The Endemic of Typhoid Fever at Springwater NY

1891

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We, the authors, proceed, therefore, to a brief discussion of the case in hand:

According to the statement of Robert Wiley, Esq., member of the local Board of Health of the town of Springwater, the first intimation that typhoid fever was present in the village, was on October 19, 1889, at which date some of the local physicians reported the presence of typhoid to the local board. On October 23rd, the Town Board of Health convened to consider the matter, and on the following day the condition of affairs was brought to the attention of the Chief Engineer and the Executive Board of the City of Rochester. At the suggestion of the Chief Engineer, Mr. J. Nelson Tubbs, the Executive Board immediately consulted Drs. W. S. Ely and E. M. Moore, Sr., who, on request, furnished the following suggestions as to the necessary inspection and disinfection.

Rochester N.Y. October 25th, 1889. To the Executive Board: *Gentlemen:*

In reply to your inquiry as to the proper measures to be instituted to protect the water supply of the City of Rochester from possible contamination from the presence of cases of typhoid fever at Springwater, we would respectfully state that:

We think all danger can be averted if the discharges from patients suffering from the disease in question are received in vessels containing a solution of 20 grains of bi-chloride of mercury in a pint of water. After having remained in this solution from 15 to 30 minutes, the discharges should be buried two feet below the surface of the soil, and at a distance of at least 50 feet from all ravines or water courses connecting with the inlet of Hemlock Lake. The sheets, linen, flannels, blankets, etc. used by the sick, whenever changed, should be boiled for at least half an hour in a solution made by dissolving four ounces of sulphate of zinc and two ounces of common salt in one gallon of water. All loose articles, without special value, in contact with the affected persons should be burned.

A sufficient number of inspectors should be employed to see that the foregoing recommendations are strictly carried out in the case of every patient affected by typhoid fever, on, or near any stream, emptying into Hemlock Lake. It may be best to have this inspection supervised by a medical officer. Reports should be regularly made in writing to your Board, stating the degree to which the foregoing instructions are carried out.

If the measures recommended are immediately adopted we deem that the interests of the community will be advanced by deferring, for the present, any publication of the existence of typhoid fever at Springwater.

It should be borne in mind that the above solution of bi-chloride of mercury, recommended for use as a disinfectant, is highly poisonous, and every preparation containing it should be distinctly marked . . . "Poison - For External Use Only."

We have the honor to be, very respectfully yours,

William S. Ely and E. M. Moore.

Acting under this advice, measures were at once taken for the careful inspection and disinfection of all premises occupied by the sick, as well as for the disinfection of the dejections of typhoid fever patients. These measures included the employment by the City of Rochester of inspectors, to act in accordance with the town Board of Health of Springwater. This action was taken under authority of the rules for the sanitary protection of the Hemlock Lake drainage area, as formulated by the State Board of Health, by the provisions of which the local Boards of Health carry out the protective measures at the expense of the municipality protected. In the meantime, the present writers were requested to make such studies of the case in hand as might be of use to the water works authorities of the City of Rochester in future efficient protection of the Hemlock water-shed. Such a study was, furthermore, justly deemed of considerate importance by reason of Springwater valley being an unusually healthful region, and the sudden appearance of twenty cases of typhoid fever, in a locality hitherto free from it, appeared to be of sufficient interest to justify the attempt to learn something definite as to its causation.

Our first investigations were, therefore, directed toward a solution of the question of the origin of these cases in Springwater village.

The earliest clearly defined case of typhoid fever, we found to be that of Orson Grover, a boy 13 years of age, who, when taken sick with the disease on September 29th, was employed at Snyder's Hotel, on Main Street, near the four corners. Not only is the well at this place in close proximity to the privy (30 feet), but half way between the well and privy we found a board slop-drain, which, undoubtedly, discharges into the well a considerable portion of its contents. The family claimed, however, that the water of this well had been considered bad for a year and a half, and that none of it had been used for domestic purposed during that time; the water so used having been all obtained from the well on the adjoining place to the north. As may be gathered from the map, this Snyder well is in the cellar, and the pump pertaining thereto is in a cellar landing just off the hotel kitchen. We found the pump in working order, with pail beneath the spout, partly filled with water, and with a dipper in the pail. On questioning the servant girl, it appeared very evident that the water was sometimes used.

The boy, Orson Grover, immediately on being taken sick, went home to the house of his mother, Mrs. R. K. Grover, whose residence is on Center Street - the first south of the school house. Within fifteen days thereafter no fewer than eight cases appeared among the children in attendance at the village school, and a second son of Mrs. Grover, living at home, was also taken with typhoid fever. In the meantime, an adult person, Mrs. Steven Norton, living on the opposite side of the street from the school house, was taken sick, followed soon by the balance of the cases in other parts of the village. The relation of the privy at Mrs. Grover's residence to her own well, the school house well and other wells in the vicinity is so clearly apparent that extended description is unnecessary here.

The large number of cases among the school children apparently indicated some special source of contagion to which they were exposed, and this special source, we think, is clearly indicated by the foregoing.

The present state of knowledge of the causation of typhoid fever enables us to say positively that the disease is due to the presence, in the human organism of a rod-like bacillus, the so called Bacillus typhus or Eberth's bacillus, that in the absence of this bacillus the disease cannot exist; that during the course of the disease large quantities of the bacilli pass away from the patient in the dejections, that the usual medium by which this bacillus passes into the human body is drinking water, and that drinking water containing in solution such human wastes as come from slop-drains, cesspools and privies probably presents conditions favorable for the multiplication of the typhoid bacillus, provided even a single germ gets into such water.

It is also well understood that cases of typhoid fever sometimes occur which are not severe enough to send the patient to bed. These are termed "walking cases", and the dejections from them contain the bacilli capable of producing the disease in others, the same as from more severe cases.

Our view as to the origin of these cases of typhoid fever in the village of Springwater is, therefore, as follows:

The hotel was certainly an original center of infection, as including Orson Grover, four persons living there were taken sick with the disease, and while we are unable to establish the fact definitely, we consider it very probable that some "walking case" of typhoid fever stopped at the hotel, and without leaving any other tangible evidence inoculated the hotel privy with germs of typhoid contained in the dejections. The chemical analyses of the water of the hotel well both show the water to be exceedingly bad, utterly unfit for domestic use, and the environment is such as to lead, with the certainty of a mathematical demonstration, to the conclusion that there is gross pollution from the privy and slop drain.

From the hotel privy vault, inoculated in the manner indicated, the germs passed, not only to the hotel well, but, possible, to other wells, and, by use of the water for drinking, to Orson Grover. His presence at his mother's house, and the inoculation of the privy there, caused a further distribution to the school house and adjacent wells on Center Street, whence the germs were quickly distributed to various parts of the village, and in a few cases even to the surrounding country.

Provisions having been made for carrying out the suggestions of Drs. Ely and Moore, as well as for thorough disinfection of the infected privies, etc., we next turned our attention to the quality of the water of the village wells, and as a preliminary step in this direction, the amount of chlorine present in a unit volume of the water of a number of wells was determined by Mr. Rafter.

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Editor's Note: The report starts with a brief description of the village of Springwater, its terrain, streams and its relationship to Hemlock Lake and therefore the City of Rochester. Then the report continues . . .

The remainder of the report, which is not presented here, provides detailed information about the bacillus itself, how it may have migrated to the City of Rochester and methods for its eradication.