

one of the most important conclusions to be drawn from our recent experience is that in vaccination we have the only effective protection against the elusive carrier."

Complete confidence in vaccination was established by this epoch-making achievement, and, upon the recommendation of the Surgeon General, the Secretary of War ordered, on September 30, 1911, the compulsory vaccination of every person in the army under 45 years of age, and of all recruits. This was carried out as promptly as possible, and, as the result the United States has today an "immunized" army, not a single case of typhoid having thus far been reported among the troops in this country during 1913. This record, compared with that of any year previous to the beginning of vaccination, seems little short of miraculous.

In no other army is anti-typhoid vaccination mandatory, and no other is entirely immunized against the disease. Our navy soon followed the precedent established by the army, and it is today immunized with vaccine prepared in the laboratory of the Army Medical School.

### SOME FIGURES THAT PROVE

In a paper recently read before the Congress of American Physicians and Surgeons in Washington, Major Russell included a table showing the incidence of typhoid in the army in the United States during the period 1903-1913. These statistics were gathered with the utmost accuracy and tell the story in a nutshell:

#### TYPHOID FEVER, U. S. ARMY, IN THE UNITED STATES

	<i>Cases.</i>
Five years prior to 1908 (Average per year) . . . . .	160
Two years after vaccination had begun (year 1911) . . . . .	44
Three years after vaccination had begun (year 1912) . . . . .	18
First nine months of 1913 (latest figures available) . . . . .	0

Since 1908 a prodigious amount of work has been accomplished. The various steps in the production of each dose of vaccine have been as carefully regulated and supervised as though it was to be used upon the President of the United States. Before leaving the laboratory, it is tested upon guinea pigs, and the statistics above quoted show the results of this painstaking care. Large quantities have been furnished to the various government departments, to the militia, and to a number of civil institutions.

As soon as its success was assured the larger drug firms of the country sent representatives to Washington to learn the formula and to study the process of manufacture. The same vaccine is now prepared by these firms and sold to the medical profession of the country at a reasonable rate.

Regarding the act of vaccination itself, an authority states:

"It is quite simple, consisting merely in the subcutaneous administration, with a hypodermic syringe, of a small quantity of the opalescent prophylactic fluid. The syringe is sterilized by boiling, the skin is prepared by painting a place on the arm the size of a quarter, and the immunization is completed by the administering of three doses—the first containing  $7\frac{1}{2}$  drops and the second and third, which are given 10 and 20 days later, 15 drops each. The site of inoculation becomes somewhat red and tender for a day or two, but there is no sore and no scar as in vaccination against smallpox.

"In a small percentage of cases, less than five, there is some headache and prostration, but it soon disappears, rarely lasting more than 24 or at the most 48 hours. In this connection it is necessary to remember that we vaccinate none but the healthy."

The progressive health department of New York city decided to use the typhoid prophylactic as soon as its success was assured by the War Department, and it is