

anything corresponding to Koch's comma bacillus, or, as we now call it, the spirillum of Asiatic cholera. I myself have made very extended bacteriological researches in yellow fever, having collected fæces from the intestines of cadavers, forty in number, and the discharges from a large number of patients during the epidemic at Decatur, Ala. I have also made comparative experiments with discharges from healthy persons in a large number of cases, and I have never encountered anything which corresponded with Koch's comma bacillus. But, on the other hand, all competent bacteriologists who have made researches at the proper time and in the proper way have, in cholera, been able to demonstrate the presence of that particular micro-organism. I have not heard the results of the researches now being made at Quarantine Station, but we cannot doubt it will be found there.

As to the biological characteristics of this micro-organism, I think I will save time by referring to some of the proof-sheets of my work, which is now being put in type. This spirillum grows readily in the presence of oxygen, and also in the absence of oxygen, as it must do to thrive in the intestines. I shall not stop to dwell upon its characteristics in culture media, but I will say that it does not form spores, and consequently is very easily destroyed. Indeed, it is one of the most easily destroyed of all the pathogenic organisms known. It grows readily in a variety of organic media. Milk is a very favorable medium, but it does not grow in acid media. A slightly alkaline medium is most favorable for its growth. It grows very readily in bouillon which is diluted with eight or ten parts of water, and it also multiplies to some extent in sterilized river or well water. Experience shows that there is sufficient organic pabulum in ordinary river or well water for the multiplication of this particular micro-organism. In water which is rich in organic pabulum, and consequently contains numerous other common organisms, it dies out, as these take the precedence; so it would apparently multiply more rapidly in water not containing a large amount of organic material than it would in sewage. Koch found in his earliest investigation that this spirillum grows readily on moist linen, or the soiled clothing of patients. In experiments made by Bolton in 1886, he found that it multiplied in distilled water to which bouillon was added in the proportion of fifteen to twenty-five parts in the thousand. The thermal death point of the cholera spirillum I fixed myself some years ago at 52° Centigrade, which is 125.6° Fahrenheit. Kitasato has since made experiments and places it a little higher, at 55° C. There seems to be a difference in cultures in different media, but ten minutes' exposure to 55° C. will suffice. Sixty degrees C. is a good figure, remember—that is, 140° F.—and ten minutes' exposure to this temperature may be relied upon for the destruction of this spirillum; so if your milk or water has been heated up