

Antityphoid Vaccination and the War

Reason for Treating the Soldiers with Antityphoid Vaccine.

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DURING former wars prostrations and deaths from typhoid fever among the soldiers have always been numerous, usually more numerous than those which occurred from wounds received in action. In the Franco-German War, 60 per cent. of the total German mortality was due to typhoid fever, there being 73,396 cases and 8,789 deaths. In the Boer War the British Army had 31,000 cases of the disease with 8,200 deaths, while only 7,772 men were killed in action or died of wounds. In the Spanish-American War the army of the United States, consisting of 107,973 men had 20,738 cases, and 1,580 deaths from typhoid, or nearly 1 case to every 5 men. Any measures, therefore, which will tend to prevent these enormous losses where large numbers of men are mobilized, should be enforced.

Improved sanitation such as sterilizing the drinking water and effective disposal of camp refuse all tends to reduce the spread of the disease, but most remarkably beneficial results have followed the practise of antityphoid vaccination. In the British Army in India 1910, in which typhoid vaccination was voluntary, the rate of typhoid attack was about one-sixth as great among the vaccinated as among the unvaccinated. In 1911 a United States Army Division of 12, 800 men in camp at San Antonio, Texas, were vaccinated and only one case of typhoid occurred, and this was a case where the disease established itself before the vaccination was completed. At the beginning of the present war typhoid was prevalent to a great extent among some of the

German troops who had not been protected. Antityphoid vaccination was made compulsory with the result that typhoid was practically wiped out. According to a statement made in 1915 in the British House of Commons only 421 cases of typhoid had developed in the British forces to date, and of these 305 had not been vaccinated within two years. Only one death occurred among the 116 men who had been recently vaccinated, while among the 305 unprotected there were 35 deaths.

NATURE OF ANTITYPHOID VACCINE.

In 1896, Wright, an English army surgeon, and Pfeiffer and Kolle of Germany working independently, demonstrated that persons injected with a vaccine or bacterin composed of killed typhoid bacilli developed the same antibodies in their blood as were developed naturally in the blood of recovered cases of typhoid fever. Wright then introduced its use in the English army and the results led to its use in other countries.

The methods of preparing the vaccine have been modified from time to time as improvements have suggested themselves. One of the standard methods, the one most commonly used, is to grow a culture of the typhoid bacillus of low virulence at 37 C. for 12 days in a shallow layer of peptone broth. This culture is then sterilized by heating to 53 C. for an hour and 0.25 per cent. lysol is then added to ensure its sterility being retained. This sterilized culture constitutes the vaccine. It then has to be standardized so that one dose of 1 c.c. shall contain 1,000 million dead bacilli. Two inoculations