

made with his aspiration apparatus and by other methods, of the number of positive and negative ions present in atmospheric air under different conditions. The variations in the richness in ions of the air at different heights (studied by means of balloon observations) and the excess of positive ions in the air carried down by the Föhn are of special interest. The electrical phenomena accompanying precipitation are explained by the difference in the efficiency as condensation nuclei of the positive and negative ions. An attempt is made to treat this part of the subject quantitatively. The maintenance of the ordinary fine weather electric field is put down to the difference between the positive and negative ionic velocities.

Prof. J. A. McClelland has described in the Royal Dublin Society's *Transactions* (November) experiments upon ionisation in atmospheric air. These experiments are introductory to a study of the number of ions in the free air of the atmosphere under varying meteorological conditions. Like Prof. Ebert, he has obtained evidence from the results of preliminary experiments of a larger number of ions per c.c. of free atmospheric air than was shown by Prof. Rutherford's measurements in Canada. The latter found on some occasions no more ions per c.c. of the free air than are generally produced *per second* in each c.c. in air in closed vessels, whereas Prof. Ebert's results are more nearly what we should expect if the rate of production of ions in the free air were the same as in a closed vessel.

MEDICAL REPORT OF THE LOCAL GOVERNMENT BOARD.¹

THE annual report issued by the Medical Department of the Local Government Board always contains matter of interest. The first half of the volume comprises an excellent summary of the contents by Dr. Power, the able head of the department, the vaccination and other statistics, and the reports of inquiries into the sanitary administration of various districts, of outbreaks of epidemic disease, and on the distribution of plague and cholera. There is a mass of information in these pages of the greatest value to the specialist.

But to the readers of NATURE the reports of the auxiliary scientific investigations carried out for the Board will prove of most interest. Dr. Klein is responsible for four of these:—(1) On the nature of the Haffkine plague prophylactic; (2) on the phenomenon of agglutination; (3) on the micro-pathology of hæmorrhagic small-pox; and (4) on the differentiation of the *Bacillus enteritidis sporogenes*, *B. butyricus*, and *B. cadaveris sporogenes* from one another. The cultural and other differences between these microbes are detailed, and may prove very useful in the bacteriological examination of potable waters. The *Bacillus aerogenes capsulatus* is here alluded to, but that is all. This organism is closely allied to, if not identical with, the *B. enteritidis sporogenes*, and it is hardly right that the work of the Americans in this connection should be dismissed in so summary a fashion.

Dr. Sidney Martin has once more taken up the investigation of the chemical pathology of infective diseases, dealing in this paper with the products of the *B. dysenteriae*. Experiments were performed in order to ascertain whether any toxic substance is produced when the bacillus is grown in fluid media. Indications of the presence of such a soluble toxin, proteid in nature, were obtained, but are not convincing, as no control experiments are mentioned; the most potent

poison is certainly contained in the bacterial cells themselves.

Dr. Gordon contributes a useful paper on certain diphtheria-like organisms, and Dr. Houston reports on the inoculation of soil with sewage and on the examination of Chichester well water. Dr. Haldane gives further details of his method for destroying rats on shipboard with carbon monoxide, but this does not seem to be so convenient and safe as the Clayton process with sulphur dioxide.

The reports from the Board's vaccine department are of considerable interest. Nearly 1,000,000 charges of glycerinated calf lymph were supplied from the Board's laboratories during the year under review, and proved to be of excellent quality. Dr. Blaxall gives an account of an outbreak of equine variola, Mr. Fremlin describes a useful method for anaërobic cultivation, and Dr. Green discusses the action of various alcohols and other substances upon vaccine lymph. The volume is illustrated with several excellent photomicrographs.

R. T. HEWLETT.

HERBERT SPENCER.

BY the death of Herbert Spencer England has lost the most widely celebrated and influential of her sons. He has passed away in the fulness of years and honours, having lived to complete the great work that he designed and took in hand half a century ago. Spencer was not without honour in his own country, yet our national indifference to philosophy and to all systematic thinking, and the subserviency of a great part of our professed philosophers to the great German metaphysicians, have undoubtedly prevented his receiving from his countrymen during his lifetime the full measure of recognition that is due to his splendid services to science and philosophy. And, indeed, the enthusiastic and unstinted eulogy of our great dead, voiced by the Press of every civilised country during the past week, has brought home to many of us for the first time the greatness of the man who by sheer force of intellect and character has won the tribute of the world. For in Spencer's work there was nothing designed to attract the attention of the crowd, there was no attempt to write down to the level of the multitude; it was one long and steady effort of a great intellect systematically grappling with the great problems. Yet his books have been translated into a score of languages, have been studied by hundreds of thousands of serious men, and in no small number of them have aroused admiring and enthusiastic gratitude.

Spencer's system of philosophy was broadly distinguished from other latter-day systems, save in a measure from that of Comte, by two features; firstly, his conception of philosophy as the unification of the sciences; secondly, the evolutionary standpoint from which he sought to effect that unification. While the great metaphysicians have for the most part set out with the premise that the world must be intelligible to our minds, and have held it to be their business to present it as an intelligible whole, Spencer prefaced his system of philosophy with a demonstration of the irresolvable mystery that lies behind us and before, and sought merely to discover the most general laws or statements that will express the relations of all the phenomena that science has revealed. That towards this great work he has made splendid and enduring contributions no one will deny. That there remain great gaps in his system is equally undeniable, and the most serious charge that can be made against him is that he professed, or seemed to profess, to have bridged the chasm between the inorganic and the organic worlds, between the world of mechanism and the world of volition.

¹Thirty-first Annual Report of the Local Government Board, 1901-2. Supplement containing the Report of the Medical Officer for 1901-2. Price 6s. 9d.