

must inevitably possess this same characteristic, and in this way a special race of amœbæ must tend to be produced. So it is with the bacteria, slight alterations of environment must affect, and, it has been proved experimentally, undoubtedly do affect the characters of the microbes subjected to those changes, and there is an absence of that beneficial effect of sexual fusion and reproduction to preserve the mean characters of the species. Given any one form of microbe it can only retain its special characters over any long period of time by retaining a like environment, and thus it is that we must expect to find not so much sharply-defined species of pathogenic microbes, as fairly well defined groups of pathogenic microbes presenting slight divergences either in virulence or in morphological characters, or in power of fermentation or in all of these conditions, the microbe varying to a slight extent according to variations in environment. In cases of disease that are what is termed most typical there we must expect to find and to isolate the microbe most nearly presenting typical characters. In our doubtful and difficult cases we must equally expect to find microbes departing from the type. It may be that in the individual showing atypical symptoms, some peculiarity in his system, some increased or lessened power of resistance to the inroad of the bacteria, may bring about a modification of the microbe. It may be on the other hand that through unusual environment the microbes have become modified prior to their entry into the system, and thus rendered capable of producing only a modified disease. Probably both of these are factors. In either case it appears to me that the bacteriologist of the future will not so much recognize sharply-defined types as he will group together under broad headings, varieties or races of bacteria having common characters of growth and somewhat similar action upon the organism; while the officer of public health, meeting with a member of one of these groups, associated with a not perfectly typical case of disease, will treat it as suspicious, and will treat a case from which is isolated, not necessarily as one of clearly-