THURSDAY, JANUARY 30, 1890.

THE HYDERABAD CHLOROFORM COMMISSION.

THE safety of anæsthetics is a subject of the deepest personal interest to everyone, either on his own account or on that of his family or friends. For this reason, the general public, as well as the medical profession, have been looking with interest for the Report of the Chloroform Commission which has lately been trying to work out the subject under the generous auspices of the Nizam and his Minister Sir Asman Jah. As we pointed out in NATURE of December 19, 1889, p. 154, two views regarding chloroform are commonly held. The one view is that it may kill by paralyzing the heart directly. The other is that it really kills by paralyzing the respiration, and only stops the heart indirectly through the asphyxia which quickly follows stoppage of the respiration. The first view is generally held in London, the second in Edinburgh, where it was strongly insisted on by the late distinguished surgeon Prof. Syme. As we learn from the Report now published, it was in consequence of his reverence for Syme's teaching, that Surgeon-Major Lawrie moved for the appointment of the Commission, which was generously granted by the Nizam's Government. This teaching was founded on clinical experience, but the results of some physiological experiments appeared to show that it was incorrect, and that chloroform paralyzed the heart directly. To ensure anything like general acceptance of Syme's teaching it was necessary that it should be shown that these experiments did not really disprove it. But this necessitated a complete revision of the whole question of the *modus operandi* of chloroform, and of the production of an immense amount of experimental evidence. This has been supplied by the present Commission, and the result of their labours appears to be that there is some truth in both views, but that when chloroform is given in the ordinary way by inhalation, it is the respiration which stops first. When chloroform vapour is blown down the trachea the heart may be stopped by it, but when the vapour is drawn into the lungs in the usual way by the movements of the chest, this is not the case, for, the respiratory movements being arrested first, their stoppage prevents any more chloroform vapour from being taken into the lungs. Embarrassment of respiration constitutes the first sign of danger, and should be at once attended to. The breathing should not be allowed to stop, but if it should do so by any accident, life may still be preserved by the immediate use of artificial respiration. Should the interval of asphyxia between the stoppage of natural breathing and the commencement of artificial respiration be too long, the heart may fail to such an extent that artificial respiration is in vain; and if the administrator waits for a failing pulse to warn him of danger, the warning may come too late. In a former research by the Glasgow Committee of the British Medical Association, some of the experiments, in the opinion of the Committee, seemed to show that chloroform not only lowers the blood-pressure and paralyzes the heart, but does so sometimes in an unexpected and capricious manner. The Commission has repeated their experiments, and found a similar fall of the blood-pressure and slowing of the pulse, but has come to a different conclusion regarding their causation, and attributes them not to chloroform but to asphyxia. If this opinion be correct, it shows how much care is necessary to avoid asphyxia, for the Glasgow Committee appear to have overlooked its presence, notwithstanding the serious effects it was producing on the heart in the animals on which they were experimenting. The work of the Hyderabad Commission points strongly to the conclusion that deaths from chloroform in man are likewise due to asphyxia, and the Commission considers that by careful attention to the respiration all deaths may and should be prevented. The Report points out that instead of the conclusions at which the Commission has arrived being opposed to those of Claude Bernard, they are almost exactly those at which that distinguished physiologist, so well known for his accurate work, had arrived, although his name is often quoted in support of the doctrine that chloroform kills by paralyzing the heart. The number of experiments on which the Commission bases its conclusions is very large, no fewer than 430 having been done without recording apparatus, and 157 with recording apparatus. The former consisted chiefly of experiments, firstly, on the general action of chloroform given in various ways, in various dilutions, and in different conditions of the animal, *e.g.* fasting, after meals, after a preliminary dose of spirits, &c.; and, secondly, on the limits within which artificial respiration could restore life, and the effect of morphine, strychnine, atropine, &c., in modifying the action of the anæsthetic and the reviving power of artificial respiration. The necessary apparatus was taken out by Dr. Lauder Brunton, and on his arrival at Hyderabad the Commission was at once constituted: Surgeon-Major Lawrie, President; Drs. Lauder Brunton, Bomford, and Rustamji, members; Dr. Bomford acting as secretary. They were greatly aided in their work by the members of the first Commission, Drs. Hehir, Kelly, and Chamarette, as well as to Messrs. Tripp, Carroll, and Mayberry, the latter of whom gave the chloroform. To Dr. Chamarette's energy and fertility of resource the success of the experiments was mainly due. The work was continued daily from 7 a.m. to 5 p.m., except on Sundays and holidays, from October 23 to December 18. From a speech made by Dr. Lauder Brunton at a dinner given to the Chloroform Commission by the Nawab Intesar Jung, we learn that the facilities for work afforded to the Commission were such as were not to be found even in the great laboratories of the continent of Europe; and, indeed, the large number of experiments which were made in a comparatively short time, is sufficient of itself to show this. At this dinner the Nawab Intesar Jung reminded his guests that Europe is indebted to Mohammedan writers of the schools of Bagdad and Cordova for the preservation of medical science during the dark ages; and as Dr. Lauder Brunton very truly said in his reply, the Nizam has not only followed the traditions of the Mussulmans in selecting the subject of research, but has rivalled the generosity of Haroun-al-Raschid and Abdurrahman in supplying the Commission with every-

thing it could require. Although the liberal endowment of universities and schools is now fortunately much more common, especially in America, than it used to be, yet there are few instances of such liberality as the Nizam has shown towards definite subjects of scientific research. For the excellent example they have shown in this matter, the Nizam and his enlightened Minister, Sir Asman Jah, deserve the thanks of the scientific world, while they also deserve that of the public in general for their endeavour to save life and lessen suffering by rendering the administration of anæsthetics so safe that they may be employed without fear whenever they are required.

HYGIENE.

Hygiene, or Public Health. By Louis C. Parkes, M.D. (London: H. K. Lewis, 1889.)

DR. LOUIS PARKES has conferred an important service by the opportune publication of his manual of hygiene. The public mind has been slow to perceive the importance of the science of preventive medicine. For nearly half a century Sir Edwin Chadwick and others have preached the doctrine. It fell for a long time on sterile ears. No doubt provisions have been made by Parliament from time to time, when some special danger or disease-cause was brought prominently into notice: not, indeed, as a part of a system of sanitary protection, but as if it were the only matter to be cared for. Thus, vaccination was made compulsory to stop small-pox, but for a long time many other diseases were ignored. These scattered efforts in sanitary legislation were brought to a focus in 1875, and systematic sanitation may be said to have been instituted by the division of the country into sanitary areas, and by the appointment of medical officers of health. These provisions were rather a theoretical recognition of the importance of the subject than a practical creation of efficiency, for the medical officers in a large number of instances have not received such remuneration as would enable them to give their whole time to their duties; nor do they possess security of tenure. They have been, for the most part, men in local practice, who have been content to receive an honorarium in some cases as low as £20 or £10, and occasionally even £5 and £3 a year. Such payments could not be expected to induce men to do more than give a nominal service to their official duties; and it is, indeed, notorious that in many instances the object of members of the sanitary authority which has made the appointment, who are themselves owners of house property, has been to nominate men who would let matters rest, and would not compel owners of cottages to spend money on sanitation.

We are now, however, entering upon a new era in sanitation. The creation of County Councils which took place last year has introduced a new feature. Although the powers vested in these bodies are permissive and somewhat tentative, it has already become quite certain that they will, sooner or later, bring the whole sanitary service of the country under their general supervision and control.

The Local Government Act of 1888 lays down the provision that the medical officer of health to be appointed by a county must be qualified in sanitary knowledge—that is to say, in the knowledge of the prevention of disease, as distinguished from curative knowledge. It will, therefore, be necessary that the men appointed shall have spent time and money in obtaining the required qualifications for their duties: hence they will expect adequate salaries to remunerate them for the trouble and expense which they will have incurred in thus educating themselves. The call for education in preventive medicine will react upon the medical schools and the various degree-conferring bodies—such as the Universities—and will compel them to hold examinations in, and to confer diplomas or certificates upon the possessors of, sanitary knowledge. Moreover, the sanitary authorities, in order to justify to themselves the higher salaries which they will be compelled to pay, will be induced to place enlarged areas under the medical officer, and, in order that he may effectually perform his duties, he will insist on being furnished with a better educated staff of sanitary inspectors or inspectors of nuisances than have been, as a rule, appointed under the old *régime*.

It is thus evident that there will soon be a great call for sanitary education, and Dr. Parkes's volume forms a very useful commentary upon what are the general heads comprised in a course of instruction in the methods necessary for applying various branches of science to the prevention of disease. A glance at the table of contents shows the very large field embraced under the title of preventive medicine. It concerns not only the medical man, but the engineer, the architect, the chemist, the physiologist, the meteorologist, and the statistician. The questions to be studied include climatic conditions; the effect on health of the state and movement of the atmosphere; the health of soils; the purity of water-supply, and the prevention of injury to health from fouled water; the construction of buildings, their warming, lighting, and ventilation; questions of food and clothing; the history of communicable diseases; and bacteriology, as well as hygienic chemistry and statistics.

A brief summary of the present position of our knowledge shows us that preventive medicine is still far removed from being an exact science. We have, no doubt, lately made much progress in removing from the medical man the imputation that his proceedings were empirical. Physiological studies in recent years have established the relationship between certain diseases and the presence of micro-organisms; and although this relationship may not be as universal as some persons would hold, yet we know that there is a positive relationship in the case of certain diseases. When the causes of diseases are known; when the action of the causes can be studied, and their mode of entrance into the body ascertained; when the methods which can be applied to their destruction are discovered; then the science of the prevention of disease ceases to be empirical.

Whilst, however, our progress in this knowledge has of late years been extremely rapid as compared with former experience; yet when, as in this volume, we are brought face to face with the various problems of the prevention of disease, we are amazed to find what a vast field is still unexplored in the knowledge of the causes of disease. Dr. Parkes has given a very interesting summary of our knowledge on this part of the question in his chapters on