

3. Has this medium of communication usually seemed to have been the air or the water?

A large number, it was satisfactory to find, replied to these questions. To the first question, that concerning the source of the disease being another case of typhoid, about 60 per cent. answered, "only rarely." Only rarely were they able to trace its source as from another case of the disease direct. About 15 per cent. wrote "commonly." The remaining 25 per cent. were nearly equally divided, between such replies as "very frequently," "commonly," "about one-half." So that considerably more than one half had "only rarely" been able to trace their cases of typhoid fever to other cases of it. Most of their cases had probably had some other origin.

To the second question, relating to the connection of the disease with *fecal* matter, nearly 60 per cent. answered, a "large proportion;" 12 per cent. answered, "commonly" or "frequently;" about 20 per cent. wrote, "small proportion," and the few remaining wrote, "rarely."

To the third question, was the medium of communication—the carrier of the poison, air or water, 82 per cent. believed the medium to be usually water, the remainder—18 per cent. thought it usually air.

So that the medical evidence in this enquiry was very largely to the effect that cases of typhoid are only rarely caused by contagion coming direct from another case of typhoid, but frequently from excremental matter, and through or by means of water contamination.

But this plant—this *Bacillus*, as it is called—from a Latin word signifying a small stick or staff—is only one factor in the causation of typhoid, and there is doubtless one other factor at least. Why is it that when two persons have been equally exposed to the infection—to the germs of the vegetation—the disease is

developed in one and the other escapes it? Its germs, or rather the spores of the plant (it is a sporing plant, and all such multiply very rapidly by means of the spores), take root, so to speak, develop, multiply and give rise to typhoid fever in the one case and not in the other. Dr. Alfred Carpenter has put forth the hypothesis, that in all zymotic diseases, such as typhoid fever, there are three factors: one, the specific contagium—the essential germ; another, the meteorological condition of the atmosphere; and a third, an excess of used up or waste matters in the fluids of the body. This last factor arises from the waste matters having been but imperfectly removed from the body by the excretory organs,—the skin, kidneys, liver. He doubts if the contagion of disease would have any effect upon the body if the recipient of the contagion were perfectly healthy—if there were no impurities, no excremental matter, in the fluids of the body. We are fully in accord with this view. This would explain, too, why it is that the plant ceases to grow and multiply in the body after a certain period of time in cases of recovery from the disease. We know, furthermore, that individuals often have better health after an attack of fever than they had had previous to the attack. Have the parasites removed from the body some foul substance which ought not to have been there? Possibly. We might, on this view, almost regard these fever plants as friendly scavengers.

However this may be, without the specific contagium—the typhoid plant—there would be no typhoid fever. The waste, foul matters in the blood can be much more safely got rid of or avoided—as by attention to the laws of health, individually—to the diet, exercise, the condition of skin—than by inviting the services of bacilli of any sort. To get rid of the filth, upon which the bacilli feed and grow and multiply, is, without doubt, to get rid of, or to prevent, the fever.