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By Captain Frank A. Cook, U. S. A.

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THE NATIONAL GUARD MAGAZINE

Volume X.

FEBRUARY, 1913

Number 2

Anti-Typhoid Vaccination*

By C. E. YONT, Captain, Assistant Surgeon, N. G. Arizona, Prescott, Arizona.

EXPERIENCE is a good teacher, but a hard master. The civilized nations of the world have learned much concerning the art of war by experience, but at the loss of countless thousands of their best and brightest youth throughout all ages.

Experience crystalized gives us statistics. From the careful analysis of war statistics we are brought face to face with many uncontrovertible facts not the least of these being that disease kills 75 per cent, while the "deadly missile" claims but 25 per cent of the total dead.

Typhoid is the special scourge of armies, whether in camp or on the march. To properly develop my subject it will be necessary for us to briefly trace the history of typhoid fever in the armies of the world since 1860. With a close study of the statistics thus given, together with others to be presented in contrast, I hope to convince the most skeptical among you, of the great value of anti-typhoid vaccination, a very recent scientific achievement, furnishing as it does the best preventative against typhoid fever, that much needed missing link which is even now indispensable in the best sanitized camps, if a chain would be forged strong enough to keep typhoid out.

Typhoid Fever in Wars Since 1860.

War.	Army.	Year.	Cases.	Died.
Rebellion.....	Union	1861-5	80,000	160,000
Franco-Prussian.....	German	1870	73,000	9,000
Spanish-American.....	U. S.	1898	20,738	1,580
Boer.....	British	31,000	6,000
Russia-Japanese.....	Russian	1904-5	24,663	4,566

Leaving the generalities presented in the above table we will turn now to a few detailed incidences gleaned from our Spanish-American war; one man in every six serving the colors had typhoid fever. Again, in the 49th Iowa, out of 1,236 men, there were 612 cases of typhoid, or about half of the regiment, and fifty men died with it. The 15th Minnesota furnishes much the same history, 475 cases and most of these stricken while the regiment was still encamped within the confines of the State.

We could continue to select innumerable examples from our latest war, but we have, I think, presented enough statistics to demonstrate the vast amount of sickness, suffering and death, not to mention military inefficiency which has been occasioned by that preventable disease known as typhoid fever.

We will now consider briefly a few facts about typhoid fever as a disease. "Typhoid fever is due to a tiny little vegetable germ—or rather to aggregations of billions and trillions of such germs—to which is given the name, typhoid bacillus. When looked at under the microscope, these germs, if suspended in a drop of water, are seen to have very active motion. They multiply with enormous rapidity, so that, under favorable conditions, a single germ may develop into many millions within twenty-four hours."

It is frequently classed as a water born or filth distributed disease. In fact, when you recall that each case of typhoid fever must

come from some previous case of typhoid through contamination by urine or feces, we observe that we are but little better off than swine. Our water supply may become infected from the stools or urine of a typhoid fever case, our milk supply may become infected from infected water or an infected dairyman ("typhoid carrier"), the filthy fly is a most potent factor in the dissemination of typhoid, feeding on the typhoid stool in the latrine and then arriving at the mess tent ahead of you. Contact infection through failure to use most rigid aseptic measures, is common among physicians and nurses.

To our eternal shame be it said, that typhoid exists constantly in civil communities. About three per cent of those recovering from typhoid fever harbor in their intestinal and urinary tracts for years the typhoid germ. So it has been estimated that you could scarcely assemble a regiment of 1,300 officers and men without having two or three cases of typhoid fever break out very shortly thereafter. Our annual toll to the great Jugger-naught, Typhoid, is about 400,000 cases with 40,000 deaths. When we consider that young men between the age of fifteen and twenty-five are most susceptible, and when we further consider the greatly increased difficulties attendant upon camp sanitation as compared with that of towns and cities, we are not surprised that armies are scourged with typhoid.

We stated a moment ago that typhoid was a preventable disease and the immortal

Pasteur has said that it is within the power of man to rid himself of every germ disease. You ask very pertinently why have we not prevented typhoid, why have we not rid ourselves of this germ disease? To answer that question would require more time than I have at my disposal, if indeed I am competent to do so at all. However, the fact remains that we are working to that end. Experience, the great teacher, is annually exacting her exorbitant tuition in necessary deaths. But, I repeat, progress has been in the making and all the little irksome details of camp sanitation which we try annually to impress upon you are not burdens of the martinet or commissioned taskmaker, but absolutely necessary for your health and life.

Vaccination against smallpox has well nigh rid the armies of the world of this ancient scourge, so vaccination against typhoid has already greatly reduced the number of cases and deaths where practiced.

It has been known for many years that one attack of typhoid would give immunity for many years thereafter, the very disease as it were having stimulated the blood to produce an anti-body which would protect the patient for years from further attacks of typhoid. With this fact clearly before them scientists finally set about to establish if possible an "artificial" immunity which would give all the protection afforded by an attack of typhoid without any of the dangers, suffering or economic loss.

Frankel in 1893 began inoculation experiments against typhoid, but to the British surgeon, Prof. A. E. Wright, is due the honor of having first conceived and put in practice the idea of anti-typhoid vaccination. This was before the Boer war and during this war many were vaccinated, but statistics thereon are lacking; this much, however, is known, some immunity was conferred and the death rate reduced. However, the reactions were too severe, due to too large dosage and the dose was not twice repeated as in our more modern technique.

The German Army next took up the subject and by improvement in methods cut their typhoid rate in half by vaccination in 1904-07. Then our own Army Medical Department became interested and Maj. F. F. Russell was sent to England and Germany in the summer of 1908 to study their methods and results. His report was so favorable to vaccination that the Surgeon General of the Army ordered it reviewed by a board of distinguished medical scientists, consisting of Doctors Vaughn, Councilmen, Musser, Lambert, Flexner and Thayer, who submitted the following conclusion:

First—The board is convinced that the practice of anti-typhoid inoculation is both useful and harmless and offers a practicable means of diminishing the amount of typhoid fever in the Army in times of peace and war.

Second—The experience to date with anti-typhoid vaccination justifies the introduction of the practice in the Regular and Volunteer Armies in time of war.

Third—The board recommends the immediate introduction of the practice of voluntary

MICHIGAN NATIONAL GUARD

Company F, Second Infantry
Muskegon, Mich., Jan. 5, 1913.

Editor National Guard Magazine:

I trust you will pardon the frankness of this letter, and hope you will not take offense. I have been a subscriber of The National Guard Magazine for some years, and have always enjoyed reading it until about six months ago. At about that time, in my opinion, the publication lost interest. I have heard the same objection from several readers at this station and had concluded not to renew. But after reading the January issue I have "flopped." I was especially interested in the article by W. Richeson Love, and "Michigan's Disgrace," and the editorial on the latter. As I know Captain Blackman personally, I was naturally pleased at the stand taken by your paper.

"Talks With the Old Man" and "Two Hours a Week Too Much?" were also good, as, indeed, was the whole paper.

I suppose, of course, you have heard of Michigan's publicity stunt. I refer to the moving pictures. I think it would be a good plan for all the States. (A detailed description of the "stunt" referred to will be found in the November, 1912, issue of The National Guard Magazine.—Ed.)

Well, I think I have bothered you enough, so will sound "recall."

C. M. FIELD,
First Lieut., 2nd Inf., M. N. G.