

the serum of the horse, which has been successfully immunized against these infections, is found to be highly antitoxic, besides possessing some anti-bacterial power. In the case of typhoid fever, however, the serum of a horse, after repeated inoculations with the virus, though possessed of anti-bacterial properties, as in the case of diphtheria and tetanus, is found to be practically devoid of any antitoxic value, and consequently useless as a curative serum. Until a serum can be produced which is antitoxic, in addition to containing anti-bacterial substances, it would seem that all attempts to confer a specific passive immunity in enteric fever must, as in the case of cholera, apparently be doomed to failure. It should be mentioned, however, that Chantemesse claims to have produced a serum with which a remarkable success in the treatment of enteric fever is said to have been achieved. Speaking at the Seventh French Medical Congress, held last month in Paris, he stated that of 545 cases of the disease which had been treated in his wards at the 29th Bastion, between April 1st, 1901, and Oct. 1st, 1904, only 22 proved fatal, representing a mortality of 4 per cent. Planté and Foucauld, with the same remedy, were reported in January, 1903, to have treated at the Marine Hospital of St. Mandrier, 151 cases with 13 deaths, a mortality of 8.7 per cent. The two series together comprise 696 cases, with a fatality of 5 per cent., a success which is really phenomenal.

As to the nature of this serum there is at present some uncertainty. For its preparation a horse is immunized by repeated inoculation with toxic products of the typhoid bacillus obtained by special methods of cultivation. The serum eventually acquires curative properties, but the process is a slow one, requiring a good many months for its accomplishment. Chantemesse states that the serum retains its properties unimpaired by keeping, an observation which suggests that its mode of action is not a bactericidal one. On the other hand, the fact that its injection is often followed by definite, though not prolonged, constitutional disturbance, and the very remarkable fact, as stated by Chantemesse, that the more seriously ill the patient is, and the more advanced the disease, the smaller should be the injection, seems hardly compatible with the action of a serum which is merely antitoxic. It has been suggested by Dr. A. E. Wright that its curative properties may be explained on the assumption that an active immunity is conferred on the patient as a result of the transference from the horse of unneutralized bacterial poisons, which act as vaccines when introduced into the human organism. It is to be regretted that more precise information as to the