

proven to an absolute certainty that small, microscopic organisms, called micrococci, bacteria, schizomycetes, etc., are the sole cause and essence of a large number of diseases, and that without these organisms present in the body such diseases are impossible. It seems queer, that among all the mystical, visionary theories of disease imagined by the poetical fancies of the ancients, one theory, most visionary and fairy-like of all, should to-day become the established creed of sceptical science. The idea that minute organisms, visible only by certain devices of the microscopist, should invade our bodies, and, there selecting their appropriate abodes, should, by rapid multiplication, become the cause of typhoid-fever, small-pox, diphtheria, consumption, and numerous other diseases, seems like a fable; and yet such is the truth. The casting out of evil spirits is not wholly a figure of speech, and heathen incantations and the beatings of drums were but the earliest attempts to solve the problem of dislodgement which is pressing us hard at the present day.

In the introductory pages of his work, Professor Liebermeister defines and classifies the different varieties of infectious diseases in a very clear manner. He first divides those diseases into the miasmatic and the contagious. By miasmatic, he designates those diseases whose germs are primarily generated outside of, and independently of, any diseased body. Contagious diseases are those whose specific germs arise only in organisms suffering the special diseases. Contagious germs can be transferred from a sick man directly to a well man by simple contact, and they may then produce the same disease in this second person. Miasmatic germs, however, are bred in special localities, — in the soil and water, — and they attack those who come to these localities, but are not transferable from person to person. The contagious diseases, therefore, are *epidemic*; the miasmatic, *endemic*. A third group of these diseases includes a number whose germs appear to require two stages of development—first in the body, and then outside of it—before they become qualified to infect a new body. Thus cholera is not directly transferable from person to person, and men are also attacked who never saw another sick with cholera. On the other hand, it is equally certain that cholera never arises in any place outside of the East Indies, except it is brought to that place by human agency. Professor Liebermeister's explanation of these apparently contradictory facts is very logical and satisfactory. He assumes that cholera germs,

when first expelled from a diseased body, are innocuous; but, falling upon suitable conditions of temperature and moisture, they develop the fatal properties which render them deadly to those who then come in contact with them. Typhoid-fever exhibits similar contradictions as regards its methods of transmission, but such contradictions become clear and harmonious in the light of this theory. The excrement of one typhoid-patient in Pennsylvania, thrown out upon the hillside to ripen its deadly poison, killed hundreds of people in the town of Plymouth a few weeks later. The necessity for the instantaneous disinfection of all the excreta of these diseases should be one of the fundamental principles of sanitation taught to every child in every school in the land. Grown-up people do not go to school, and they learn slowly. Children at the right age should be taught such matters in the proper way.

In his handling of special diseases, Professor Liebermeister is short and terse, but remarkably clear; and we most cordially recommend his work to all.

NOTES AND NEWS.

—The 'Journal of the Franklin institute' for October adds another series of composite photographs to the fast-increasing contributions in this field. They group together the historic portraits of Washington, as represented by seventeen artists. There are three composites in all, due to the variations of position in the originals; and the resemblance of the three to one another is stronger than the resemblance amongst the originals. The photographs were prepared by Mr. W. Curtis Taylor of Philadelphia, who claims for them the highest attainable accuracy. A large crayon drawing of one of the composites is exhibited at the 'Novelties exhibition' in Philadelphia.

—Dr. Heinrich Winkler, in his recently published 'Uralaltaische völker und sprachen,' has made a careful comparison of the Eskimo with the languages of northern and north-eastern Asia. He reaches the result that it is in unmistakably close relation to the Kadyak, Tschiglit, and Namollo of the Asiatic coast, but is in no way connected with the Ural-Altaic tongues. It may have originally proceeded from the same elementary conception of speech; but it has developed a type of its own differing widely from Asiatic standards, and much more closely approaching the structure typical of the great mass of American tongues, though in many respects presenting features peculiar to itself.

—An aerostatic school is to be established at Grenoble in connection with the artillery, and will be especially devoted to teaching the use of captive balloons in reconnoitring.