

of tincture of iron and one grain of quinine every hour for two days, then every three hours.

CASE III.—Occurred in the practice of a surgeon in a neighboring village, 45 miles away. This case had advanced so far that one metacarpal bone and finger had been removed, in hopes of checking the advance of the disease. Pus formed in the hand and wrist, and the hand was riddled with incisions to provide drainage. The hand and arm were immersed in alcohol as described above and made a very good recovery.

The change for the better, which took place immediately in each of these cases, makes me believe that alcohol is almost a specific in all such cases.

Selected Articles.

KOCH ON BACTERIOLOGY.

The following abstract, by the *Lancet*, of Prof. Koch's address at the 10th International Congress, will be of interest to our readers, in view of the development of his consumption cure, which is now on the *tapis*, as it brings us up to date regarding bacteriology:

His address was an admirably clear account of bacteriological research. Only fifteen years ago one regarded the micro-organisms occasionally observed in the bodies of diseased animals and persons, more as curiosities than as things essentially connected with the disease. And, considering the great ignorance of their nature which then prevailed, this could not but be so; there were investigators, for instance, who declared bacteria to be crystalloid bodies, not living organisms. With the perfecting of the magnifying instruments, the application of staining, the propagation of organisms on nutritive media, culminating soon in pure cultivation, a rapid change took place. It became possible to distinguish a number of quite definite sorts with certainty, and to ascertain that they were distinctly connected with the diseases in which they were found. It was further ascertained that one sort of bacteria was not transformed into another, and the remarks of old writers on leprosy and consumption, for instance, even justified the conclusion that, just as certain diseases, presumably caused by micro-organisms, had remained unchanged, their germs also must, on the whole, have retained their old qualities. Within certain limits, indeed, deviations of demeanor had been observed in some bacteria, but that was the case among the higher plants, too, without the varieties ceasing to belong

to the species. The main gain of this period of research was the recognition of the fact that the thing was to discover as many morphological and biological qualities of a bacterium as possible, so as to be guarded against the danger of confounding various bacteria. There was still a danger of this with certain bacteria, the typhus and diphtheria bacilli, for example, whereas it had been removed in the case of the tubercle and cholera bacilli by the very exact investigations of these organisms. In their case, too, however, the bacillus must never be determined by one mark alone. He had experienced this in his own case, having for some time taken the bacillus of chicken cholera—for the special study of which he had not had material,—for a variety of the bacillus of Asiatic cholera, till a new series of experiments had convinced him of his error. Whether the germs of chicken cholera would have an injurious effect on human beings was still a question, and a question that would not easily be answered, as one could not well make direct experiments on human beings, but must wait to see whether the bacillus of chicken cholera would not one day appear in a human cholera patient. As to the etiological connection of the noxious bacteria with infectious diseases, general opinion was at first against it, and strict proof was necessary. It was necessary to prove, in all cases, that the disease and the micro-organism always appear together, that the micro-organism in question does not appear in any other disease, and that the micro-organism, propagated outside of the body through several generations, always produces the same disease, if it gets into the body again. Now that the etiological connection had been proved in this manner in anthrax, tuberculosis and erysipelas, and the resistance of opponents broken, one might confine one's self, in further cases, to the two first lines of proof. This proof had still to be given in the case of abdominal typhus, ague, leprosy, diphtheria and Asiatic cholera, but in the case of the latter, it was already generally assumed that the cholera bacillus was the cause of cholera. As subjects of investigation for the immediate future, Koch designated the question whether the pathogenic bacteria live only in the body, or outside of it, too, and, in the latter case, only occasionally get into the body and cause disease; also the manner of getting into the body, and their demeanor there.

The next advance in bacteriology was the discovery of the poisons excreted by the bacteria, which were now regarded as the cause of death in fatal bacterial diseases, for the opinion that the white blood-corpuscles resist the bacteria was more and more losing ground. Koch then discussed the spore-formation of some bacteria, and the influences of air, warmth, moisture and chemicals on bacteria. Direct sunlight quickly killed