

against bacteria and toxic substances, and on protracted and recurrent effects of bacterial poisons.

The last chapters of the book contain the studies of Behring, Behr and Kossel "On Diphtheria, and its Treatment by Serum"; known to our readers by the reports in this Journal.

In spite of the circumstance that only a portion of these studies is of special laryngological interest, the book must be praised as one in which the understanding of the current theories is made lucid by the work of the author, who is most competent to deal with these questions. *Michael.*

Gottstein and Schleich, C. L.—*Immunität, Infection Theorie und Diphtherie Heilserum. Drei kritische Aufsätze.* ("Immunity, Infections and Diphtheria Heilserum.") Three critical papers. Berlin: Springer. 1894. 69 pp.

In the *introduction* the authors say that they will make critical remarks upon the causes of infectious diseases, and on the methods of their treatment. For a second time the comparatively young science of bacteriology promises with great certainty admirable results, and awakens hopes, the fulfilment of which they doubt. The hard judgment of the public will punish the whole science of medicine if they are a second time deceived. But if these results are as good as they are expected to be, the authors combat presumptions, and they must have another explanation.

1. SCHLEICH. *Immunity.*—Disease is a form of struggle of the life of the individual against damage to which the human organism is not yet adapted. For those who believe that man is the crown of creation this combat will finally end with the victory of man. For evolutionists it will not be impossible to think that the end of the struggle will be the victory of the micro-organisms. The existence of toxin and antitoxin is an hypothesis adapted from organic chemistry, and the proclamation of this dogma has the *naïveté* of all unscientific therapeutic fanaticism. But if Nature cures by forming antitoxins, it seems not improbable that a similar action may be obtained by art to what Nature performs in a slow manner. Darwin's theory cannot be adapted to this theory, for we often see individuals, wretchedly burdened hereditarily, victorious against diseases which strike down healthy and strong persons, and especially do we observe this in pneumonia and diphtheria. It is not possible to consider any analogy with the inoculation of small-pox, because in small-pox there exists a natural immunity from the disease itself; but individuals who have had diphtheria have not the least immunity against this disease. On the contrary, we often get the impression that the predisposition to acquire it is still further increased in those who have had diphtheria. Acquired immunity is not, perhaps, a general condition, but only a standard of those regions through which infection usually arises—a local immunity. This fact has been proved for hydrophobia by Pasteur. If immunized animals are inoculated in the brain by trephining, they get the disease. The same may be thought for the immunity of intoxications: for example, in a morphinist, the path of absorption may obtain the power to resist absorption, so that greater doses are necessary to obtain any effect. In the morphinist the narcotic applied by the rectum sometimes causes severe intoxication, even when the subcutaneous application has

no longer any effect. Scarlet fever immunizes itself against acquisition in the usual manner, but persons who have had the disease still get surgical scarlatina as easily as others. Immunity must be obtained by a cellular-pathological process in the lymphoid channels, and by obliteration of lymphoid channels, as may be macroscopically observed occasionally in extirpated infected lymphoid glands. Those animals which are made immune are such as never acquire diphtheria through the natural ways. Their immunity, therefore, has no analogy to man.

2. GOTTSTEIN. *Infection Theory and Infectious Diseases*.—The theory of Robert Koch and his school as to the development and specific nature of bacterial diseases, their propagation, and the methods of their prevention, is founded on the fact of the constancy of the pathogenic powers of the micro-organisms. It is necessary that a pathogenic organism should have virulent powers; that the diseased individual should have a predisposition to disease from this agent, and that there should exist a proportion between virulence and predisposition. At great length the author proves that it is no longer possible to believe that a certain micro-organism causes a disease only because it is found to occur in many cases. The principal fact proving the contrary is that certain bacteria, such as bacterium coli, bacterium Loeffleri, and others, are found sometimes to exist as harmless saprophytes in healthy persons; the same is observed of the cholera bacillus. If there exists a personal predisposition or disposition of a certain genus of animals, the micro-organism is deleterious. If there is immunity of the person or the genus, the micro-organism does not do any harm. It is not impossible that the bacteria do not cause the disease but only accompany it, as certain species of organisms are always found where decomposition exists. But the specificity of forms of intoxications by poisons produced by the bacteria cannot be denied. It might be possible to explain the cause of disease in the loss of the power of the normal organism to prevent the entrance of specific poisons produced by the micro-organisms. If these facts are applied to the theory of diphtheria, it must be admitted that it is not possible to say that the knowledge of the diphtheria bacillus alone can illustrate the development of the disease: it is probable that it is only able to produce the disease in combination with other circumstances not yet sufficiently well known.

3. GOTTSTEIN. *Serum-therapy, and Statistics of Cures*.—A careful criticism of the numbers and of the cases contained in the statistics published up to now (details must be seen in the original) give the following results: Decrease of some few per cents. in the mortality is observed: it does not suffice to prove anything as to the curative power of Heilserum, because it does not differ from the variations of mortality always observable in Berlin; it is much higher than the mortality observed in other cities, which do not usually suffer such grave epidemics as Berlin. This small diminution can perhaps be produced by the injection of salt solution, which is proved to be useful in many diseases. The assertion that commencing the treatment during the earliest days gives a mortality of only ten per cent. is not at all proved. The non-existence of an immunizing power is certain. The disadvantageous results produced by the treatment are not yet excluded with certainty. Michael.