ance of the mother, as in the cases of negroes, or to her being obliged to do so much work for her daily bread that she cannot give proper attention to her children, as in the cases of factory operatives.

Catarrhal conjunctivitis is not infrequently found accompanying a rhinitis due to adenoids. This conjunctivitis may be confined to one eye, or may effect both eyes at once, or one eye after the other. Sometimes it co-exists with a phlyctenular condition of the cornea-scleral margin. In one case which came under my observation, the child had a phlyctene of the cornea, which healed entirely under yellow oxide of mercury ointment; several months later, a monolateral catarrhal conjunctivitis, when getting well, was followed by a crop of small styes.

Marginal blepharitis is also at times found as a condition consequent upon the presence of a continued rhinitis due to adenoids of the naso-pharynx; though in this case I would look for an additional cause besides the secretions of the nose.

(To be continued.)

ON IMMUNITY.

Since Pasteur's celebrated discovery that it is possible to make animals immune against chicken cholera and other diseases by the use of attenuated vaccine, the nature of immunity, whether natural or acquired, has attracted to an ever-increasing extent the attention of bacteriologists. Year by year new theories have been brought forward to explain these phenomena. It is not my intention to attempt to discuss these earlier theories, partly because I prefer to leave this to abler hands, partly because the more recent theories on this subject tend rather to supplement than to exclude their predecessors. I should like, however, to point out how our modern views on this subject are acquiring greater precision and definiteness as time goes on. The view that acquired immunity was due to an alteration of the metabolism of the tissue cells, either in general or at the seat of infection (Grawitz, Buchner), is now known as the phagocite theory, with which the name of Metschnikoff will ever be honorably connected. The supposition of Chauveau and others that immunity was caused by the presence of some unknown substance of bacterial origin is now overshadowed by the results obtained by many workers who have actually found bacteria-killing substances in immune animals, whose nature and origin, however, appear to be very different from what Chauveau's theory might have led us to expect. It is to a consideration of this view of the nature of immunity that I propose chiefly to devote my paper.

Towards the end of 1888, Nuttall discovered that various bacteria are destroyed when mixed with fresh blood or blood serum, and, further, that this destruction cannot be ascribed to the action of cellular elements, but rather to the fluid part of the blood. This discovery (which really arose from the German criticism of Metschnikoff's phagocyte theory) was soon followed by the work of Buchner and Nissen, and these observers came to the conclusion that this bactericidal action of the cell-free blood serum is a weighty factor in the conflict between the organism and the microbe. A further confirmation of this view is to be found in the interesting discoveries of Bouchard. He first showed that the blood serum of an ordinary rabbit will serve as a culture medium for the bacillus pyocyaneus. If, however, a rabbit is made immune against the disease produced by this bacillus, its blood serum has acquired the power of attenuating and even destroying the microbe in question. Thus it was shown that by making an animal immune against a disease the bactericidal action of its blood serum was greatly increased. Similar results have since been obtained with the microbes of cholera, anthrax, and other diseases. Among these must be mentioned the recently published work of Emmerich and Mastbaum on pig typhoid. Not only have these observers found that the microbes of this disease are killed by the blood serum of rabbits that have been rendered immune against it, but they have successfully employed such serum to cure the disease after it has appeared in other susceptible animals. These discoveries concerning the bactericidal action of blood serum led to another of a very different, and I may say unexpected, nature. I refer to the work of Behring and Kitasato on tetanus and diphtheria which appeared at the end of last year. With these last named diseases our attention is at once drawn from the microbes to the poisons they produce. The microbes of tetanus and diphtheria do not spread through the body of the infected animal, as is the case with anthrax. On the contrary, they remain in the immediate neighborhood of the seat of inoculation. There they elaborate their deadly poisons, which, when absorbed into the system, produce, as is well known, various disastrous effects. For instance, an inoculated guinea-pig will in some cases develop typical diphtherial paralysis long after the last diphtheria bacillus has vanished from its system, and practically the same clinical effects can be produced by an injection of a minute dose of the poison made by the diphtheria microbe as by the microbe itself. Fraenkel, Behring, and other observers agree that scarcely any tolerance can be obtained by successive inoculations of minute doses of the unaltered diphtheria poison; consequently such a procedure can scarcely be expected to lead to a sure way of producing immunity against this disease. How then, it may be