DIPHTHERIA EXPERIENCE IN KEIGHLEY IN 1898.*

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I FEEL I ought to apologize to this Society for presuming to occupy its time with a short history of an epidemic of diphtheria in the borough of Keighley during the greater part of last year. Your energetic Secretary thought, however, that the following short statement might serve as an introduction to an interesting discussion on diphtheria, especially in relation to public health.

For several years the number of cases reported in Keighley has been steadily decreasing, but last year was marked by one of the most serious epidemics which have visited the borough. The cases notified annually since the Notification Act was adopted in 1891 numbered 62, 36; 31, 34, 19, 16, 13, 12, and 149.

On January 9th, 1898, a case of diphtheria was reported from Utley, and during the next few days seven other cases were notified, all being children attending one class in Utley Board School. The precautionary measures to be mentioned later were adopted, with the result that no further cases were reported from this neighbourhood.

On January 22nd, however, a case was notified from Holycroft Board School, which I may mention is attended by over 1,000 children. From this fresh focus nearly seventy children in the junior department were infected. The same measures for checking the spread of infection were adopted as in the Utley outbreak, but the cases being spread over a larger and more populous district, less success attended our efforts.

Towards the end of February the infant school was closed for two weeks, and during this period no case was reported. A recrudescence of the disease followed the reopening of the school, and not until the beginning of April, when both the infant and junior departments were closed, was there any decrease in the number of cases notified. It is interesting to note that during the month these departments were closed only one case connected with Holycroft was reported. When the schools were again opened, it became evident, from the fresh cases reported, that the epidemic had not yet been stamped out, and consequently the schools were closed until after the summer holidays, or for such longer period as might be found necessary.

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Only two or three cases connected with the Holycroft Schools came to our notice after this closure, and when, six weeks later, the schools were reopened, no fresh cases developed in the neighbourhood.

Although a few cases occurred in connection with other schools in the town, it was not found necessary to have recourse to the extreme measure of closing these schools.

With very few exceptions, the disease seized upon children under ten years of age, and the few exceptions were mostly the mothers or nurses of those who were ill.

Spread of Infection.—The first reported case had been sleeping from home for some time previous to being taken ill, and no theory could be formed as to the origin of the disease. In the Utley district the cases were strictly limited to children attending one class, and there seems no doubt but that the spread of infection from the first to subsequent cases was closely connected with school life. With regard to the Holycroft outbreak, nearly seventy of the cases attended Holycroft School, and the fact that no case was reported during the first closure of the school, and only one case reported during the second closure, left no room for doubt but that infection was spread directly among the children attending the crowded classrooms of that school. That this view was correct is strengthened by the absence of any case of "sore-throat" among any of the milk-dealers, or among the people at any of the dairy farms supplying milk to the infected houses. With four exceptions, all had water from the Corporation mains, and in only 24 of 121 infected houses was there found any insanitary condition. Defects in drainage, however, were found in several of the schools, but it did not seem probable that these defects had much to do with spreading the infection.

Measures adopted to check the Spread of Infection.—Early notification of cases, and the immediate removal to the Isolation Hospital of as many cases as would go.

Isolation at home where hospital treatment was refused (but at times this was far from satisfactory).

Exclusion from school of all children from infected families, as well as all cases of "sore-throat," and the notification of all such cases by the teachers to the medical officer of health.

Closure of schools, and thorough disinfection of all classrooms.

Disinfection of all infected houses, bedding, clothing, etc.

Inspection of all infected houses and schools, and removal of insanitary conditions where found.

Inspection of dairy farms, milk-dealers, etc.

Free distribution of disinfectants, with instruction as to their proper use, and advice as to the possibility of all cases of "sore-throat" being of a diphtheritic nature.

Unfortunately, the epidemic had got firm hold upon the Hilycroft district before the Fever Hospital was ready for the reception of diphtheria, and although subsequently over 50 per cent. of the cases were removed, it cannot be said that our hospital isolation was so instrumental in checking the disease as probably it would have been had the early cases been removed. It may, however, not be out of place to note the marked advantage of hospital compared with home treatment: 85 cases were treated at home, with 32 deaths—fatality, 37·6 per cent.; 64 cases were treated at hospital, with 9 deaths—fatality, 14·0 per cent.

With regard to treatment, I need only say that antitoxin was largely used, and the general opinion was that it cut short, in a marked degree, the disease when used early, and even when its use was delayed, owing to the patient not being seen for several days after the illness had begun, the symptoms were in most cases far less pronounced than where no injection was made. In those severe cases where a fatal result ensued, notwithstanding repeated injections, the invalid's sufferings seemed less acute than in fatal cases not so treated. As only occasional cases were examined bacteriologically, I have not given you the relative mortality of those treated with and without antitoxin. When any mode of treatment is on its trial, it is only fair that the results should be judged after every source of error has been removed, and that was not practicable in many cases we had in hand.

Before concluding, I wish to draw your attention to the conclusive proof we had that the infection was mostly contracted at school. In former years my experience in Keighley did not confirm the results found in other towns—that diphtheria was a disease closely associated with school-life. In fact, it was rather the exception for diphtheria to be notified in a child of school-age, and in this respect the type of disease we have to deal with seemed allied to the sporadic form frequently found among adults in country districts.

Finally, I should like to have some expression of opinion as to the length of time a child should be isolated after apparently convalescent. Some authorities say two weeks, some say four, and some say until the fauces are bacteriologically free from the specific bacillus. Now, seeing that MacGregor has found such bacilli nearly six months after convalescence, the problem of isolation becomes a very serious one—not only for sanitary authorities, but also for those of us who have charge of infectious-disease hospitals. As a

rule, we isolated our cases from three to four weeks in the hospital, but I have frequently thought that a longer period of isolation would have been better. Of course, during the epidemic we are largely the creatures of circumstances, and our actions rather than our judgment are influenced by the number of beds at our disposal compared with the number of cases awaiting admission.

TRANSMISSION OF THE AGGLUTINATING SUBSTANCE OF THE EBERTH BACILLUS THROUGH THE MILK.—Courmont and Cade (*Lyon Médical*, September 3, 1899, p. 5) report the case of a mother who had nursed her two-months' old baby for two weeks after she was taken ill of typhoid fever. Three days after the child was taken from the breast it was found that its blood possessed the agglutinating power in a dilution of 1 to 10, while the mother's milk showed a positive reaction at 1 to 30, and her blood at 1 to 200. Eight days after weaning the infant's blood failed to produce the reaction. The case therefore serves to confirm the observations of Landouzy and Griffon, and of Castaigne, and to demonstrate the possibility of transmitting to a nursling certain properties acquired by the blood-serum of the nurse, and the passage of these substances through the mucous membranes of the infant. The occurrence of the changes in the fluids of the nursling appears to depend upon two factors—the intensity of the changes in the nurse's blood-serum, and the duration of the transmission by ingestion of her milk. This influence is but temporary, and ceases within several days after nursing is suspended.—*American Journal of Medical Science*.

COMPULSORY NOTIFICATION OF PHTHISIS.—The compulsory reporting of tuberculosis is discussed by Dr. S. A. Knopf in the *New York Medical Journal*, September 23, 1899, p. 443. Formerly in favour of compulsory notification, Dr. Knopf has, with larger experience, come to the conclusion that this is not desirable, since the danger to the community is not so much from the consumptive confined to his home under medical care, but from the relatively well tubercular individual who, though expectorating daily millions of bacilli, is able to attend to his occupation. One of the vital duties of health authorities should be, in the writer's opinion, to inspect regularly all institutions which admit cases of pulmonary tuberculosis for treatment and care, and to insist upon a systematic carrying out of all the necessary precautions concerning prophylaxis. In such institutions, when there is no resident physician, there is much danger to the community from the want of necessary care. Patients under the care of medical men may best be left in the hands of their professional advisers, who will inform them of the requirements for preventing danger to others. Should there be a refractory patient who absolutely refuses to comply with the instructions concerning the expectoration, every conscientious physician would consider it his duty to report such a case as dangerous, and to demand isolation. [The conclusions arrived at by Dr. Knopf are in agreement with those of the advocates in this country of voluntary notification of tuberculosis.]—*Treatment*.