

whole garrison in India, and that when on a voluntary basis says a great deal for the British soldier.

Leading down from the year 1907 we find that in 1907 there were 1,910 cases and 192 deaths. In 1909 there were 616, with 112 deaths. In 1910, 196 cases and 45 deaths. In 1911, 170 cases and 22 deaths, and in 1912, 118 cases in the whole of India, as contrasted with the figures of some 2,000 of a few years before. I am talking of typhoid as regards the en masse of India. Now that 93 per cent of the soldiers are inoculated, it is much more difficult to draw comparison between results for those inoculated and those not inoculated, because of the great disparity between the two groups, and the incidence is now confined to small groups of non-inoculated cases.

I do not wish to minimize the value resulting from increased study and increased application of the study of hygiene and sanitation. I may remind you that in India now when a soldier contracts enteric he is not allowed to return to barracks until he has been thoroughly tested bacteriologically. He is sent for convalescence at once to the typhoid convalescent depot, of which there are two in India. There he is tested from day to day till we are certain he is not a typhoid carrier. No carrier who develops as carrier during service in India can be missed by this system, and that is an enormous gain, guarding against the spreading of infection. Now the carrier group is ordinarily not over three per cent, and last year only two or three carriers were found in the whole of India.

There are two more general questions I should like touch on; first, the use of typhoid vaccine and the treatment of cases of enteric; second, the application of typhoid vaccine to the civil population as a protective measure.

The treatment of typhoid fever by inoculation is beyond the stage of mere protection and interesting experiment. Treatment of cases of enteric by typhoid vaccine is thoroughly scientific, and it is the only scientific method to treat these cases.

This is not a new thing, I do not claim any credit for it, but I have strongly advocated its use among my brother officers. Given a proper vaccine and given proper doses of vaccine, you will approach a case of typhoid fever with very much more confidence than you have in the past. I have seen grave toxic cases treated in this way, change their character completely in a period of 24 to 48 hours, not in the way of temperature coming down straight to normal, and the attack of fever becoming abortive, but the temperature running along at a much more moderate level and, above all, in a change for the better condition of the patient, who loses the typical typhoid face, the anxious expression we all know so well. He becomes a more cheerful individual, he no longer looks like a man dangerously ill. I have known soldiers to ask for the inoculation to be repeated. This is a good testimony of its value in treatment. The temperature following inoculation usually arises in twelve hours to a slightly higher level than one would expect to be present in an uninterrupted case. The local reaction is very slightly in evidence. Following this rise within twelve hours or so the temperature drops to a lower level than one would expect in an ordinary case. The temperature at first goes a little higher, then goes down lower than you expected, and only by degrees comes up to the old level. Another inoculation brings it down a little lower, and when two or three doses have been administered it comes down to normal and remains normal.

The duration of the attack is not greatly shortened, but there are fewer complications, and relapses are very much more rare. Monsieur Natelle's published account of his collections of the writings of those who have been working on this subject some forty papers published in different countries show what this method of treatment is doing. These cases of Natelle's thirteen hundred and ten in all had a mortality of only five per cent, and here there were cases treated by doses of vaccine that were useless. Some were too small, others one could have no confidence in. I am convinced that with an effective vaccine the mortality would be one or two per cent. If you have opportunity of trying this treatment, try it and you will be rewarded. One should start with an initial dose of two hundred million of the ordinary prophylactic vaccine and repeat the dose on the third day allowing one clear day as an interval.