
**The Prevention of Disease in the Army and the Best
Method of Accomplishing That Result**

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The Seaman Prize Essay

BY MAJOR JEFFERSON RANDOLPH KEAN,
SURGEON IN THE UNITED STATES ARMY.



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It has been said that an Army is the most complex machine which has been devised by the mind of man. This is the more true now when every science is made ancillary to the art of destruction and modern specialism has invaded every department of the military profession. Military

medicine is now feeling the full force of this progressive tendency, influenced as it is likewise by the kaleidoscopic changes which have marked medical progress in the last quarter of a century. The direction of this progress has been to add to the duty of caring for the sick and wounded, which was formerly almost the only responsibility of the Medical Staff, the supervision of the hygiene of the troops and the prevention of disease among them. In this way the Medical Department has been able not only to comply with the altruistic de-

mands of the age, but to directly and powerfully contribute to the military efficiency of armies. There has also been a great advance in the way of more perfect organization and better and more specialized training for the medical personnel, as well as improvement in equipment, so that the comfort of patients has been much promoted.

Preventive medicine in its broader sense and apart from the personal and domestic point of view is a specialty with which the ordinary medical practitioner has little to do and of which he has but little knowledge either theoretical or practical. Its knowledge and practice is thus confined to a relatively small number of health officers, military surgeons (including naval surgeons), and professional epidemiologists. But because of the special conditions and exceptional environment of military life, notably in the case of armies in the field, and because there the preservation of health cannot be considered as in civil life the cardinal consideration, but must often be subordinated to the imperious demands of military necessity, we find that for the soldier many of the rules of preventive medicine either cannot be applied or must be greatly modified. So military hygiene has arisen as a further specialized offshoot of preventive medicine, and one so far removed from the well beaten paths of medical practice that civil practitioners cannot be expected to acquire proficiency in it by the mere act of accepting a commission.

The first step in the study of the prevention of disease in the Army is to ascertain what diseases most seriously affect its efficiency or cause the chief loss to the effective force. When ascertained they are divisible into the preventable and non-preventable, and for the former the approved methods of prevention, which apply to individual diseases or classes of diseases, as well as those which are of general application, will be discussed. This will, however, not complete the subject, for unfortunately it is a fact that it is no more possible for an army to be made healthy by military order than for people to be made virtuous by Act of Congress. If the sanitary rules laid down in Circular No. 1, of the Surgeon General's Office, April 25, 1898, and G. O. 117, A. G. O., of August 10, of that year, had been carefully

followed throughout the Army, the camps would have been health resorts, and the country would have been saved the melancholy lesson of more than 20,000 cases of typhoid fever in the Army in 1898, with more than 2,000 deaths. But with an untrained Army of volunteers, and a Medical Department in which the vast majority of officers and men were equally untrained, these carefully framed sanitary regulations fell nearly as far short of their purpose as did G. O. 87 of that year, enjoining abstinence from alcoholic drinks, in producing a blue-ribbon Army. No method of disease prevention can, therefore, be efficacious which does not embrace the necessary executive machinery to procure its practical working, and so some discussion of what is needed to secure an efficient Medical Department and the cordial co-operation of the line in questions of sanitation is as essential to our purpose as are the horses to a stage coach or an engine to a train.

Having thus outlined the scope of our inquiry it is in order to take up the subject of the occurrence of disease in armies.

The influence of modern civilization upon the health of mankind is, except for the submerged tenth, conservative. Men are abundantly and regularly fed and well clothed, and are protected by warm houses from the exposures of winter. Municipal government provides an abundance of water which is usually pure, and for the prompt removal of wastes and filth. The law enforces sanitary rules and compels the segregation of many contagious diseases. The sick are cared for in hospitals and in many ways the physically unfit are protected from the operation of the great natural law which provides for their extinction. By the force of custom, comforts and luxuries come to be regarded as necessities and men's wants are greatly multiplied. When however, the citizen becomes a soldier, he finds that this tendency is promptly and rudely reversed and that the wants, luxuries, and habits of a lifetime are stripped off by the rough hand of military necessity until he stands forth the fighting man of all the centuries, divested of everything except the weapon in his hand and the clothes on his back, cooking his simple evening meal before the fire, with the earth for his bed and the sky for his roof. In.

stead of abundant, well-cooked and regular meals, he eats his beans, bacon and bread at more or less irregular hours. Instead of a warm house and comfortable bed, he must learn to march all day in rain-soaked clothes and sleep on wet or frozen ground. He has to drink such water as he can get, and will not always be able to boil it. He will be not always able to protect himself from the filth of others, and will soon find that a perfect method of disposal of wastes in camp is yet to be discovered. During this period of reversal to primitive conditions it is not surprising that sickness results. The effects of an unaccustomed and usually ill-prepared diet are seen in attacks of bowel disturbance, to which are often added specific infections, such as dysentery, making up a disease group the several members of which, although not having the same aetiological factors in all cases, clinically are merged together and are considered together in military statistical reports. In those of the Civil War, this group far exceeds any other as a cause of admissions, and likewise deaths and discharges (See Tables IV and VI). Until the soldier becomes hardened to exposure, rheumatism, bronchitis, and colds contribute heavily to the sick report, but as he becomes a veteran, the rate steadily falls, being largely contributed by the recruits.

MEDICAL STATISTICS OF ARMIES.

The diseases of armies in time of peace differ markedly from those of wartime, not only in their degree of prevalence, but in their comparative importance, and while the prevention of disease of armies in wartime is the cardinal object of our study, an examination of the peace morbidity of a few of the principal armies makes an instructive basis of comparison. It is the more valuable because from the international military statistical tables can be ascertained the constant non-effective rate from each of the more important diseases, and thus we are given a better basis for estimating their effect on the efficiency of armies than is afforded by either admissions or total losses.

The following table shows the constant non-effective rate per thousand for the eight most important classes of diseases in the

armies of England, France, and Germany, as compared with our own:

TABLE I.	U. S. 1903.	England 1902.	France 1901.	Germany 1902.
Venereal diseases.....	9.63	12.00	2.38	1.88
Dysentery.....	4.61	.75	.26	.01
Skin diseases.....	3.00	2.07	1.13	.59
Malarial diseases.....	2.88	3.12	.64	.02
Tuberculosis.....	1.87	.52	.59	.34
Respiratory diseases*.....	1.44	1.59	3.01	2.65
Typhoid fever.....	1.02	1.61	.81	.14
Articular rheumatism.....	.51	1.53	1.02	.93

The most striking feature of this table is the predominance of venereal diseases in England and America, as compared with the Continental countries. This is due, as is well known, not to any greater laxity of morals in the former nations, but to a peculiar intolerance in the moral sentiment of the public in the English race, which will not permit the same safeguards to be taken to prevent the spread of those affections, which are used in the case of other contagious diseases. This question will be touched on later in discussing the prophylaxis of these diseases.

Dysentery, malaria, and skin diseases are higher in the English and American Armies because of their larger proportion of troops in the tropics, and respiratory diseases are less for the same reason; the tabulated reports showing much larger admissions for the former, and smaller for the latter, in the tropics than at home stations.

The large figure for tuberculosis in the United States represents rather a different method of disposal than any special prevalence of the disease. In the other services consumptives are promptly discharged and sent home; while in the United States they are transferred to a sanitarium for treatment. While the Army benefits by the former method of disposal, the health of the civil population suffers from the distribution of a contagious disease among its homes. This disease does not seriously affect the military efficiency of armies in the field, the open air life

*Includes pneumonia, pleuritis and bronchitis.