

mortality than any of the chief provincial towns except West Ham and Bristol and in 1896 a lower mortality than any except Bristol. In the several sanitary areas of London infantile mortality varied considerably in 1896 as it had done in previous years. Of these areas St. Saviour's Southwark had the highest infantile mortality in the year 1896 and Hampstead the lowest. In many of the sanitary areas, however, the deaths under one year are too few in number to afford trustworthy rates of mortality. In the year 1896 the cases of small-pox notified to the London medical officers of health numbered 225 in all and were equal to a rate of 0.050 per 1000, the death-rate in London from this disease being only 0.002 per 1000. Mr. Shirley Murphy devotes several pages of his report to the question of small-pox as affected by vaccination which will repay attentive perusal, although we cannot adequately discuss his remarks here. Measles has been more fatal in London during 1896 than in any year since 1864. In the last ten years the average death-rate from measles has been higher than in the previous ten years. These facts have led to the re-opening of the question of the notification of measles in London and also to that of hospital provision for this disease. Up to the present time, however, nothing definite has been decided on either point. Of scarlet fever there were notified during 1896 as many as 25,758 cases, or nearly 6000 more than in the previous year. These 25,758 attacks gave a "case-rate" of 5.7 per 1000 of the population and resulted in a death-rate of 0.21 per 1000. In the first three quarters of 1896 the eastern group of districts suffered the highest mortality from scarlet fever and in the fourth quarter the central group suffered most heavily. During the year prosecutions were instituted in Marylebone and in Plumstead for wilful exposure of persons whilst infectious from scarlet fever. Considerable dissatisfaction seems to have been expressed by several of the local medical officers of health at the insufficiency of hospital accommodation for the isolation of scarlet fever cases, the disease having apparently spread in consequence. In certain districts, school attendance seems to have been instrumental in causing the dissemination of this disease. In the year 1896, there were notified 13,825 cases of diphtheria, giving a case-rate of 3.1 per 1000 of the population, compared with a rate of 2.6 in each of the two previous years; the cases however were of a slightly milder description in 1896 than in the preceding year. With the exception of that of West Ham the London death-rate from diphtheria in 1896 exceeded the rate of any of the chief provincial towns. The eastern districts of London suffered most severely from diphtheria, and the central districts least severely. The highest death-rate was in Chelsea (1.17) and the lowest in St. James's Westminster (0.09). With regard to the influence of school attendance in encouraging the spread both of this disease and of scarlet fever Mr. Shirley Murphy still continues to speak with that caution and reserve which become his position. Under the Notification Act, however, facts are rapidly accumulating; and we look forward with confidence to the time, probably not far distant, when Mr. Shirley Murphy will feel justified in pronouncing a decided opinion on this momentous question which is one that in the interest of education not less than in that of the public health urgently needs solution. We trust that when after adequate experience a deliberate judgment shall have been arrived at on this point definite and concerted preventive action will speedily follow. With respect to the use of antitoxic serum in the treatment of diphtheria Mr. Shirley Murphy gives some new and important information. Quoting from a special report on this subject presented to the Metropolitan Asylums Board by their medical superintendents he shows that while in 1894 before this special treatment had been adopted the fatality among 3042 cases was 29.6 per cent., in 1896 with the advantage of the treatment by antitoxic serum the fatality among 4175 cases fell to 20.8 per cent., this reduction in fatality having been observed at each age period. If we assume, adds Mr. Shirley Murphy, that the whole of this reduction of mortality has been due to this special treatment of patients in the hospitals of the Metropolitan Asylums Board there would have been without this treatment 365 additional deaths from diphtheria in London during 1896. Instead, therefore, of a London diphtheria death-rate of 0.59 per 1000 this death-rate would have been 0.68 per 1000, and instead of a London case-mortality of 19.3 per cent. there would have been a case-mortality of 21.9. The death-rate in 1894 had

been 0.61 per 1000 and the case-mortality 23.6 per cent. The subject of seasonal variation both in relation to age distribution of attacks of diphtheria and to case fatality is ably discussed by Mr. Shirley Murphy in the present report and his observations merit careful consideration on the part of practitioners generally not less than on that of medical officers of health. In 1896 the number of attacks notified as from enteric fever was 3196, equal to a case-rate of 0.7 per 1000 persons living, which is lower than the rate of any other year since 1892. There were 564 deaths from enteric fever in London within the same period; the death-rate was therefore equal to 0.12 per 1000. For the whole year the central group of districts had the highest death-rate from enteric fever, and the western group the lowest, the district with the highest death-rate being the City and those with the lowest the Strand and St. Saviour's Southwark. The deaths from phthisis in London during 1896 numbered 7586 and were equal to a death-rate of 1.73 per 1000, which is lower than in any year mentioned in the tables. The Registrar-General having since 1894 distributed the deaths occurring in public institutions to the sanitary districts to which the patients belonged it is now possible to compare the phthisis death-rate of the various sanitary districts. The phthisis death-rate, both in 1895 and in 1896, was highest in the central group of districts and lowest in the western group. In the latter year the rates varied in the several sanitary districts from 3.24 in Holborn to 0.82 in Stoke Newington.

(To be continued.)

## THE OXYTUBERCULIN TREATMENT OF TUBERCULOSIS.

THE REPORT OF A COMMITTEE OF THE FACULTY OF THE COOPER MEDICAL COLLEGE UPON THE HIRSCHFELDER TREATMENT.

IN February, 1896, Dr. J. O. Hirschfelder, of San Francisco, called the attention of some of his professional friends to a new method of treatment of tuberculosis with a bacteriological product of his devising which he called oxytuberculin. He presented a number of patients for examination and apparently demonstrated its value. Nevertheless he was advised to withhold the results from publication until further experience and time should verify them. Subsequently—that is, in April, 1897—he read before the State Medical Society a paper recording seventy cases treated with oxytuberculin.<sup>1</sup> Thirty of these were in advanced stages of the disease, many having vomica, and forty were in earlier stages. Each of these exhibited the physical signs of tuberculosis in one or other of its stages; bacilli were found in the sputa of all. Other physicians had examined a large number of the patients at the beginning of, and at different periods during, the treatment, and had verified the diagnosis. Dr. Hirschfelder reported that sixteen of these patients were cured—that is, no evidence of the disease can now be discovered objectively or subjectively. Thirty-six were much improved—that is, they are subjectively well, little evidence of present disease can be discovered, there are few or no sputa and no bacilli. In some of these latter large vomica exist, but seem healed. Six cases were slightly improved; six remained unchanged; one became worse and five died. All the latter were in the worst stages of the disease when treatment was begun; four died in from a month and a half to two months and one in three and a half months.

During the progress of these investigations Dr. Hirschfelder made forty-one series of culture experiments in the laboratory. These uniformly proved the inhibitory power of oxytuberculin upon the growth of tubercle bacilli in veal bouillon. It appeared a just inference that similar results might follow the injection of oxytuberculin into the body. With these facts and statements before them the members of the Faculty of Cooper Medical College determined to investigate the new treatment and for that purpose the undersigned committee was appointed. Its several members have repeatedly witnessed the laboratory culture experiments and have had before them for examination fifteen patients who have been under treatment from two to several months during the past

<sup>1</sup> Transactions of the Medical Society of the State of California, 1897.

two years, together with their histories, bacteriological specimens, and the corroborative evidence of other physicians as to the diagnosis. Two of these patients at the beginning of treatment presented a mild form of the disease, in five the disease was pronounced, in four the lung was very seriously involved, and the remaining four seemed hopeless.

There is no reason to doubt that all were cases of tuberculosis. Fever, cough, expectoration, hæmorrhages, night sweats, &c., had been present in nearly all; the physical signs and bacilli had been found in all; in many the diagnosis had been confirmed by other physicians. Physical examination of many of these cases was made by the members of the committee. No evidence of present tuberculosis could be discovered, although in some old cavities were found. The concurrent testimony of all except two or three recent cases was of complete return to health so far as appetite, weight, and vigour are concerned. There were no cough, expectoration, hæmorrhages, or other symptom of disease. Several had been discharged from treatment months ago.

The conclusions reached by the committee are: (1) Oxytuberculin prevents the growth of tubercle bacilli in veal bouillon; (2) a positive therapeutic value has been demonstrated for it in the fifteen cases examined, the more clearly as no other treatment was used; (3) no dangerous or untoward effects have resulted from its use; and (4) it has been legitimately brought before the profession since a full description of its mode of preparation has been published, thereby putting it within the reach of all.<sup>2</sup>

Finally the committee feels justified in certifying these facts to the profession to the end that oxytuberculin may be thoroughly tested, the limits of its successful application determined, and its place in therapeutics established at the earliest possible time. While some remarkable results have been obtained in advanced cases no claims are made for the later stages of the disease.

L. C. LANE (President),	} Committee.
C. N. ELLINWOOD,	
A. BARKAN,	
R. H. PLUMMER,	
HENRY GIBBONS, JUN. (Dean),	

## PLAGUE IN THE NORTH-WEST PROVINCES OF INDIA.

AN interesting series of papers has been published by the Government of India relating to the outbreak of bubonic plague which occurred at Hardwar in the district of Saharanpur during April, May, and June, 1897. The infection was brought by pilgrims from Sind, Hardwar being a great pilgrimage centre. During the three months above mentioned four bathing fairs took place attracting a great number of pilgrims, and although there were eighteen cases of plague, of which fifteen proved fatal, the outbreak was promptly met and successfully suppressed. The medical officers upon whom rested the main responsibility were Surgeon-Major S. J. Thomson, sanitary commissioner in charge of the sanitary arrangements; Surgeon-Captain J. Chaytor White, Deputy Sanitary Commissioner; Surgeon-Major J. F. Tuohy, Civil Surgeon of Saharanpur, in direct charge of the medical arrangements; Surgeon-Captain T. F. Kelly, on special duty; Surgeon-Lieutenant-Colonel T. H. Hendley, C.I.E., Officiating Inspector-General of Civil Hospitals; and Surgeon-Major D. S. Reade, A.M.S., who visited the town during the course of the fairs; Surgeon-Captain A. W. Dawson and Mr. E. F. L. Winter with Mr. E. A. Kendal of the Indian Civil Service. In addition the Government received most valuable assistance from Thakur Hardan Singh, Deputy Magistrate; and Thakur Dalaman Singh, Tahsildar of Roorkee, to all of whom the Government express their best thanks.

The preventive and curative measures are set out at great length in the report but we can only shortly summarise them here. Pilgrims arriving by train were not only inspected under the provisions of the Epidemic Diseases Act at Saharanpur and Ghaziabad Junctions but in addition every passenger was inspected at Pathri Station, close to Hardwar

by a staff of hospital assistants and vaccinators. Passengers found to have come from infected centres were sent on to Hardwar in locked carriages and lodged on arrival in the observation camp upon Rori Island, where they had to sleep and cook their food, though allowed to go into Hardwar to bathe and buy food. No disease occurred among them. Pilgrims coming by road were also inspected and the site of the fair was kept scrupulously clean by a large staff of sweepers and others numbering in all 700. All pilgrim lodging-houses were carefully inspected and any case of illness or death was promptly reported. Up to April 22nd there had been eight cases, so still more stringent measures were entered upon.

The position being explained to the members of the municipal board, the leading Brahmans of the town, and the priests of the temples, by the Lieutenant-Governor it was decided with the full and willing coöperation of the native gentlemen concerned (a) that the infected area should be evacuated and placed in quarantine; (b) that after evacuation the houses should be thoroughly cleansed and disinfected; (c) that all dead bodies before disposal, whether by burning or burial, should be examined by a medical officer; and (d) that all pilgrims from infected districts should reside in a special camp under medical observation. Those removed from the infected area were either to leave the district altogether after receiving permission from a medical officer or were to reside in a camp of observation.

In the infected area all huts or temporary structures were either demolished or burned, compensation being given, while permanent structures were carefully disinfected. During the month of May the fairs were not forbidden but pilgrims were discouraged as far as possible from visiting Hardwar. Such as did go were carefully inspected and not a single case of plague occurred among them. Between April 22nd and May 16th no case occurred in Hardwar, but from May 16th to June 8th nine cases occurred outside the infected area. To assist in diagnosing doubtful cases Mr. E. H. Hankin and Surgeon-Captain Milne were deputed to help the medical officers already on duty. After June 8th no case of plague occurred in Hardwar, and by the end of June the whole union, Hardwar, Kankhal, and Jawalapur, had been thoroughly cleaned and disinfected. Most of the special restrictions were withdrawn on July 12th, although the arrangements for the medical inspection of passengers by train remained in force.

About the middle of June an extensive mortality was observed among rats at Kankhal, a town distant about a mile from Hardwar, and upon the bodies of these rats being submitted to bacteriological examination the plague bacillus was detected. It was considered that these rats had become infected by eating grain or sweetmeats removed from Hardwar to Kankhal when plague was prevalent in the former place. The disease among the rats died away, but in order to prevent the transmission of the plague to men the following precautions were taken and proved eminently successful. Any house or go-down where rats were found to be dying in unusual numbers was disinfected in exactly the same way as if a case of plague had occurred there; grain, sugar, and any raw food-stuffs were exposed to sunlight and air for eight days and then locked up in a disinfected room for ten days before being used; sacks, bags, and baskets were either disinfected or destroyed.

From the end of June to the beginning of September no cases of plague occurred in either Hardwar or Kankhal, but during the first week of September an acute quickly fatal fever was reported as occurring in Kankhal. This upon inquiry proved to be merely the usual seasonal malaria. But on Sept. 16th an undoubted case of plague occurred and was at once removed to the plague hospital. Despite the stringent measures which were taken, isolation of the whole town, segregation of the sick, and thorough cleansing of plague-stricken houses, the disease spread slowly until up to Nov. 4th 51 cases with 38 deaths had occurred; no fresh case had been reported since Nov. 1st, 1897. On Oct. 16th the Lieutenant-Governor and other officials visited the town and found all the precautionary measures in admirable working order and more satisfactory still the native population were working in loyal coöperation with the Government. About this time it was found that the monkeys frequenting the town were dying in larger numbers than usual and the dead bodies were found to contain plague bacilli. This constituted a greater difficulty than the rats, for rats could be destroyed, while monkeys, on account of religious scruples, could not be, so

<sup>2</sup> Occidental Medical Times, November, 1896. The Medical News, New York, July 3rd, 1897. Journal of the American Medical Association, July 31st, 1897. Deutsche Medicinische Wochenschrift, May, 1897.