

whitish flocculent material. Each tube contained the same organism but it became smaller and apparently less abundant at each inoculation. Another agar plate culture was made and examined for colonies 18 and 24 hours later. At the former period none were visible, but at the latter there were many and of the same appearance as those in first plate. A number were examined microscopically and showed the same bacillus. From original agar plate I inoculated beef broth. After 24 hours' growth in thermostat media contained few bacilli but those present were remarkably well defined. After 4 days, organism was yet quite distinct and more numerous, and the medium contained a white flocculent material clinging to the glass at junction with the bouillon. The bacilli vary much in length from rod-shape to filaments. The rod-shaped are large and more or less uniform in length and thickness. The filamentous structures have not, as yet, under examination shown any movements, although all other characteristics correspond with the short rod shaped forms. In many cases they appear to have transverse markings, many of which are distant from each other the length of one of the short rod-shaped bacilli. In a hanging drop examination the bacillus shows four distinct movements. There appears to be a fifth movement but I am not certain as to its real existence. Its movements are rapid, more so than those of the typhoid bacillus. In one case it moves across the field in a zig-zag manner throwing its body at different angles from right to left thus:—motionless,  $\wedge \vee$  moving,—motionless. In another movement it partially turns upon itself first to one side and then to the other, thus:—motionless,  $( \quad )$  moving,—motionless. The third movement is snake-like. The last distinct movement is one in which the bacillus turns completely upon itself, forming what looks like a coccus, after this fashion:—motionless  $\bullet \bullet \bullet \bullet$  moving,—motionless. The doubtful movement appears to be up and down or a turning end for end in a regular manner without bacillus quitting its ground.

From original agar plate culture, I inoculated agar slant and blood serum.

The following is the result of examination: In agar tube, bacilli were from ordinary size to very small and thin. Taking two of the same length, one was thick and the other thin. Many appeared to be turned upon themselves. In blood serum tube, organism appeared to be divided into segments, others probably thicker at one end than at the other, and some of ordinary size.

I inoculated another series of tubes as follows:

From original agar plate culture to bouillon; from bouillon to blood serum; from blood serum to blood serum.

The following is the result of examination: In the specimen from bouillon the organism was shorter than usual. The first blood serum showed bacilli varying in size from the smallest to the largest yet seen. Many appeared broken up and others turned upon themselves. In the second blood serum culture organism was more uniform, but also varied in size.

Three agar plate cultures were now made in order to dilute the growth, and so examine the different colonies with more accuracy. The procedure was after the ordinary method. Examination proved the