical practice the world over, and the great necessity for thorough cleanliness, sterilization of hands, instruments, field of operation and dressings is universally recognized, there exists a wide difference of opinion as to the means of sterilization. The approved antiseptic of to-day may be superseded to-morrow. Sir Joseph has recently given us a new one, in the double cyanide of mercury and zinc incorporated with starch.

Every surgeon of experience must have seen wounds heal by what is called the "first intention," prior to the introduction of the antiseptic treatment of them. I can call to mind instances after amputation of the thigh, excision of the breast, and the operation for strangulated hernia, in which not a drop of pus was seen. Nor is it contended that microbes have not been found in wounds under antiseptic dressing, but this is largely the exception to the rule. The germ theory of disease inaugurated by Pasteur, Tyndal and Carnot, and made practically applicable to the therapeutic treatment of disease by Pasteur, Lister, Koch and others justifies the belief, that in the near future brilliant results will be achieved. It has been contended, and I think justly, that many diseases are caused by certain bacilli. While the microbe of rabies has not been discovered, Pasteur, working upon that line, "by the inoculation of attenuated virus of the rabies," has, it is claimed, reduced the mortality of that dread disease from 15 per cent to 1.36 per cent.

Koch, the discoverer of the tubercle-bacillus of consumption, and the comma-bacillus of cholera, working upon the line of Pasteur, has recently startled the world with his "*remedy for tuberculous diseases*," which consists of "*a glycerine extract from pure cultivations of the tubercle bacilli*," a brownish clear liquid insoluble in alcohol, which must be largely diluted and given hypodermically. The dilution recommended makes the dose so infinitesimal and gives it such a Hahnemannian ring, as to sorely tax one's credulity. But from authentic sources we have the statement that between 3 and 6 hours after its introduction under the skin, the following symptoms appear,—pain in the limbs, nausea, exhaustion, inclination to cough, followed by ague,