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THE SANITARY CONDITION  
OF  
The Army of the United States.

BY EDWARD JARVIS, M. D.,

OF DORCHESTER, MASS.





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## SANITARY CONDITION OF THE ARMY.

THE power and efficiency of an army consist in the amount of the power and efficiency of its elements, in the health, strength, and energy of its members. No army can be strong, however numerous its soldiers, if they are weak; nor is it completely strong, unless every member is in full vigor. The weakness of any part, however small, diminishes, to that extent, the force of the whole; and the increase of power in any part adds so much to the total strength.

In order, then, to have a strong and effective army, it is necessary not only to have a sufficient number of men, but that each one of these should have in himself the greatest amount of force, the fullest health and energy the human body can present.

This is usually regarded in the original creation of an army. The soldiers are picked men. None but those of perfect form, complete in all their organization and functions, and free from every defect or disease, are intended to be admitted. The general community, in civil life, includes not only the strong and healthy, but also the defective, the weak, and the sick, the blind, the halt, the consumptive, the rheumatic, the immature in childhood, and the exhausted and decrepit in age.

In the enlistment of recruits, the candidates for the army are rigidly examined, and none are admitted except such as appear to be mentally and physically sound and perfect. Hence, many who offer their services to the Government are rejected, and sometimes the proportion accepted is very small.

In Great Britain and Ireland, during the twenty years from 1832 to 1851 inclusive, 305,897 applied for admission into the British army. Of these, 97,457, or 32 per cent., were rejected, and only 208,440, or 68 per cent., were accepted.\*

In France, during thirteen years, 1831

\* *Report on the Sanitary Condition of the British Army*, p. 498.

to 1843 inclusive, 2,280,540 were offered for examination as candidates for the army. Of these, 182,664, being too short, though perhaps otherwise in possession of all the requisites of health, were not examined, leaving 2,097,876, who were considered as candidates for examination. Of these, 680,560, or 32.5 per cent., were rejected on account of physical unfitness, and only 1,417,316, or 67.5 per cent., were allowed to join the army.\*

The men who ordinarily offer for the American army, in time of peace, are of still inferior grade, as to health and strength. In the year 1852, at the several recruiting-stations, 16,114 presented themselves for enlistment, and 10,945, or 67.9 per cent., were rejected, for reasons not connected with health:—

3,162 too young,
732 too old,
1,806 too short,
657 married,
2,434 could not speak English,
32 extremely ignorant,
1,965 intemperate,
106 of bad morals,
51 had been in armies from which
———— they had deserted,

Total, 10,945

All of these may have been in good health.

Of the remainder, 5,169, who were subjects of further inquiry, 2,443 were rejected for reasons connected with their physical or mental condition:—

243 mal-formed,
630 unsound in physical constitution,
16 unsound in mind,
114 had diseased eyes,
55 had diseased ears,
314 had hernia,
1,071 had varicose veins,

Total, 2,443

Only 2,726 were accepted, being 52.7 per cent. of those who were examined, and less than 17 per cent., or about one-

\* *Report on the Sanitary Condition of the British Army*, p. 499.

sixth, of all who offered themselves as candidates for the army, in that year.\*

In time of peace, the character of the men who desire to become soldiers differs with the degree of public prosperity. When business is good, most men obtain employment in the more desirable and profitable avocations of civil life. Then a larger proportion of those who are willing to enter the army are unfitted, by their habits or their health, for the occupations of peace, and go to the rendezvous only as a last resort, to obtain their bread. But when business falters, a larger and a better class are thrown out of work, and are glad to enter the service of the country by bearing arms. The year 1852 was one of prosperity, and affords, therefore, no indication of the class and character of men who are willing to enlist in the average years. The Government Reports state that in some other years 6,383 were accepted and 3,617 rejected out of 10,000 that offered to enlist. But in time of war, when the country is endangered, and men have a higher motive for entering its service than mere employment and wages, those of a better class both as to character and health flock to the army; and in the present war, the army is composed, in great degree, of men of the highest personal character and social position, who leave the most desirable and lucrative employments to serve their country as soldiers.

As, then, the army excludes, or intends to exclude, from its ranks all the defective, weak, and sick, it begins with a much higher average of health and vigor, a greater power of action, of endurance, and of resisting the causes of disease, than the mass of men of the same ages in civil life. It is composed of men in the fulness of strength and efficiency. This is the vital machinery with which Governments propose to do their martial work; and the amount of vital force which belongs to these living machines, severally and collectively, is the capital with which they intend to accomplish their purposes. Every

\* *Medical Statistics of the United States Army*, 1839-54, p. 625.

wise Government begins the business of war with a good capital of life, a large quantity of vital force in its army. So far they do well; but more is necessary. This complete and fitting preparation alone is not sufficient to carry on the martial process through weeks and months of labor and privation. Not only must the living machinery of bone and flesh be well selected, but its force must be sustained, it must be kept in the most effective condition and in the best and most available working order. For this there are two established conditions, that admit of no variation nor neglect: first, a sufficient supply of suitable nutriment, and faithful regard to all the laws of health; and, second, the due appropriation of the vital force that is thus from day to day created.

A due supply of appropriate food and of pure air, sufficient protection and cleansing of the surface, moderate labor and refreshing rest, are the necessary conditions of health, and cannot be disregarded, in the least degree, without a loss of force. The privation of even a single meal, or the use of food that is hard of digestion or innutritious, and the loss of any of the needful sleep, are followed by a corresponding loss of effective power, as surely as the slackened fire in the furnace is followed by lessened steam and power in the engine.

Whosoever, then, wishes to sustain his own forces or those of his laborers with the least cost, and use them with the greatest effect, must take Nature on her own terms. It is vain to try to evade or alter her conditions. The Kingdom of Heaven is not divided against itself. It makes no compromises, not even for the necessities of nations. It will not consent that any one, even the least, of its laws shall be set aside, to advance any other, however important. Each single law stands by itself, and exacts complete obedience to its own requirements: it gives its own rewards and inflicts its own punishments. The stomach will not digest tough and hard or old salted meats, or heavy bread, without demanding and

receiving a great and perhaps an almost exhausting proportion of the nervous energies. The nutritive organs will not create vigorous muscles and effective limbs, unless the blood is constantly and appropriately recruited. The lungs will not decarbonize and purify the blood with foul air, that has been breathed over and over and lost its oxygen. However noble or holy the purpose for which human power is to be used, it will not be created, except according to the established conditions. The strength of the warrior in battle cannot be sustained, except in the appointed way, even though the fate of all humanity depend on his exertions.

Nature keeps an exact account with all her children, and gives power in proportion to their fulfilment of her conditions. She measures out and sustains vital force according to the kind and fitness of the raw material provided for her. When we deal liberally with her, she deals liberally with us. For everything we give to her she makes a just return. The stomach, the nutrient arteries, the lungs, have no love, no patriotism, no pity; but they are perfectly honest. The healthy digestive organs will extract and pay over to the blood-vessels just so much of the nutritive elements as the food we eat contains in an extractible form, and no more; and for this purpose they will demand and take just so much of the nervous energy as may be needed. The nutrient arteries will convert into living flesh just so much of the nutritive elements as the digestive organs give them, and no more. The lungs will send out from the body as many of the atoms of exhausted and dead flesh as the oxygen we give them will convert into carbonic acid and water, and this is all they can do. In these matters, the vital organs are as honest and as faithful as the boiler, that gives forth steam in the exact ratio of the heat which the burning fuel evolves and the fitness of the water that is supplied to it; and neither can be persuaded to do otherwise. The living machine of bone and flesh and the dead machine of iron prepare their forces according to

the means they have, not according to the ulterior purpose to which those forces are to be applied. They do this alike for all. They do it as well for the sinner as for the saint, — as well for the traitorous Secessionist striving to destroy his country as for the patriot endeavoring to sustain it.

In neither case is it a matter of will, but of necessity. The amount of power to be generated in both living and dead machines is simply a question of quality and quantity of provision for the purpose. So much food, air, protection given produce so much strength. A proposition to reduce the amount of either of these necessarily involves the proposition to reduce the available force. Whoever determines to eat or give his men less or poorer food, or impure air, practically determines to do less work. In all this management of the human body, we are sure to get what we pay for, and we are equally sure not to get what we do not pay for.

All Governments have tried, and are now, in various degrees, trying, the experiment of privation in their armies. The soldier cannot carry with him the usual means and comforts of home. He must give these up the moment he enters the martial ranks, and reduce his apparatus of living to the smallest possible quantity. He must generally limit himself to a portable house, kitchen, cooking-apparatus, and wardrobe, and to an entire privation of furniture, and sometimes submit to a complete destitution of everything except the provision he may carry in his haversack and the blanket he can carry on his back. When stationary, he commonly sleeps in barracks; but he spends most of his time in the field and sleeps in tents. Occasionally he is compelled to sleep in the open air, without any covering but his blanket, and to cook in an extemporized kitchen, which he may make of a few stones piled together or of a hole in the earth, with only a kettle, that he carries on his back, for cooking-apparatus. In all cases and conditions, whether in fort or in field, in barrack, tent, or open air, he is limited



to the smallest artificial habitation, the least amount of furniture and conveniences, the cheapest and most compact food, and the rudest cookery. He is, therefore, never so well protected against the elements, nor, when sleeping under cover, so well supplied with air for respiration, as he is at home. Moreover, when lodging abroad, he cannot take his choice of places; he is liable, from the necessities of war, to encamp in wet and malarious spots, and to be exposed to chills and miasms of unhealthy districts. He is necessarily exposed to weather of every kind,—to cold, to rains, to storms; and when wet, he has not the means of warming himself, nor of drying or changing his clothing. His life, though under martial discipline, is irregular. At times, he has to undergo severe and protracted labors, forced marches, and the violent and long-continued struggles of combat; at other times, he has not exercise sufficient for health. His food is irregularly served. He is sometimes short of provisions, and compelled to pass whole days in abstinence or on short allowance. Occasionally he cannot obtain even water to drink, through hours of thirsty toil. No Government nor managers of war have ever yet been able to make exact and unflinching provision for the wants and necessities of their armies, as men usually do for themselves and their families at home.

#### SUPPOSED DANGERS TO THE SOLDIER.

FROM the earliest recorded periods of the world, men have gone forth to war, for the purpose of destroying or overcoming their enemies, and with the chance of being themselves destroyed or overthrown. Public authorities have generally taken account of the number of their own men who have been wounded and killed in battle, and of the casualties in the opposing armies. Gunpowder and steel, and the manifold weapons, instruments, and means of destruction in the hands of the enemy are commonly considered as the principal, if not the only sources of danger to the soldier,

and ground of anxiety to his friends; and the nation reckons its losses in war by the number of those who were wounded and killed in battle. But the suffering and waste of life, apart from the combat, the sickness, the depreciation of vital force, the withering of constitutional energy, and the mortality in camp and fortress, in barrack, tent, and hospital, have not usually been the subjects of such careful observation, nor the grounds of fear to the soldier and of anxiety to those who are interested in his safety. Consequently, until within the present century, comparatively little attention has been given to the dangers that hang over the army out of the battle-field, and but little provision has been made, by the combatants or their rulers, to obviate or relieve them. No Government in former times, and few in later years, have taken and published complete accounts of the diseases of their armies, and of the deaths that followed in consequence. Some such records have been made and printed, but these are mostly fragmentary and partial, and on the authority of individuals, officers, surgeons, scholars, and philanthropists.

It must not be forgotten that the army is originally composed of picked men, while the general community includes not only the imperfect, diseased, and weak that belong to itself, but also those who are rejected from the army. If, then, the conditions, circumstances, and habits of both were equally favorable, there would be less sickness and a lower rate of mortality among the soldiers than among men of the same ages at home. But if in the army there should be found more sickness and death than in the community at home, or even an equal amount, it is manifestly chargeable to the presence of more deteriorating and destructive influences in the military than in civil life.

#### SICKNESS AND MORTALITY IN CIVIL LIFE.

THE amount of sickness among the people at home is not generally recog-

nized, still less is it carefully measured and recorded. But the experience and calculations of the Friendly Societies of Great Britain, and of other associations for Health-Assurance there and elsewhere, afford sufficient data for determining the proportion of time lost in sickness by men of various ages. These Friendly Societies are composed mainly of men of the working-classes, from which most of the soldiers of the British army are drawn.

According to the calculations and tables of Mr. Ansel, in his work on "Friendly Societies," the men of the army-ages, from 20 to 40, in the working-classes, lose, on an average, five days and six-tenths of a day by sickness in each year, which will make one and a half per cent. of the males of this age and class constantly sick. Mr. Neison's calculations and tables, in his "Contributions to Vital Statistics," make this average somewhat over seven days' yearly sickness, and one and ninety-two hundredths of one per cent. constantly sick. These were the bases of the rates adopted by the Health-Assurance companies in New England, and their experience shows that the amount of sickness in these Northern States is about the same as, if not somewhat greater than, that in Great Britain, among any definite number of men.

The rate of mortality is more easily ascertained, and is generally calculated and determined in civilized nations. This rate, among all classes of males, between 20 and 40 years old, in England and Wales, is .92 per cent. : that is, 92 will die out of 10,000 men of these ages, on an average, in each year; but in the healthiest districts the rate is only 77 in 10,000. The mortality among the males of Massachusetts, of the same ages, according to Mr. Elliott's calculations, is 1.11 per cent. or 111 in 10,000. This may be safely assumed as the rate of mortality in all New England. That of the Southern States is somewhat greater.

These rates of sickness and death — one and a half or one and ninety-two hundredths per cent. constantly sick, and

seventy-seven to one hundred and eleven dying, in each year, among ten thousand living — may be considered as the proportion of males, of the army-ages, that should be constantly taken away from active labor and business by illness, and that should be annually lost by death. Whether at home, amidst the usually favorable circumstances and the average comforts, or in the army, under privation and exposure, men of these ages may be presumed to be necessarily subject to this amount, at least, of loss of vital force and life. And these rates may be adopted as the standard of comparison of the sanitary influences of civil and military life.

#### SICKNESS AND MORTALITY OF THE ARMY IN PEACE.

SOLDIERS are subject to different influences and exposures, and their waste and loss of life differ, in peace and war. In peace they are mostly stationary, at posts, forts, and in cantonments. They generally live in barracks, with fixed habits and sufficient means of subsistence. They have their regular supplies of food and clothing and labor, and are protected from the elements, heat, cold, and storms. They are seldom or never subjected to privation or excessive fatigue. But in war they are in the field, and sleep in tents which are generally too full and often densely crowded. Sometimes they sleep in huts, and occasionally in the open air. They are liable to exposures, hardships, and privations, to uncertain supplies of food and bad cookery.

The report of the commission appointed by the British Government to inquire into the sanitary condition of the army shows a remarkable and unexpected degree of mortality among the troops stationed at home under the most favorable circumstances, as well as among those abroad. The Foot-Guards are the very *élite* of the whole army; they are the most perfect of the faultless in form and in health. They are the pets of the Government and the people. They are stationed at London and Windsor, and lodged in

magnificent barracks, apparently ample for their accommodation. They are clothed and fed with extraordinary care, and are supposed to have every means of health. And yet their record shows a sad difference between their rate of mortality and that of men of the same ages in civil life. A similar excess of mortality was found to exist among all the home-army, which includes many thousand soldiers, stationed in various towns and places throughout the kingdom.

The following table exhibits the annual mortality in these classes.\*

DEATHS IN 10,000.

Age.	Civilians.	Foot-Guards.	Home-Army.
20 to 25	84	216	170
25 to 30	92	211	183
30 to 35	102	195	184
35 to 40	116	224	193

Through the fifteen years from 1839 to 1853 inclusive, the annual mortality of all the army, excepting the artillery, engineers, and West India and colonial corps, was 330 among 10,000 living; while that among the same number of males of the army-ages, in all England and Wales, was 92, and in the healthiest districts only 77. †

There is no official account at hand of the general mortality in the Russian army on the peace-establishment; yet, according to Boudin, in one portion, consisting of 192,834 men, 144,352 had been sick, and 7,541, or 38 per 1,000, died in one year. ‡

The Prussian army, with an average of 150,582 men, lost by death, during the ten years 1829 to 1838, 1,975 in each year, which is at the rate of 13 per 1,000 living. §

The mortality of the Piedmontese ar-

my, from 1834 to 1843 inclusive, was 158 in 10,000, while that of the males at home was 92 in the same number living.

From 1775 to 1791, seventeen years, the mortality among the cavalry was 181, and among the infantry 349, out of 10,000 living; but in the ten years from 1834 to 1843 these rates were only 108 and 215.\*

Colored troops are employed by the British Government in all their colonies and possessions in tropical climates. The mortality of these soldiers is known, and also that of the colored male civilians in the East Indies and in the West-India Islands and South-American Provinces. In four of these, the rate of mortality is higher among the male slaves than among the colored soldiers; but in all the others, this rate is higher in the army. In all the West-Indian and South-American possessions of Great Britain, the average rate of deaths is 25 per cent. greater among the black troops than among the black males of all ages on the plantations and in the towns. The soldiers are of the healthier ages, 20 to 40, but the civilians include both the young and the old: if these could be excluded, and the comparison made between soldiers and laborers of the same ages, the difference in favor of civil pursuits would appear much greater.

Throughout the world, where the armies of Great Britain are stationed or serve, the death-rate is greater among the troops than among civilians of the same races and ages, except among the colored troops in Tobago, Montserrat, Antigua, and Granada in America, and among the Sepoys in the East Indies. †

In the army of the United States, during the period from 1840 to 1854, not including the two years of the Mexican War, there was an average of 9,278 men, or an aggregate of 120,622 years of service, equal to so many men serving one year. Among these and dur-

\* Report on the Sanitary Condition of the British Army.

† Ibid.

‡ *Traité de Géographie et de Statistique Médicales*, Tom. II. p. 239.

§ Ibid. p. 286.

\* *Traité de Géographie et de Statistique Médicales*, Tom. II. p. 234.

† Report on the Sanitary Condition of the British Army.



ing this period, there were 342,107 cases of sickness reported by the surgeons, and 3,416 deaths from disease, showing a rate of mortality of 2.83 per cent., or two and a half times as great as that among the males of Massachusetts of the army-ages, and three times as great as that in England and Wales. The attacks of sickness average almost three for each man in each year. This is manifestly more than that which falls upon men of these ages at home.\*

#### SICKNESS AND MORTALITY OF THE ARMY IN WAR.

THUS far the sickness and mortality of the army in time of peace only has been considered. The experience of war tells a more painful story of the dangers of the men engaged in it. Sir John Pringle states, that, in the British armies that were sent to the Low Countries and Germany, in the years 1743 to 1747, a great amount of sickness and mortality prevailed. He says, that, besides those who were suffering from wounds, "at some periods more than one-fifth of the army were in the hospitals." "One regiment had over one-half of its men sick." "In July and August, 1743, one-half of the army had the dysentery." "In 1747, four battalions," of 715 men each, "at South Beveland and Walcheren, both in field and in quarters, were so very sickly, that, at the height of the epidemic, some of these corps had but one hundred men fit for duty; six-sevenths of their numbers were sick." † "At the end of the campaign the Royal Battalion had but four men who had not been ill." And "when these corps went into winter-quarters, their sick, in proportion to their men fit for duty, were nearly as four to one." ‡ In 1748, dysentery prevailed. "In one regiment of 500 men, 150 were sick at the end of five weeks; 200 were sick af-

ter two months; and at the end of the campaign, they had in all but thirty who had never been ill." "In Johnson's regiment sometimes one-half were sick; and in the Scotch Fusileers 300 were ill at one time."\*\*

The British army in Egypt, in 1801, had from 103 to 261 and an average of 182 sick in each thousand; and the French army had an average of 125 in 1,000, or one-eighth of the whole, on the sick-list. †

In July, 1809, the British Government sent another army, of 39,219 men, to the Netherlands. They were stationed at Walcheren, which was the principal seat of the sickness and suffering of their predecessors, sixty or seventy years before. Fever and dysentery attacked this second army as they had the first, and with a similar virulence and destructiveness. In two months after landing,

Sept. 13,	7,626	were on the sick-list.
" 19,	8,123	" "
" 21,	8,684	" "
" 23,	9,046	" "

In ninety-seven days 12,867 were sent home sick; and on the 22d of October there were only 4,000 effective men left fit for duty out of this army of about 40,000 healthy men, who had left England within less than four months. On the 1st of February of the next year, there were 11,513 on the sick-list, and 15,570 had been lost or disabled. Between January 1st and June of the same year, (1810,) 36,500 were admitted to the hospitals, and 8,000, or more than 20 per cent., died, which is equal to an annual rate of 48 per cent. mortality.

The British army in Spain and Portugal suffered greatly through the Peninsular War, from 1808 to 1814. During the whole of that period, there was a constant average of 209 per 1,000 on the sick-list, and the proportion was sometimes swelled to 330 per 1,000. Through the

\* *Medical Statistics U. S. Army, 1839-54*, p. 491, etc.

† *Observations on the Diseases of the Army*, p. 51.

‡ *Ib.*, p. 53.

\* *Observations on the Diseases of the Army*, p. 59.

† *London Statistical Journal*, Vol. XIX. p. 247.

forty-one months ending May 25th, 1814, with an average of 61,511 men, there was an average of 13,815 in the hospitals, which is 22.5 per cent.; of these only one-fifteenth, or 1.5 per cent. of the whole army, were laid up on account of injuries in battle, and 21 per cent. were disabled by diseases. From these causes 24,930 died, which is an annual average of 7,296, or a rate of 11.8 per cent. mortality.\*

No better authority can be adduced, for the condition of men engaged in the actual service of war, than Lord Wellington. On the 14th of November, 1809, he wrote from his army in Spain to Lord Liverpool, then at the head of the British Government, — "In all times and places the sick-list of the army amounts to ten per cent of all." † He seemed to consider this the lowest attainable rate of sickness, and he hoped to be able to reduce that of his own army to it: this is more than five times as great as the rate of sickness among male civilians of the army-ages. The sickness in Lord Wellington's army, at the moment of writing this despatch, was fifteen per cent., or seven and a half times as great as that at home.

In the same Peninsular War, there was of the sick in the French army a constant average of 136 per 1,000 in Spain, and 146 per 1,000 in Portugal. Mr. Edmonds says, that, just before the Battle of Talavera, the French army consisted of 275,000 men, of whom 61,000, or 22.2 per cent., were sick. ‡ Lord Wellington wrote, Sept. 19, 1809, that the French army of 225,000 men had 30,000 to 40,000 sick, which is 13.3 to 17.7 per cent. The French army in Portugal had at one time 64 per 1,000, and at another 235 per 1,000, and an average of 146 per 1,000, in the hospitals through the war.

The British army that fought the Battle of Waterloo, in 1815, had an average of 60,992 men, through the campaign of four months, June to September; of these,

there was an average of 7,909, or 12.9 per cent., in the hospitals.\*

The British legion that went to Spain in 1836 consisted of 7,000 men. Of these, 5,000, or 71 per cent., were admitted into the hospitals in three and a half months, and 1,223 died in six months. This is equal to an annual rate of almost two and a half, 2.44, attacks for each man, and of 34.9 per cent. mortality. †

"Of 115,000 Russians who invaded Turkey in 1828 and 1829, only 10,000 or 15,000 ever repassed the Pruth. The rest died there of intermittent fevers, dysenteries, and plague." "From May, 1828, to February, 1829, 210,108 patients were admitted into the general and regimental hospitals." "In October, 1828, 20,000 entered the general hospitals." "The sickness was very fatal." "More than a quarter of the fever-patients died." "5,509 entered the hospitals, and of these, 3,959 died in August, 1829, and only 614 ultimately recovered." "At Brailow the plague attacked 1,200 and destroyed 774." "Dysentery was equally fatal." "In the march across the Balkan, 1,000 men died of diarrhœa, fever, and scurvy." "In Bulgaria, during July, 37,000 men were taken sick." "At Adrianople a vast barrack was taken for a hospital, and in three days 1,616 patients were admitted. On the first of September there were 3,666, and on the 15th, 4,646 patients in the house. This was one-quarter of all the disposable force at that station." "In October, 1,300 died of dysentery; and at the end of the month there were 4,700 in the hospitals." "In the whole army the loss to the Russians in the year 1829 was at least 60,000 men." ‡

#### CRIMEAN WAR.

In 1854, twenty-five years after this fatal experience of the Russian army in

\* Edmonds in *London Lancet*, Vol. XXXVI. p. 148.

† *Ib.*, p. 219.

‡ Boudin, *Traité de Géographie et de Statistique Médicales*, Tom. II. p. 289, etc., quoted by him from Major Moltka.

\* \* Edmonds in *London Lancet*, Vol. XXXVI. p. 143.

† *Despatches*.

‡ Edmonds in *London Lancet*, Vol. XXXVI. p. 145.

Bulgaria, the British Government sent an army to the same province, where the men were exposed to the same diseases and suffered a similar depreciation of vital force in sickness and death. For two years and more they struggled with these destructive influences in their own camps, in Bulgaria and the Crimea, with the usual result of such exposures in the waste of life. From April 10, 1854, to June 30, 1856, 82,901 British soldiers were sent to the Black Sea and its coasts; and through these twenty-six and two-thirds months the British army had an average of 34,559 men engaged in that "War in the East" with Russia. From these there were furnished to the general and regimental, the stationary and movable hospitals 218,952 cases: 24,084, or 11 per cent., of these patients were wounded or injured in battle, and 194,868, or 89 per cent., suffered from the diseases of the camp. This is equal to an annual average of two and a half attacks of sickness for each man. The published reports give an analysis of only 162,123 of these cases of disease. Of these, 110,673, or 68 per cent., were of the zymotic class,—fevers, dysenterics, scurvy, etc., which are generally supposed to be due to exposure and privation, and other causes which are subject to human control. During the two years ending with March, 1856, 16,224 died of diseases, of which 14,476 were of the zymotic or preventable class, 2,755 were killed in battle, and 2,019 died of wounds and injuries received in battle. The annual rate of mortality, from all diseases, was 23 per cent.; from zymotic diseases, 21 per cent.; from battle, 6.9 per cent. The rate of sickness and mortality varied exceedingly in different months. In April, May, and June, 1854, the deaths were at the annual rate of 8.7 per 1,000; in July, 159 per 1,000; in August and September, 340 per 1,000; in December, this rate again rose and reached 679 per 1,000; and in January, 1855, owing to the great exposures, hardships, and privations in the siege, and the very imperfect means of sustenance and protection, the mortal-

ity increased to the enormous rate of 1,142 per 1,000, so that, if it had continued unabated, it would have destroyed the whole army in ten and a half months.\*

#### AMERICAN ARMY, 1812 TO 1814.

WE need not go abroad to find proofs of the waste of life in military camps. Our own army, in the war with Great Britain in 1812-14, suffered, as the European armies have done, by sickness and death, far beyond men in civil occupations. There are no comprehensive reports, published by the Government, of the sanitary condition and history of the army on the Northern frontier during that war. But the partial and fragmentary statements of Dr. Mann, in his "Medical Sketches," and the occasional and apparently incidental allusions to the diseases and deaths by the commanding officers, in their letters and despatches to the Secretary of War, show that sickness was sometimes fearfully prevalent and fatal among our soldiers. Dr. Mann says: "One regiment on the frontier, at one time, counted 900 strong, but was reduced, by a total want of a good police, to less than 200 fit for duty." "At one period more than 340 were in the hospitals, and, in addition to this, a large number were reported sick in camp."† "The aggregate of the army at Fort George and its dependencies was about 5,000. From an estimate of the number sick in the general and regimental hospitals, it was my persuasion that but little more than half of the army was capable of duty, at one period, during the summer months"‡ of 1813. "During the month of August more than one-third of the soldiers were on the sick-reports."§ Dr. Mann quotes Dr. Lovell, another army-surgeon, who says, in the autumn of 1813: "A morning report, now before me, gives 75 sick, out of a corps of 160. The several regiments of the army, in their reports, ex-

\* *Report on the Sanitary Condition of the British Army*, p. 524.

† *Medical Sketches*, p. 39.

‡ *Ib.*, p. 204.

§ *Ib.*, p. 66.



hibit a proportional number unfit for duty."\* Dr. Mann states that "the troops at Burlington, Vt., in the winter of 1812-13, did not number over 1,600, and the deaths did not exceed 200, from the last of November to the last of February." † But Dr. Gallup says: "The whole number of deaths is said to be not less than 700 to 800 in four months," and "the number of soldiers stationed at this encampment [Burlington] was about 2,500 to 2,800." ‡ According to Dr. Mann's statement, the mortality was at the annual rate of 50 per cent.; and according to that of Dr. Gallup, it was at the rate of 75 to 96 per cent. This is nearly equal to the severest mortality in the Crimea.

General William H. Harrison, writing to the Secretary of War from the borders of Lake Erie, Aug. 29, 1813, says: "You can form some estimate of the deadly effects of the immense body of stagnant water with which the vicinity of the lake abounds, from the state of the troops at Sandusky. Upwards of 90 are this morning reported sick, out of about 220." This is a rate of over 40 per cent. "Those at Fort Meigs are not much better." §

General Wilkinson wrote from Fort George, Sept. 16, 1813: "We count, on paper, 4,600, and could show 3,400 combatants"; that is, 25 per cent. and more are sick. "The enemy, from the best information we have, have about 3,000 on paper, of whom 1,400," or 46.6 per cent., "are sick." ||

#### MEXICAN WAR.

THERE was a similar waste of life among our troops in the Mexican War. There is no published record of the number of the sick, nor of their diseases. But the letters of General Scott and General Taylor to the Secretary of War show that the loss of effective force in our ar-

my was at times very great by sickness in that war.

General Scott wrote:—

"Puebla, July 25, 1847.

"May 30, the number of sick here was 1,017, of effectives 5,820."

"Since the arrival of General Pillow, we have effectives (rank and file) 8,061, sick 2,215, beside 87 officers under the latter head."\*

Again:—

"Mexico, Dec. 5, 1847.

"The force at Chapultepec fit for duty is only about 6,000, rank and file; the number of sick, exclusive of officers, being 2,041." †

According to these statements, the proportions of the sick were 17.4 to 27.4 and 24.7 per cent. of all in these corps at the times specified.

General Taylor wrote:—

"Camp near Monterey, July 27, 1847.

"Great sickness and mortality have prevailed among the volunteer troops in front of Saltillo." ‡

August 10th, he said, that "nearly 23 per cent. of the force present was disabled by disease."

The official reports show only the number that died, but make no distinction as to causes of death, except to separate the deaths from wounds received in battle from those from other causes.

During that war, 100,454 men were sent to Mexico from the United States. They were enlisted for various periods, but served, on an average, thirteen months and one day each, making a total of 109,104 years of military service rendered by our soldiers in that war. The total loss of these men was 1,549 killed in battle or died of wounds, 10,986 died from diseases, making 12,535 deaths. Besides these, 12,252 were discharged for disability. The mortality from disease was almost equal to the annual rate of 11 per cent., which is about ten times as

\* *Medical Sketches*, p. 119.

† *Ib.*, p. 199.

‡ *On Epidemics*, p. 70.

§ *United States Documents*, 1814.

|| *Ib.*, 1814.

\* *Executive Documents, U. S.*, 1847-48, Vol. VII. p. 1013.

† *Ib.*, p. 1033.

‡ *Ib.*, p. 1185.

great as that of men in ordinary civil life at home.

SICKNESS IN THE PRESENT UNION  
ARMY.

THERE are not as yet, and for a long time there cannot be, any full Government reports of the amount and kind of sickness in the present army of the United States. But the excellent reports of the inquiries of the Sanitary Commission give much important and trustworthy information in respect to these matters. Most of the encampments of all the corps have been examined by their inspectors; and their returns show, that the average number sick, during the seven months ending with February last, was, among the troops who were recruited in New England 74.6, among those from the Middle States 56.6, and, during six months ending with January, among those from the Western States 104.3, in 1,000 men. From an examination of 217 regiments, during two months ending the middle of February, the rate of sickness among the troops in the Eastern Sanitary Department was 74, in the Central Department, Western Virginia and Ohio, 90, and in the Western, 107, in 1,000 men. The average of all these regiments was 90 in 1,000. The highest rate in Eastern Virginia was 281 per 1,000, in the Fifth Vermont; and the lowest, 9, in the Seventh Massachusetts. In the Central Department the highest was 260, in the Forty-First Ohio; and the lowest, 17, in the Sixth Ohio. In the Western Department the highest was 340, in the Forty-Second Illinois; and the lowest, 15, in the Thirty-Sixth Illinois.

On the 22d of February, the number of men sick in each 1,000, in the several divisions of the Army of the Potomac, was ascertained to be,—

Keyes's, . . . . .	30.3
Sedgwick's, . . . . .	32.0
Hooker's, . . . . .	43.7
McCall's, . . . . .	44.4
Banks's, . . . . .	45.0
Porter's, . . . . .	46.4

Blenker's, . . . . .	47.7
McDowell's, . . . . .	48.2
Heintzelman's, . . . . .	49.0
Franklin's, . . . . .	54.1
Dix's, . . . . .	71.8
United States Regulars, . . . . .	76.0
Sumner's, . . . . .	77.5
Smith's, . . . . .	81.6
Casey's, . . . . .	87.6*

Probably there has been more sickness in all the armies, as they have gone farther southward and the warm season has advanced. This would naturally be expected, and the fear is strengthened by the occasional reports in the newspapers. Still, taking the trustworthy reports herein given, it is manifest that our Union army is one of the healthiest on record; and yet their rate of sickness is from three to five times as great as that of civilians of their own ages at home. Unquestionably, this better condition of our men is due to the better intelligence of the age and of our people,—especially in respect to the dangers of the field and the necessity of proper provision on the part of the Government and of self-care on the part of the men,—to the wisdom, labors, and comprehensive watchfulness of the Sanitary Commission, and to the universal sympathy of the men and women of the land, who have given their souls, their hands, and their money to the work of lessening the discomforts and alleviating the sufferings of the Army of Freedom.

OTHER LIGHTER AND UNRECORDED  
SICKNESS.

THE records and reports of the sickness in the army do not include all the depreciations and curtailments of life and strength among the soldiers, nor all the losses of effective force which the Government suffers through them, on account of disease and debility. These records contain, at best, only such ailments as are of sufficient importance to come under the observation of the surgeon. But there are manifold lighter physical disturbances, which, though they neither prostrate the

\* *MS. Letter of Mr. Elliott, Actuary of the Sanitary Commission.*

patient, nor even cause him to go to the hospital, yet none the less certainly unfit him for labor and duty. Of the regiment referred to by Dr. Mann, and already adduced in this article, in which 700 were unable to attend to duty, 340 were in the hospital under the surgeon's care, and 360 were ill in camp. It is probable that a similar, though smaller, discrepancy often exists between the surgeon's records and the absentees from parades, guard-duty, etc.

It is improbable, and even impossible, that complete records and reports should always be made of all who are sick and unfit for duty, or even of all who come under the surgeon's care. Sir John Hall, principal Medical Officer of the British army in the Crimea, says that there were "218,952 admissions into hospital."\* "The general return, showing the primary admissions into the hospitals of the army in the East, from the 10th April, 1854, to the 30th June, 1856, gives only 162,123 cases of all kinds."† But another Government Report states the admissions to be 162,673.‡ Miss Nightingale says, "There was, at first, no system of registration for general hospitals, for all were burdened with work beyond their strength."§ Dr. Mann says, that, in the War of 1812, "no sick-records were found in the hospital at Burlington," one of the largest depositories of the sick then in the country. "The hospital-records on the Niagara were under no order."|| It could hardly have been otherwise. The regimental hospitals then, as frequently must be the case in war, were merely extemporized shelters, not conveniences. They were churches, houses, barns, shops, sheds, or any building that happened to be within reach, or huts, cabins, or tents suddenly created for the purpose. In these all the surgeons' time, energy, and resources

were expended in making their patients comfortable, in defending them from cold and storm, or from suffering in their crowded rooms or shanties. They were obliged to devote all their strength to taking care of the present. They could take little account of the past, and were often unable to make any record for the future. They could not do this for those under their own immediate eye in the hospital; much less could they do it for those who remained in their tents, and needed little or no medical attention, but only rest. Moreover, the exposures and labors of the campaign sometimes diminish the number and force of the surgeons as well as of the men, and reduce their strength at the very moment when the greatest demand is made for their exertions. Dr. Mann says, "The sick in the hospital were between six and seven hundred, and there were only three surgeons present for duty." "Of seven surgeons attached to the hospital department, one died, three were absent by reason of indisposition, and the other three were sick."\* Fifty-four surgeons died in the Russian army in Turkey in the summer of 1828. "At Brailow, the pestilence spared neither surgeons nor nurses."† Sir John Hall says, "The medical officers got sick, a great number went away, and we were embarrassed." "Thirty per cent. were sometimes sick and absent" from their posts in the Crimea.‡ Seventy surgeons died in the French army in the same war. It is not reasonable, then, to suppose that all or nearly all the cases of sickness, whether in hospital or in camp, can be recorded, especially at times when they are the most abundant.

Nor do the cases of sickness of every sort, grave and light, recorded and unrecorded, include all the depressions of vital energy and all the suspensions and loss of effective force in the army. Whenever any general cause of depression

\* *Report on the Sanitary Condition of the British Army*, p. 180.

† *Ib.*, 525.

‡ *Medical and Surgical History of the War in the East*, Vol. II. p. 252.

§ *Report on the Sanitary Condition of the British Army*, p. 377.

|| *Medical Sketches*, p. 246.

\* *Medical Sketches*, p. 66.

† Boudin, *Traité de Géographie et de Statistique Médicales*, Tom. II., p. 289.

‡ *Report on the Sanitary Condition of the British Army*, p. 180.



weighs upon a body of men, as fatigue, cold, storm, privation of food, or malaria, it vitiates the power of all, in various degrees and with various results; the weak and susceptible are sickened, and all lose some force and are less able to labor and attend to duty. No account is taken, none can be taken, of this discount of the general force of the army; yet it is none the less a loss of strength, and an impediment to the execution of the purposes of the Government.

#### INVALIDING.

THE loss of force by death, by sickness in hospital and camp, and by temporary depression, is not all that the army is subject to. Those who are laboring under consumption, asthma, epilepsy, insanity, and other incurable disorders, and those whose constitutions are broken, or withered and reduced below the standard of military requirement, are generally, and by some Governments always, discharged. These pass back to the general community, where they finally die. By this process the army is continually sifting out its worst lives, and at the same time it fills their places with healthy recruits. It thus keeps up its average of health and diminishes its rate of mortality; but the sum and the rates of sickness and mortality in the community are both thereby increased.

During the Crimean War, 17.34 per cent. were invalided and sent home from the British army, and 21 per cent. from the French army, as unable to do military service. By this means, 11,994 \* British and 65,069 † French soldiers were lost to their Governments. The army of the United States, in the Mexican War, discharged and sent home 12,252 men, or 12 per cent. of the entire number engaged in that war, on account of disability.

The causes of this exhaustion of personal force are manifold and various, and

\* *Medical and Surgical History of the British Army in the East*, Vol. II. p. 227.

† *British and Foreign Medical and Surgical Journal*, Vol. XXI.

so generally present that the number and proportion of those who are thus hopelessly reduced below the degree of efficient military usefulness, in the British army, has been determined by observation, and the Government calculates the rate of the loss which will happen in this way, at any period of service. Out of 10,000 men enlisted in their twenty-first year, 718 will be invalided during the first quinquennial period, or before they pass their twenty-fifth year, 539 in the second, 673 in the third, and 854 in the fourth,—making 2,784, or more than one-quarter of the whole, discharged for disability or chronic ailment, before they complete their twenty years of military service and their forty years of life.

It is further to be considered, that, during these twenty years, the numbers are diminishing by death, and thus the ratio of the enfeebled and invalided is increased. Out of 10,000 soldiers who survive and remain in the army in each successive quinquennial period, 768 will be invalided in the first, 680 in the second, 1,023 in the third, and 1,674 in the fourth. In the first year the ratio is 181, in the fifth 129, in the tenth 165, in the fifteenth 276, and in the twentieth 411, among 10,000 surviving and remaining.

The depressing and exhaustive force of military life on the soldiers is gradually accumulative, or the power of resistance gradually wastes, from the beginning to the end of service. There is an apparent exception to this law in the fact, that, in the British army, the ratio of those who were invalided was 181 in 10,000, but diminished, in the second, third, and fourth years, to 129 in the fifth and sixth, then again rose, through all the succeeding years, to 411 in the twentieth. The experience of the British army, in this respect, is corroborated by that of ours in the Mexican War. From the old standing army 502, from the additional force recently enlisted 548, and from the volunteers 1,178, in 10,000 of each, were discharged on account of

disability. Some part of this great difference between the regulars and volunteers is doubtless due to the well-known fact, that the latter were originally enlisted, in part at least, for domestic trainings, and not for the actual service of war, and therefore were examined with less scrutiny, and included more of the weaker constitutions.

The Sanitary Commission, after inspecting two hundred and seventeen regiments of the present army of the United States, and comparing the several corps with each other in respect of health, came to a similar conclusion. They found that the twenty-four regiments which had the least sickness had been in service one hundred and forty days on an average, and the twenty-four regiments which had the most sickness had been in the field only one hundred and eleven days. The Actuary adds, in explanation,—"The difference between the sickness of the older and newer regiments is probably attributable, in part, to the constant weeding out of the sickly by discharges from the service. The fact is notorious, that medical inspection of recruits, on enlistment, has been, as a rule, most imperfectly executed; and the city of Washington is constantly thronged with invalids awaiting their discharge-papers, who at the time of their enlistment were physically unfit for service."\* In addition to this, it must be remembered, that, although all recruits are apparently perfect in form and free from disease when they enter the army, yet there may be differences in constitutional force, which cannot be detected by the most careful examiners. Some have more and some have less power of endurance. But the military burden and the work of war are arranged and determined for the strongest, and, of course, break down the weak, who retire in disability or sink in death.

#### GENERAL VITAL DEPRESSION.

Two causes of depression operate, to a considerable degree in peace and to a

\* *MS. Letter of Mr. Elliott.*

very great degree in war, on the soldier, and reduce and sicken him more than the civilian. His vital force is not so well sustained by never-failing supplies of nutritious and digestible food and regular nightly sleep, and his powers are more exhausted in hardships and exposures, in excessive labors and want of due rest and protection against cold and heat, storms and rains. Consequently the army suffers mostly from diseases of depression,—those of the typhoid, adynamic, and scorbutic types. McGrigor says, that, in the British army in the Peninsula, of 176,007 cases treated and recorded by the surgeons, 68,894 were fevers, 23,203 diseases of the bowels, 12,167 ulcers, and 4,027 diseases of the lungs.\* In the British hospitals in the Crimean War, 39 per cent. were cholera, dysentery, and diarrhœa, 19 per cent. fevers, 1.2 per cent. scurvy, 8 per cent. diseases of the lungs, 8 per cent. diseases of the skin, 3.3 per cent. rheumatism, 2.5 per cent. diseases of the brain and nervous system, 1.4 per cent. frost-bite or mortification produced by low vitality and chills, 13, or one in 12,000, had sunstroke, 257 had the itch, and 68 per cent. of all were of the zymotic class,† which are considered as principally due to privation, exposure, and personal neglect. The deaths from these classes of causes were in a somewhat similar proportion to the mortality from all stated causes,—being 58 per cent. from cholera, dysentery, and diarrhœa, and 1 per cent. from all other disorders of the digestive organs, 19 per cent. from fevers, 3.6 per cent. from diseases of the lungs, 1.3 per cent. from rheumatism, 1.3 per cent. from diseases of the brain and nervous system, and 79 per cent. from those of the zymotic class. The same classes of disease, with a much larger proportion of typhoid pneumonia, prostrated and destroyed many in the American army in the War of 1812.

\* *Medico-Chirurgical Transactions*, Vol. VI. p. 478, etc.

† *Report on the Sanitary Condition of the British Army*, p. 525.—*Medical and Surgical History of the War in the East.*



In paper No. 40, p. 54, of the Sanitary Commission, is a report of the diseases that occurred in forty-nine regiments, while under inspection about forty days each, between July and October, 1861. 27,526 cases were reported; of these 67 per cent. were zymotic, 41 per cent. diseases of the digestive organs, 22 per cent. fevers, 7 per cent. diseases of the lungs, 5 per cent. diseases of the brain. Among males of the army-ages the proportions of deaths from these classes of causes to those from all causes were, in Massachusetts, in 1859, zymotic 15 per cent., diseases of digestive organs 3.6 per cent., of lungs 50 per cent., fevers 9 per cent., diseases of brain 4.6 per cent.\* According to the mortality-statistics of the seventh census of the United States, of the males between the ages of twenty and fifty, in Maryland, Virginia, North Carolina, South Carolina, and Georgia, whose deaths in the year ending June 1st, 1850, and their causes, were ascertained and reported by the marshals, 34.3 per cent. died of zymotic diseases, 8 per cent. of all the diseases of the digestive organs, 30.8 per cent. of diseases of the respiratory organs, 24.4 per cent. of fevers, and 5.7 per cent. of disorders of the brain and nervous system. In England and Wales, in 1858, these proportions were, zymotic 14 per cent., fevers 8 per cent., diseases of digestive organs 7.9 per cent., of lungs 8 per cent., and of the brain 7 per cent. †

If, however, we analyze the returns of mortality in civil life, and distinguish those of the poor and neglected dwellers in the crowded and filthy lanes and alleys of cities, whose animal forces are not well developed, or are reduced by insufficient and uncertain nutrition, by poor food or bad cookery, by foul air within and stenchy atmosphere without, by imperfect protection of house and clothing, we shall find the same diseases there as in the army. Wherever the vital forces are depressed, there these diseases of low

vitality happen most frequently and are most fatal.

Volumes of other facts and statements might be quoted to show that military service is exhaustive of vital force more than the pursuits of civil life. It is so even in time of peace, and it is remarkably so in time of war. Comparing the English statements of the mortality in the army with the calculations of the expectation of life in the general community, the difference is at once manifest.

Of 10,000 men at the age of twenty, there will die before they complete their fortieth year, —

British army in time of peace, . . . .	3,058
England and Wales, English Life-Table, 1,853	
According to tables of Amicable and	
Equitable Life-Insurance Companies, 1,972	
New England and New York, according	
to the tables of the New-England	
Mutual Life-Insurance Company, . . .	1,721

#### DANGERS IN LAND-BATTLES.

THIS large amount of disease and mortality in the army arises not from the battle-field, but belongs to the camp, the tent, the barrack, the cantonment; and it is as certain, though not so great, in time of peace, when no harm is inflicted by the instruments of destruction, as in time of war. The battle, which is the world's terror, is comparatively harmless. The official histories of the deadly struggles of armies show that they are not so wasteful of life as is generally supposed. Mr. William Barwick Hodge examined the records and despatches in the War-Office in London, and from these and other sources prepared an exceedingly valuable and instructive paper on "The Mortality arising from Military Operations," which was read before the London Statistical Society, and printed in the nineteenth volume of the Society's journal. Some of the tables will be as interesting to Americans as to Englishmen. On the following page is a tabular view, taken from this work, of the casualties in nineteen battles fought by the British armies with those of other nations.

\* Calculated from the *Eighteenth Registration Report*.

† Calculated from *Twenty-First Report of Registrar General*.



Of those who were engaged in these nineteen battles, one in 51.6, or 1.93 per cent., were killed. The deaths in consequence of the battles, including both those who died of wounds and those that died among the missing, were one in 30, or 3.3 per cent. of all who were in the fight. It is worth noticing here, that the British loss in the Battle of New Orleans was larger than in any other battle here adduced, except in that of Albuera, in Spain, with the French, in 1811.

In the British army, from 1793 to 1815, including twenty-one years of war, and excluding 1802, the year of peace, the number of officers varied from 3,576 in the first year to 13,248 in 1813, and the men varied from 74,500 in 1793 to 276,000 in 1813, making an annual average of 9,078 officers and 189,200 men, and equal to 199,727 officers and 4,168,500 men serving one year. During these twenty-one years of war, among the officers 920 were killed and 4,685 were wounded, and among the men 15,392 were killed and 65,393 were wounded. This is an annual average of deaths from battle of 460 officers and 369 men, and of wounded 2,340 officers and 1,580 men, among 100,000 of each class. Of the officers less than half of one per cent., or 1 in 217, were killed, and a little more than two per cent., or 1 in 42, were wounded; and among the men a little more than a third of one per cent., 1 in 271, were killed, and one and a half per cent., 1 in 63, wounded, in each year. The comparative danger to the two is, of death, 46 officers to 37 men, and of wounds, 234 officers to 158 men. A larger proportion of the officers than of the soldiers were killed and wounded; yet a larger proportion of the wounded officers recovered. This is attributed to the fact that the officers were injured by rifle-balls, being picked out by the marksmen, while the soldiers were injured by can-

non- and musket-balls and shells, which inflict more deadly injuries.

DANGERS IN NAVAL BATTLES.

It may not be out of place here to show the dangers of naval warfare, which are discussed at length by Mr. Hodge, in a very elaborate paper in the eighteenth volume of the Statistical Society's journal. From one of his tables, containing a condensed statistical history of the English navy, through the wars with France, 1792-1815, the following facts are gathered.

During those wars, the British Parliament, in its several annual grants, voted 2,527,390 men for the navy. But the number actually in the service is estimated not to have exceeded 2,424,000 in all, or a constant average force of 110,180 men. Within this time these men fought five hundred and seventy-six naval battles, and they were exposed to storms, to shipwreck, and to fire, in every sea. In all these exposures, the records show that the loss of life was less than was suffered by the soldiers on the land. There were—

Killed in battle, officers, . . . . .	346
“ “ men, . . . . .	4,441
Total,	4,787
Wounded, officers, . . . . .	935
“ men, . . . . .	13,335
Total,	14,270
Drowned and otherwise destroyed in battle, . . . . .	449
Estimated deaths among the wounded, . . . . .	1,427
Total destroyed by battle, . . . . .	6,663
Lost by shipwreck, accidental drowning, and by fire, . . . . .	13,621
Total deaths, from other causes than disease, . . . . .	20,284

Comparing the whole number of men in the naval service, during this period, with the mortality from causes incident to the service, the average annual loss was—

Killed in battle, . . . . .	one in 506, or .197 per cent.
Drowned and lost in battle, and died of wounds, . . . . .	one in 1,292, or .077 per cent.
Wounded, . . . . .	one in 169, or .588 per cent.
Drowned and lost by shipwreck, fire, etc., otherwise than by battle, . . . . .	one in 178, or .561 per cent.
Total annual loss by battle and the special dangers of the sea, . . . . .	one in 119, or .836 per cent.





Mr. Hodge's second table shows the conditions and casualties of thirteen battles between fleets and squadrons. This is condensed and quoted on the preceding page.

His third table includes thirty-five actions with single ships on each side, between the years 1793 and 1815. 8,542 men were engaged, and 483, or 56.5 per 1,000, were killed, and 1,230, or 144 per 1,000, wounded.

Twenty-six of these actions were with French ships, which are here omitted, and nine with American ships, which are shown in the second table on the preceding page.

There is a very remarkable difference in the loss which the British suffered in naval and in land battles:—

No. of Battles.	Vessels.	Killed. One in	Wounded. One in
13	Fleets.....	64.0	20.4
35	Single ships.....	17.7	6.9
26	French single ships.	19.8	10.6
9	American do. do.	12.7	4.4
19	Land battles.....	30.0	11.0

The danger both of wounds and death in these contests was three times as great in the single ships as in fleets, and about five times as great in battles with the Americans as in fleet-battles with other nations. The dangers in fleet-battles were about half as great as those in land-battles, and these were but little more than half as great as those in fights with single ships.

#### COMPARATIVE DANGER OF CAMP AND BATTLE-FIELD.

THESE records of land-battles show that the dangers from that cause are not very great; probably they are less than the world imagines; certainly they are much less than those of the camp. Of the 176,007 admitted into the regimental hospitals during the Peninsular War, only 20,886 were from wounds, the rest from diseases; fourteen-fifteenths of the bur-

den on the hospitals in that war, through forty-two months, were diseased patients, and only one-fifteenths were wounded. In the Crimean War, 11.2 per cent. in the hospitals suffered from injuries in battle, and 88.8 per cent. from other causes. 10 per cent. of the French patients in the same war were wounded, and 90 per cent. had fevers, etc. In the autumn of 1814, there were 815 patients in the great military hospital at Burlington, Vermont. Of these 50 were wounded, and the rest had the diseases of the camp.

In the Crimean War, 16,296 died from disease, and 4,774 from injuries received in battle. In the Peninsular War, 25,304 died of disease, and 9,450 from wounds.

During eighteen years, 1840 to 1857, 19,504 were discharged from the home, and 21,325 from the foreign stations of the British army. Of these, 541, or 2.7 per cent. of those at home, and 3,703, or 17.3 per cent. abroad, were on account of wounds and fractures, and the others on account of disease, debility, and exhaustion.

#### NATIONS DO NOT LEARN FROM EXPERIENCE TO PREPARE FOR ARMY-SICKNESS.

NATIONS, when they go to war, prepare to inflict injury and death on their opponents, and make up their minds to receive the same in return; but they seem neither to look nor to prepare for sickness and death in their camps. And when these come upon their armies, they seem either to shut their eyes to the facts, or submit to the loss as to a disturbance in Nature, a storm, a drought, or an earthquake, which they can neither prevent nor provide for, and for which they feel no responsibility, but only hope that it will not happen again. Nevertheless, this waste of life has followed every army which has been made to violate the laws of health, in privations, exposures, and hardships, and whose internal history is known. The experience of such disastrous campaigns ought to induce Governments to inquire into the causes of the

suffering and loss, and to learn whether they are not engaged in a struggle against Nature, in which they must certainly fail, and endeavoring to make the human body bear burdens and labors which are beyond its strength. But Governments are slow to learn, especially sanitary lessons. The British army suffered and died in great numbers at Walcheren and South Beveland, in the middle of the last century. Pringle described the sad condition of those troops, and warned his nation against a similar exposure; yet, sixty years later, the Ministry sent another army to the same place, to sink under the malarious influences and diseases in the same way. The English troops at Jamaica were stationed in the low grounds, where, "for many generations," "the average annual mortality was 13 per cent." "A recommendation for their removal from the plains to the mountains was made so far back as 1791. Numerous reports were sent to the Government, advising that a higher situation should be selected"; but it was not until 1837, after nearly half a century of experience and warning, that the Ministry opened their eyes to this cost of life and money in excessive sickness and mortality, and then removed the garrison to Maroontown, where the death-rate fell to 2 per cent., or less than one-sixth of what it had been.\*

The American army, in the war with Great Britain fifty years ago, suffered from the want of proper provision for their necessities and comfort, from exposures and hardships, so that sometimes half its force was unavailable; yet, at the present moment, a monstrous army is collected and sent to the field, under the same regulations, and with the same idea of man's indefinite power of endurance, and the responsibility and superintendence of their health is left, in large measure, to an accidental and outside body of men, the Sanitary Commission, which, although an institution of great heart and energy, and supported by the sympathies and cooperation of the whole people, is yet doing

a work that ought to be done by the Government, and carrying out a plan of operations that should be inseparably associated with the original creation of the army and the whole management of the war.

#### CRIMEAN WAR.

THE lesson which the experience of the Russian army of 1828 and 1829 taught the world of the mortal dangers of Bulgaria was lost on the British Government, which sent its own troops there in 1854, to be exposed to, and wither before, the same destructive influences. But at length sickness prevailed to such an extent, and death made such havoc, in the army in the East, that England's great sympathies were roused, and the Ministers' attention was drawn to the irresistible fact, that the strongest of Britain's soldiers were passing rapidly from the camp to the hospital, and from the hospital to the grave. Then a doubt occurred to the minds of the men in power, whether all was right in the Crimea, and whether something might not be done for the sanitary salvation of the army. They sent a commission, consisting of Dr. John Sutherland, one of the ablest sanitarians of the kingdom, Dr. Hector Gavin, and Robert Rawlinson, civil engineer, to the Black Sea, to inquire into the state of things there, to search out the causes of the sufferings of the army, and see if there might not be a remedy found and applied. At the same time, Miss Nightingale and a large corps of assistants, attendants, and nurses, women of station and culture and women of hire, went to that terrible scene of misery and death, to aid in any measures that might be devised to alleviate the condition of the men. Great abuses and negligence were found; and the causes of disease were manifest, manifold, and needless. But a reform was at once instituted; great changes were made in the general management of the camp and hospitals and in the condition of the soldiers. Disease began to diminish, the progress of mortality was arrested, and

\* *Report on the Sanitary Condition of the British Army*, p. 212. Colonel Tulloch.

in the course of a few months the rate of death was as low as among men of the same ages at home.

This commission made a full report, when they returned, and described the state of things they found in the Crimea and on the shores of the Black Sea,—the camps, barracks, huts, tents, food, manner of life, and general sanitary condition of the troops, their terrible sufferings, and the means and ways of caring for the sick, the measures of reform which they had proposed and carried out, and their effects on the health of the men. This report was published by the Government.

Besides this commission, the Government sent Dr. Lyons, a surgeon and pathologist of great learning and acumen, to investigate the pathology or morbid condition of the army. According to his instructions, he spent four months in the Crimea and at the great hospitals on the Bosphorus. He examined and traced the course of disease and disturbance in the sick and wounded. He made very many thorough examinations after death, in order to determine the effects of vitiating influences upon the organization, and the condition of the textures and organs of the body in connection with the several kinds of disorders. Dr. Lyons's extremely instructive report was published by national authority as one of the Parliamentary folio volumes. After the war was over, Dr. W. Hanbury and Staff-Surgeon Matthew, under the direction of the Secretary of War, gathered, analyzed, and prepared the records of all the surgeons of the several corps of the Crimean army. To these they added a long and valuable treatise on the nature and character of the diseases, and their connection with the condition and habits of the men. These are published in two very thick folio volumes, and give a minute and almost daily history of the life, labors, exposures, privations, sufferings, sickness, and mortality of each regiment. These two works, of Dr. Lyons and Drs. Hanbury and Matthew, show the inseparable connection

between the manner of living and the health, and demonstrate that the severe life of war, with its diminished creation of vital force, by imperfect and uncertain nutrition and excessive expenditure in exposures and labors, necessarily breaks down the constitution. It subjects the body to more abundant disorders, and especially to those of the depressive, adynamic type, which, from the want of the usual recuperative power, are more fatal than the diseases of civil life. These works may be considered generic as well as specific. They apply to and describe the sanitary condition and the pathological history of all armies engaged in hard and severe campaigns, as well as those of the Crimea. They should, therefore, be read by every Government that engages in or is forced into any war. They should be distributed to and thoroughly understood by every commander who directs the army, and every surgeon who superintends the sanitary condition of, and manages the sickness among, the men; and happy will it be for those soldiers whose military and sanitary directors avail themselves of the instructions contained in these volumes.

There are several other works on the Crimean War, by surgeons and other officers, written mainly to give a knowledge of the general facts of those campaigns, but all incidentally corroborating and explaining the statements in the Government Reports, in respect to the health and sufferings of the British and French armies. In this view, Dr. Bryce's book, "England and France before Sebastopol," and M. Baudens's and M. Scrive's medical works in French, are worthy of great attention and confidence.

The most important and valuable work, in this connection, is the Report of the British Commission appointed in May, 1854, "to inquire into the regulations affecting the sanitary condition of the British army, the organization of the military hospitals, and the treatment of the sick and wounded." This commission included some of the ablest and most learned physicians and surgeons in the civil



and military service, some of the most accomplished statisticians, sanitarians, army-officers, and statesmen in the United Kingdom. They were authorized to inquire into the habits and duties, the moral and sanitary condition of the army, the amount and kinds of sickness, the causes and frequency of death, and the means of improvement. This commission sat for a long time in London. They called before them fifty-three witnesses, among whom were Sir Benjamin Brodie, the leading surgeon of England, Dr. Andrew Smith, Director-General of the Medical Department of the Army, Thomas Alexander, Inspector-General of Hospitals, Major-General Airey, Quartermaster-General, Dr. John Sutherland, late Crimean Commissioner, and one of the leading authorities of Great Britain in all sanitary matters, Dr. William Farr, the chief and master-spirit of the Registry-Office, and the highest authority in vital statistics, Colonel Sir Alexander Tulloch, author of the elaborate and valuable reports on the mortality in the British army, Francis G. P. Neison, author of "Contributions to Vital Statistics," Miss Nightingale, and others, surgeons, officers, purveyors, engineers, soldiers, and medical and sanitary scholars.

The commission put forth 10,070 interrogatories relating to everything connected with the army, the persons and the *matériel*, to officers, surgeons, physicians, health-officers, soldiers, nurses, cooks, clothing, food, cooking, barracks, tents, huts, hospitals, duties, labors, exposures, and privations, and their effects on health and life, in every climate, wherever British troops are stationed or serve, at home and abroad. The same inquiry was extended to the armies of other nations, French, Turkish, Russian, etc. To these questions the witnesses returned answers, and statements of facts and opinions, all carefully prepared, and some of great length, and elaborate calculations in respect to the whole military and sanitary science and practice of the age. A large part of the inquiry was directed to the Crimean army, whose con-

dition had been, and was then, a matter of the most intense interest. Many of the witnesses had, in various ways, been connected with that war: they were familiar with its history, and their answers revealed much that had not before been known. The result of all this investigation is published in a folio volume of 607 pages, filled with facts and principles, the lamentable history of the past, painful descriptions of the present, and wise suggestions for the future management of the army; and the whole is worthy of the careful attention of all who, as projectors, leaders, or followers, have anything to do with the active operations of war.

The Crimean War has this remarkable interest, not that the suffering of the troops and their depreciation in effective power were greater than in many other wars, but that these happened in an age when the intelligence and philanthropy, and even the policy of the nation, demanded to know whether the vital depression and the loss of martial strength were as great as rumor reported, whether these were the necessary condition of war, and whether anything could be done to lessen them. By the investigations and reports of commissions, officers, and others, the internal history of this war is more completely revealed and better known than that of any other on record. It is placed on a hill, in the sight of all nations and governments, for their observation and warning, to be faithful to the laws of health in providing for, and in the use of, their armies, if they would obtain the most efficient service from them.

#### WANT OF SANITARY PREPARATIONS FOR WAR.

THERE are, and have been, faults — grievous, destructive, and costly faults — in all connected with armies, from the Governments at the head, down through all grades of officers, to the men in the ranks: they are faults of theory and faults of practice, — of plan in those who direct, and of self-management in those whose whole duty is to obey. The root of this



is the failure to fully understand and count the cost, and to prepare to meet it as men generally do in the management of their common affairs. In civil life, when prudent men intend to effect any purpose by the aid of motive power, whether of water, steam, horse, or other kind, they carefully consider the means of generating that power, and the best and safest ways of applying and expending it. They include this in their plans, and make provision accordingly. Precisely determining the extent of the purpose they design to effect, and the amount of force that is and will be needed, they make their arrangements to provide or generate and maintain so much as long as they intend to do the work. During the whole process, they carefully guard and treasure it up, and allow none to be wasted or applied to any other than the appointed purpose. But in the use and management of the vital machines, the human bodies, by which the purposes of war are to be accomplished, nations are less wise. There are few, perhaps no records of any Government, which, in creating, maintaining, and operating with an army, has, at and during the same time, created and established the never-failing means of keeping the machinery of war in the best working order, by sustaining the health and force of the men in unfailling fulness.

War is carried on by a partnership between the Government and soldiers, to which the Government contributes money and directing skill, and assumes the responsibility of management, and the soldiers contribute their vital force. In the operation of this joint concern, both the money of the nation and the lives of the men are put at risk. Although, by the terms of the contract, the Government is presumed to expend its money and the soldiers' vital force to the extent that may be necessary to effect the objects of the association, it has no right to do this for any other purpose or on any other condition. It may send the men to battle, where they may lose in wounds or in death a part or all that they have contributed; but it has no right, by any negli-

gence or folly on its own part or in its agents, to expend any of the soldiers' health or strength in hunger, nakedness, foul air, miasma, or disease. There is a glory attached to wounds, and even to death, received in a struggle with the enemies of one's country, and this is offered as a part of the compensation to the warrior for the risk that he runs; but there is no glory in sickness or death from typhus, cholera, or dysentery, and no compensation of this kind comes to those who suffer or perish from these, in camp or military hospital.

#### DIFFERENCE BETWEEN CIVIL AND MILITARY LIFE.

MILITARY life, with the labors, exposures, and circumstances of war, differs widely from civil life. The social and domestic machinery of home spontaneously brings within the reach of families the things that are needful for their sustenance, comfortable for their enjoyment, and favorable to their health. But this self-acting machinery follows not the soldier through his campaigns. Everything he needs or enjoys is to be a matter of special thought, and obtained with a special effort and often with difficulty. Much that was very comfortable and salutary in civil life must be given up in the camp. The Government is the purveyor for and the manager of the army; it undertakes to provide and care for, to sustain and nourish the men. But, with all its wisdom, power, and means, it is not equal to the thousand or thousands of housekeepers that eared and provided for these men when at home; and certainly it does not, and probably cannot, perform these domestic offices as well and as profitably for the soldiers as their natural providers did. Nevertheless, the Government is the sole provider for the army, and assumes the main responsibility of the physical condition of its members.

Starting with the very common belief that the human body has an indefinite power of endurance, or, if it suffer from

disease, or fall in death, it is from causes beyond man's control,—seeing, also, that it is impossible to carry the common means of sustaining life into the camp, Governments seem willing to try the experiment of requiring their men to do the hard work of war without a certain, full supply of sustenance. They expect from the army the largest expenditure of force, but sometimes give it the smallest means and poorest conditions of recuperating it.

The business of war is not constant and permanent, like the pursuits of peace. It therefore comes to most managers as a new and unfamiliar work, to which they can bring little or no acquaintance from experience. They enter upon untried ground with imperfect knowledge of its responsibilities and dangers, and inadequate conceptions of the materials and powers with which they are to operate. They therefore make many and some very grave mistakes, every one of which, in its due proportion, is doubly paid for in drafts on the nation's treasury and on the soldiers' vital capital, neither of which is ever dishonored.

Military life is equally new to the soldier, for which none of his previous education or experience has fitted him. He has had his mother, wife, sister, or other housekeeper, trained and appointed for the purpose, to look after his nutrition, his clothing, his personal comfort, and, consequently, his health. These do not come without thought and labor. The domestic administration of the household and the care of its members require as much talent, intelligence, and discipline as any of the ordinary occupations of men. Throughout the civilized world, this responsibility and the labor necessary for its fulfilment absorb a large portion of the mental and physical power of women.

When the new recruit enters the army, he leaves all this care and protection behind, but finds no substitute, no compensation for his loss in his new position. The Government supposes either that this is all unnecessary, or that the man in arms has an inspired capacity or an

instinctive aptitude for self-care as well as for labor, and that he can generate and sustain physical force as well as expend it. But he is no more fitted for this, by his previous training and habits, than his mother and wife are for making shoes or building houses by theirs. Nevertheless he is thrown upon his own resources to do what he may for himself. The army-regulations of the United States say, "Soldiers are expected to preserve, distribute, and cook their own subsistence"; and most other Governments require the same of their men. Washing, mending, sweeping, all manner of cleansing, arrangement and care of whatever pertains to clothing and housekeeping, come under the same law of prescription or necessity. The soldier must do these things, or they will be left undone. He who has never arranged, cared for, or cooked his own or any other food, who has never washed, mended, or swept, is expected to understand and required to do these for himself, or suffer the consequences of neglect.

The want of knowledge and training for these purposes makes the soldier a bad cook, as well as an indiscreet, negligent, and often a slovenly self-manager, and consequently his nutrition and his personal and domestic habits are neither so healthy nor so invigorating as those of men in civil life; and the Government neither thinks of this deficiency nor provides for it by furnishing instruction in regard to this new responsibility and these new duties, nor does it exercise a rigid watchfulness over his habits to compel them to be as good and as healthy as they may be.

#### MUCH SICKNESS DUE TO ERRORS OF GOVERNMENT.

WHATEVER may be the excess of sickness and mortality among soldiers over those among civilians, it is manifest that a great portion is due to preventable causes; and it is equally manifest that a large part of these are owing to the negligence of the Government or its agents,

the officers in command or the men themselves, in regard to encampments, tents, clothing, food, labors, exposures, etc.

The places of encampment are usually selected for strategic purposes, or military convenience, and the soldiers are exposed to the endemic influences, whatever they may be. In some localities these influences are perfectly salubrious; in others they are intensely destructive. Malaria and miasms offer to the unpractised eye of the military officer no perceptible signs of their presence. The camp is liable to be pitched and the men required to sleep in malarious spots, or on the damp earth, or over a wet subsoil, exposed to noisome and dangerous exhalations from which disease may arise. Pringle says, that, in 1798, the regiment which had 52 per cent. sick in two months, and 94 per cent. sick in one season, "were cantoned on marshes whence noxious exhalations emanated."\* "Another regiment encamped where meadows had been flowed all winter and just drained, and half the men became sick." Lord Wellington wrote, August 11, 1811, "Very recently, the officer commanding a brigade encamped in one of the most unwholesome situations, and every man of them is sick."† One of our regiments encamped at Worcester, Massachusetts, on the Agricultural Society's grounds, where the upper soil was not dry and the subsoil was wet. The men slept in tents on the ground, consequently there were thirty to forty cases of disordered bowels a day. The surgeon caused the tents to be floored, and the disease was mitigated. The Eleventh Massachusetts Regiment were encamped on a wet soil at Budd's Ferry, in Maryland. In a week, thirty cases of fever appeared. Dr. Russell, the surgeon, ordered the camp to be removed to a dry field, and the tents to be floored with brush; no new cases of fever appeared afterward. Moltka says that "the Russian army which suffered so terribly and fatally in 1828 and 1829 was badly clothed and badly nourished, and in no way protected against

the climate of the Danubian Provinces, and especially of Bulgaria, where the temperature varies from 58° in the day to 29° at night, and where the falling dew is like a fine and penetrating rain."\*

Lord Wellington was a sagacious observer and a bold speaker. His despatches to his Government frequently mention the errors of those who should provide for the army, and the consequent sufferings of the soldiers. November 14, 1809, he says, "In the English army of 30,000 men, 6,000 are sick." "Want of proper food increases sickness." "With nothing but water for drink, with meat, but no salt, and bread very rarely for a month, and no other food; consequently, few, if any, were not affected with dysentery." Again he writes, "Men cannot perform the labors of soldiers without food. Three of General Park's brigade died of famine yesterday, on their march; and above a hundred and fifty have fallen out from weakness, many of whom must have died from the same cause." August 9, 1809, he wrote to Lord Castlereagh, "No troops can serve to any good purpose, unless they are regularly fed. It is an error to suppose that a Spaniard, or any man or animal of any country, can make an exertion without food." In February, 1811, he wrote, "The Portuguese army of 43,000 or 44,000 men has about 9,000 sick, which is rather more than a fifth. This is caused by want of proper and regular food, and of money to purchase hospital-stores. If this be continued, the whole army will be down, or must be disbanded."

The British army in Spain suffered from want of clothing as well as of food. The Duke, who did not intend to be misunderstood, nor believe that this was without somebody's fault, wrote, November 3, 1810, to General Fane, "I wish it were in my power to give you well-clothed troops or hang those who ought to have given them clothing."

The diaries of the medical officers in the Crimean army, quoted in the "Med-

\* *Diseases of the Army*, p. 59.

† *Despatches*.

\* Boudin, *Traité de Géographie et de Statistique Médicales*, Tom. II. p. 239.



ical and Surgical History" of that war, already referred to, are full of similar complaints, and these are supported by Dr. Lyons's "Pathological Report." One says, "Some of the camps were very injudiciously chosen." "The men were very much weakened," "unable to undergo any fatigue," even "to carry their knapsacks." "At Balaklava, they built their huts on a very unhealthy site." Sir John Hall, Inspector-General of Hospitals, referring to this, said, "I protested against it, in the strongest way I could, but without effect; and the consequence was that shortly after the men had spotted fever."\* Dr. Hanbury says, "November, 1854. Health of the army rapidly deteriorated from defective diet, harassing duties, hardships, privations, and exposures to the inclement season." "Cholera increased; cold, wet, innutritious and irritating diet produced dysentery, congestion and disorganization of the mucous membrane of the bowels, and scurvy." January, 1855, he says, "Fever and bowel affections indicated morbid action; scurvy and gangrene indicated privation and exposures."

The surgeon of the Thirty-Fourth Regiment writes: "November, 1854. Cholera broke out. It rained constantly. Troops had no other protection from the damp ground than a single wet blanket." "Without warm clothing, on short allowance of provisions, in want of fuel." "The sanitary condition of the regiment deteriorated rapidly: 56 per cent. of the men admitted to the hospital."

Forty-First Regiment, November and December. "No respite from severe duties; weather cold and wet; clothing ill-adapted for such climate and service; disease rapidly increased; 70 per cent. of the men in the hospital in two months."

Thirty-Third Regiment, December, 1854. "Cold and wet weather, coupled with insufficient food, fuel, and clothing, and severe and arduous duties, all combined to keep up the sickness; 48.8 per

cent. admitted to the hospital in this month."

Twentieth Regiment. "The impoverished condition of the blood, dependent on long use of improper diet, exposure to wet and cold, and want of sufficient clothing and rest, had become evident." "Scurvy, diarrhœa, frost-bite, and ulceration of the feet followed."

First Regiment. "December, 1854. Scarcely a soldier in perfect health, from sleeping on damp ground, in wet clothing, and no change of dress; cooking the worst; field-hospital over-crowded." "January, 1855. Type of disease becoming more unequivocally the result of bad feeding, exposure, and other hardships."

Thirtieth Regiment. "Duties and employments extremely severe; exposure protracted; no means of personal cleanliness; clothing infested with vermin; since Nov. 14, short allowance of meat, and, on some days, of biscuit, sometimes no sugar, once no rice; food sometimes spoiled in cooking; tents leaked; floors and bedding wet; sanitary efficiency deteriorated in a decided manner."

These quotations are but samples of hundreds, perhaps thousands, of similar statements, showing the immediate connection between privations, exposures, and hardships, and depression of life and abundant disease.

Dr. Sutherland went through all the camps, and makes similar statements. "The damp, unventilated, and undrained huts, in some parts of the camp, produced consequences similar to those in cellardwellings at home,"—that is, typhus and typhoid diseases. "The half-buried huts of the Sardinian camp furnished a large proportion of fever cases among their occupants." "That beautiful village of Balaklava was allowed to become a hot-bed of pestilence, so that fever, dysentery, and cholera, in it and its vicinity and on the ships in the harbor, were abundant." "Filth, manure, offal, dead carcases, had been allowed to accumulate to such an extent, that we found, on our arrival, in March, 1855, it would have

\* *Report on the Sanitary Condition of the British Army*, p. 178.

required the labor of three hundred men to remove the local causes of disease before the warm weather set in.\* General Airey said: "The French General Canrobert came to me, complaining of the condition in which his men were. He said 'they were dying in the mud.' †

Dr. Bryce, one of the army-surgeons in that war, says, in his book: "The British army was exhausted by overwork and the deficiency of everything that would sustain health and strength."

When the soldier, overcome by these morbid influences, became sick, and was taken to the hospital, he was still compelled to suffer, and often sank under, the privation of those comforts and means of restoration which the sick at home usually enjoy.

Dr. Sutherland says: "The hospitals at Scutari were magnificent buildings, apparently admirably adapted to their purpose; but, when carefully examined, they were found to be little better than pest-houses." ‡

Under direction of the Sanitary Commission, the hospitals were cleansed and ventilated, and the patients allowed more room. In the first three weeks of these improvements, the mortality from diseases fell to one-half; in the second three weeks, to one-third; in the third, to one-fifth; and in the fourth and fifth periods, to one-tenth of that which prevailed before they were begun. §

The reform was carried through the whole army, camp and barracks, Government supplies, and soldiers' habits and exposures; and the mortality from diseases, which had been at the annual rate of 114 per cent. in January, and 83 per cent. in February, fell to 19 per cent. in April and May, 5 per cent. in the autumn, and 1.6 per cent. in the winter following. ||

\* *Report of the Sanitary Commission.—Report on the Sanitary Condition of the British Army*, p. 335.

† *Report of the Sanitary Condition of the British Army*, p. 97.

‡ *Ib.*, p. 334. § *Ib.*, p. 365. || *Ib.*, p. 524.

The exposures, privations, and sufferings of our own army in the last war with Great Britain, heart-rending even at this distance of time, were sufficient to account for much of the terrible sickness and mortality that prostrated and destroyed the men. They were at times in want of food, clothing, and tents; and yet, in the new and unsettled country, in the wilderness and forest, they performed great labors. "Long and unremitting exposures to wet, cold, and fatigue, with a diet which, under existing circumstances, could not prove nutritious, exhausted the vital principle, and diarrhœa and typhus fever supervened. The production of animal putrefaction and excrementitious materials were also sources of these diseases. Armies always accumulate these noxious principles about their encampments in a few days, when attention is not called to their daily removal."\* Feeble, and destitute of clothing and provisions, they invaded Canada at the end of the autumn in 1813. "During the whole of October and part of November, most of them were subjected to excessive fatigues, and exposed in open boats on the lake, when it rained almost every day." "On the 14th of November the weather became intensely cold, and remained so all winter. In addition to their great fatigue, most of them lost their extra clothing and blankets on their march and in the battle of the 11th. Even the sick had no covering but tents until January. Provisions were scarce, and of a bad quality. Under these circumstances, sickness and mortality were very great." "Nearly one-half of the army," 47 per cent., "were unfit for duty." †

"Through the following winter, the want of necessaries for the support of the enfeebled and wretched soldier was most severely felt. The poor subsistence which bread of the worst quality afforded was almost the only support which could be had for seven weeks." "The sickness,

\* Dr. Mann, *Medical Sketches*, p. 64.

† Dr. Lovell, quoted by Mann, *Medical Sketches*, p. 119.

deaths, and distress at French Mills excited much alarm. This great mortality had obvious causes for its existence."

"Predispositions to sickness, the effects of obvious causes, the comfortless condition of men exposed to cold, wanting the common necessities of life to support them in their exhausted states." Dr. Lovell adds: "It was impossible for the sick to be restored with nothing to subsist upon except damaged bread."\* Among the causes of the abundant sickness, in March, along the Niagara frontier, given by the surgeons, were "severe duty during the inclement weather, exposure on the lake in open transports, bad bread made of damaged flour, either not nutritious or absolutely deleterious, bad water impregnated with the product of vegetable putrefaction, and the effluvia from materials of animal production with which the air was replete."† "The army, in consequence of its stationary position, suffered from diseases aggravated by filth accumulated in its vicinity." "The clothing was not sufficient to protect the men on the northern frontier, and even this short allowance failed to reach them in due season."‡ "The woollen garments have not been issued until the warm weather of summer commenced, when winter finds them either naked or clad in their summer dresses, perishing with cold."§

The camps were sometimes in malarious districts. "At Fort George and the vicinity, the troops were exposed to intense heat during the day and to cold and chilly atmosphere at night." "The diseases consequent to this exposure, typhus and intermittent fever, dysentery and diarrhœa," and "but little more than half of the men were fit for duty."||

Gen. Scott wrote from Mexico, February 14, 1848: "The army is also suffering from the want of necessary clothing. The new troops are as destitute as the others. They were first told that they should find abundant supplies at New

Orleans, next at Vera Cruz, and finally here."\*

There is ever a danger of the sensibilities and perceptive faculties becoming blunted by exposure to and familiarity with offensive effluvia. "The General repeatedly called the attention of the officers at Fort George to the filthy state and foul effluvia of their camp, but they perceived no offensive odor; their olfactories had lost their acuteness, and failed to warn them of the noisome gases that pervaded the atmosphere."† If the officers fail of their duty as housekeepers to see that everything in the camp and tents is clean and healthy, the men fall into negligent habits, and become dirty and sick. It was the "total want of good police" that reduced the regiment already referred to from 900 to 200 fit for duty. On the other hand, "The regiment of artillery, always subject to correct discipline, with quarters and encampments always in the best state, and the men mostly neat and clean, suffered less by disease than any on the northern frontier. Their better health may be much imputed to cleanliness."‡

Itch and lice, the natural progeny of negligence and uncleanness, often find their home in the army. Pringle, more than a hundred years ago, said that "itch was the most general distemper among soldiers." Personal and household vermin seem to have an instinctive apprehension of the homes that are prepared for them, and flock to the families and dwellings where washing and sweeping are not the paramount law and un-failing habit. They are found in the houses and on the bodies of the filthy and negligent everywhere. They especially delight in living with those who rarely change their body-linen and bedding. They were carried into and established themselves in the new barracks of Camp Cameron in Cambridge, Massa-

\* Mann, *Medical Sketches*, pp. 120, 121.

† *Ib.*, p. 78.

‡ *Ib.*, p. 92.

§ *Ib.*, p. 124.

|| *Ib.*, p. 204.

\* *Executive Documents, U. S.*, 1848, Vol. VII. p. 1224.

† Mann, *Medical Sketches*, p. 66.

‡ *Ib.*, p. 39.



chusetts; but they are never found in the Boston House of Correction, which receives its recruits from the filthiest dens of iniquity, because the energetic master enforces thorough cleansing on every new-comer, and continues it so long as he remains.

The camps and police of the present Union army, though better than the average of others and far above some, are yet not in as healthy condition as they might be. The Report of the Sanitary Commission to the Secretary of War, December, 1861, says: "Of the camps inspected, 5 per cent. were in admirable order, 45 per cent. fairly clean and well policed. The condition of 26 per cent. was negligent and slovenly, and that of 24 per cent. decidedly bad, filthy, and dangerous."\* The same Report adds: "On the whole, a very marked and gratifying improvement has occurred during the summer." And that improvement has been going on ever since. Yet the description of a camp at Grafton, Virginia, in March, shows that there a very bad and dangerous state of things existed at that time, and "one-seventh of the regiment was sick and unfit for duty"; but the bold and clear report of Dr. Hammond of the United States Army produced a decided and favorable change, and "the regiment has now less than the average amount of sickness." †

The hospitals of the army are mostly buildings erected for other purposes, and not fitted for their present use; and the sudden influx of a large military population, with its usual amount of sickness, has often crowded these receptacles of the suffering soldiers. For want of experience on the part of the officers, surgeons, nurses, and men, in the management of such establishments, they are sometimes in very bad and unhealthy condition. In Cumberland, Maryland, fifteen buildings were occupied by about five hundred patients. These buildings had been warehouses, hotels, etc., with few or none of the conveniences for the sick.

\* p. 23.

† *Report of the Sanitary Commission*, No. 41.

They were densely crowded; in some the men were "lying on the floor as thickly as they could be packed." One room with 960 feet of air contained four patients. Dr. Hammond's description of the eighty-three rooms and the condition of the patients in them seems to justify the terms he frequently uses. "Halls very dirty." "Rooms dismal and badly ventilated." "Utmost confusion appears to exist about each hospital; consequently, duties are neglected, and a state of the most disgusting want of cleanliness exists."\* Happily, the wise and generous suggestions of the surgeon were carried out, and with the best results. This hospital was an exception; but it shows the need of intelligent watchfulness on the part of the Government.

#### CROWDED QUARTERS.

It is to be expected that the soldier's dwelling, his tent and barrack, will be reduced to the lowest endurable dimensions in the campaign, for there is a seeming necessity for this economy of room; but in garrisons, stations, and cantonments, and even in encampments in time of peace, this necessity ceases, and there is a power at least, if not a disposition, to give a more liberal supply of house- and lodging-room to the army, and a better opportunity for rest and recuperation. In common dwelling-houses, under favorable circumstances, each sleeper is usually allowed from 500 to 1,000 cubic feet of space: a chamber fifteen or sixteen feet square and eight feet high, with 1,800 to 2,048 feet of air, is considered a good lodging-room for two persons. This gives 900 to 1,024 feet of air for each. The prudent always have some means of admitting fresh air, or some way for the foul air to escape, by an open window, or an opening into the chimney, or both. If such a room be occupied by three lodgers, it is crowded, and the air becomes perceptibly foul in the night. Sometimes more are allowed to sleep

\* *Report of the Sanitary Commission*, No. 41.

within a room of this size; but it is a matter of necessity, or of lower sensibility, and is not healthy. They do not find sufficient oxygen to purify or decarbonize their blood through the night; they consequently are not refreshed, nor invigorated and fully prepared for the labors of the following day.

No nation has made this liberal and proper provision of lodging-room for its sleeping soldiers in peace or in war, in garrison or in the encampment.

The British army-regulations formerly allowed 400 to 500 cubic feet for each soldier in barracks in temperate climates, and 480 to 600 in tropical climates. The new regulations allow 600 feet in temperate climates.\* But the 356 barracks at the various military stations in Great Britain and Ireland give the soldiers much less breathing-room than the more recent regulations require. Of these,

3	allow	100 to 200	feet for each man.
27	"	200 to 300	" "
123	"	300 to 400	" "
125	"	400 to 500	" "
59	"	500 to 600	" "
19	"	600 to 800	" " †

The French Government allows 444 feet for each infantry soldier, and 518 feet for each man in the cavalry.

The British soldiers, at these home-stations, have less breathing-space and are subject to more foulness of air than the people of England in civil life; and the natural consequence was discovered by the investigation of the Military Sanitary Commission, that consumption and other diseases of the lungs were much more prevalent and fatal among these soldiers, who were originally possessed of perfect constitutions and health, than among the people at large. The mortality from consumption and other diseases of the respiratory organs, among the Household Cavalry, the Queen's Body-Guard, and the most perfectly formed men in the kingdom, was 25 per cent., among the Dragoon Guards 59 per cent., among the

Infantry of the Line 115 per cent., and among the Foot-Guards 172 per cent. greater than it was among the males of the same ages throughout England and Wales, and consumption was the prevailing cause of death.

The huts of the British army are of various sizes, holding from twenty-five to seventy-two men, and allowing from 146 to 165 cubic feet for each. The "Portsmouth hut" is the favorite. It is twenty-seven feet long, fifteen feet wide, walls six feet, and ridge twelve feet high. This holds twenty-five men, and allows 146 feet of air to each man. All these huts have windows, and most of them are ventilated through openings under the eaves or just below the ridge, and some through both.

Some of the temporary barracks erected at Newport News, Virginia, are one hundred feet long, twenty-two feet wide, and twelve and a half feet high at the ridge, and accommodate seventy-six men, giving each 360 feet of air. Some are larger, and allow more space; others allow less; in one each man has only 169 feet of breathing-space. All these buildings are well supplied with windows, which serve also for ventilators.

In forts, the garrisons are usually more liberally supplied with sleeping-room, yet, on emergencies, they are densely crowded. At Fort Warren, in Boston Harbor, two regiments were temporarily stationed, in the summer of 1861. There was one large barrack divided into some large and many small rooms, and there was the usual supply of rooms in the casemates. There was one range of rooms in the barrack, each sixteen feet six inches long, seven feet four inches high, and varying in width from ten feet eight inches to thirteen feet two inches. In most of these rooms, including two of the narrowest, twelve men slept. They had from 105 to 119 feet of air for each one. There was a large window in each room, which was opened at night, and might have served for healthy ventilation, except that there was an accumulation of disgusting filth within a few feet of the

\* *Report of Barrack Commission*, p. 160.

† *Report on the Sanitary Condition of the British Army*, p. 439.



building, on that side, sending forth offensive and noisome effluvia, and rendering it doubtful which was the most disagreeable and dangerous, the foul air within or the foul atmosphere without. In two of the casemate-rooms, holding sixty and seventy-five men respectively, each man had 144 and 180 feet of air. At Fort Independence, in the same harbor, a battalion was stationed, and slept in thirteen casemate-rooms, where the men had from 150 to 297 feet of air. All the casemate-rooms, being in the thick walls, and covered with earth, in both forts, were cold and damp, and many of them were kept comfortable only by fires, even in June.

The ten new barracks at Camp Cameron, in Cambridge, when full, according to the plan, give each soldier 202 feet of air for respiration; but in August last, when densely filled, as some of them were, the proportion of air for each man was reduced to 120 feet. The doors and windows were left open at night, however, and obviated in some degree the evil effects of the crowding.

#### TENTS.

THE portable house must necessarily be as small as possible, and must be made to give its occupants the smallest endurable space. The English bell-tent contains 512 cubic feet, and lodges twelve to fifteen men, when on march, and eight to twelve men in camp, affording 34 to 64 feet of breathing-space for each. Quartermaster-General Airey says this is the best tent in use.

The American tents are of many varieties in shape and size. The Sibley tent gives 1,052 feet to seventeen or eighteen, and sometimes to twenty men, being 53 to 62 feet for each. The Fremont tent is somewhat larger, and, as used in the cavalry camp at Readville, gave the men more air than the Sibley. Both of these have means of ventilation. The wedge-tent, being the simplest in structure, is most easily pitched, struck, and packed by the soldiers, and therefore used by 58 per cent. of the regiments of the Union

army, six men sleeping in each. But, as occupied by two of the regiments in Massachusetts, in the summer of 1861, it was the most crowded and unhealthy. Those used by the Second Regiment at West Roxbury, and the Ninth at Long Island, (in Boston Harbor,) were twelve and a half feet long, eight feet wide, and six feet high to the ridge, and held twelve men. Each sleeper had  $8\frac{1}{2}$  square feet of floor to rest upon, and 25 cubic feet of air to breathe through the night, with no ventilation, except what air passed in through the door-way, when left open, and through the porous cloth that covered the tent. Some of the tents of one of the regiments encamped at Worcester had 56 feet of floor-surface, and 160 feet of air, which was divided among six men, giving each 27 feet of air.

In all the camps of Massachusetts, and of most armies everywhere, economy, not only of room within the tents, but of ground where they are placed, seems to be deemed very important, even on those fields where there is opportunity for indefinite expansion of the encampment. The British army-regulations prescribe three plans of arranging the tents. The most liberal and loose arrangement gives to each soldier eighty square feet of ground, the next gives forty-two, and the most compact allows twenty-seven feet, without and within his tent. These are densities of population equal to having 348,000, 664,000, and 1,008,829 people on a square mile. But enormous and incredible as this condensation of humanity may seem, we, in Massachusetts, have beaten it, in one instance at least. In the camp of the Ninth Regiment at Long Island, the tents were placed in compact rows, and touched each other on the two sides and at the back. Between the alternate rows there were narrow lanes, barely wide enough for carriages to pass. Thus arranged, the men, when in their tents, were packed at the rate of 1,152,000 on a square mile, or one man on every twenty-two square feet, including the lanes between, as well as the ground under, the tents.

The city of London has 17,678 persons on a square mile, through its whole extent, including the open spaces, streets, squares, and parks. East London, the densest and most unhealthy district, has 175,816 on a mile. Boston, including East and South Boston, but not Washington Village, has 50,805 on a mile; and the Broad-Street section, densely filled with Irish families, had, when last examined for this purpose, in 1845, a density of population at the rate of 413,000 on the same space.

#### RESULTS OF SANITARY REFORMS.

THE errors and losses which have been adverted to are not all constant nor universal: not every army is hungry, or has bad cookery; not every one encamps in malarious spots, or sleeps in crowded tents, or is cold, wet, or overworked: but, so far as the internal history of military life has been revealed, they have been and are sufficiently frequent to produce a greater depression of force, more sickness, and a higher rate of mortality among the soldiery than are found to exist among civilians. Every failure to meet the natural necessities or wants of the animal body, in respect to food, air, cleanliness, and protection, has, in its own way, and in its due proportion, diminished the power that might otherwise have been created; and every misapplication has again reduced that vital capital which was already at a discount. These first bind the strong man, and then, exposing him to morbid influences, rob him of his health. Perhaps in none of the common affairs of the world do men allow so large a part of the power they raise and the means they gather for any purpose to be lost, before they reach their object and strike their final and effective blow, as the rulers of nations allow to be lost in the gathering and application of human force to the purposes of war. And this is mainly because those rulers do not study and regard the nature and conditions of the living machines with which they operate, and the vital forces that move them, as

faithfully as men in civil life study and regard the conditions of the dead machines they use, and the powers of water and steam that propel them, and form their plans accordingly.

But it is satisfactory to know that great improvements have been made in this respect. From a careful and extended inquiry into the diseases of the army and their causes, it is manifest that they do not necessarily belong to the profession of war. Although sickness has been more prevalent, and death in consequence more frequent, in camps and military stations than in the dwellings of peace, this excess is not unavoidable, but may be mostly, if not entirely, prevented. Men are not more sick because they are soldiers and live apart from their homes, but because they are exposed to conditions or indulge in habits that would produce the same results in civil as in military life. Wherever civilians have fallen into these conditions and habits, they have suffered in the same way; and wherever the army has been redeemed from these, sickness and mortality have diminished, and the health and efficiency of the men have improved.

Great Britain has made and is still making great and successful efforts to reform the sanitary condition of her army. The improvement in the health of the troops in the Crimea in 1856 and 1857 has already been described. The reduction of the annual rate of mortality caused by disease, from 1,142 to 13 in a thousand, in thirteen months, opened the eyes of the Government to the real state of matters in the army, and to their own connection with it. They saw that the excess of sickness and death among the troops had its origin in circumstances and conditions which they could control, and then they began to feel the responsibility resting upon them for the health and life of their soldiers. On further investigation, they discovered that soldiers in active service everywhere suffered more by sickness and death than civilians at home, and then they very naturally concluded that a similar application of sanitary measures and enforcement of

the sanitary laws would be as advantageous to the health and life of the men at all other places as in the Crimea. A thorough reform was determined upon, and carried out with signal success in all the military stations at home and abroad. "The late Lord Herbert, first in a royal commission, then in a commission for carrying out its recommendations, and lastly as Secretary of State for War in Lord Palmerston's administration, neglecting the enjoyments which high rank and a splendid fortune placed at his command, devoted himself to the sanitary reform of the army."\* He saw that the health of the soldiers was perilled more "by bad sanitary arrangements than by climate," and that these could be amended. "He had some courageous colleagues, among whom I must name as the foremost Florence Nightingale, who shares without diminishing his glory."† Both of these great sanitary reformers sacrificed themselves for the good of the suffering and perishing soldier. "Lord Herbert died at the age of fifty-one, broken down by work so entirely that his medical attendants hardly knew to what to attribute his death."‡ Although he probed the evil to the very bottom, and boldly laid bare the time-honored abuses, neglects, and ignorance of the natural laws, whence so much sickness had sprung to waste the army, yet he "did not think it enough to point out evils in a report; he got commissions of practical men to put an end to them."§ A new and improved code of medical regulations, and a new and rational system of sanitary administration, suited to the wants and liabilities of the human body, were devised and adopted for the British army, and their conditions are established and carried out with the most happy results.

These new systems connect with every corps of the army the means of pro-

tecting the health of the men, as well as of healing their diseases.

"The Medical Department of the British army includes, —

"1. Director-General, who is the sole responsible administrative head of the medical service.

"2. Three Heads of Departments, to aid the Director-General with their advice, and to work the routine-details.

"A Medical Head, to give advice and assistance on all subjects connected with the medical service and hospitals of the army.

"A Sanitary Head, to give advice and assistance on all subjects connected with the hygiene of the army.

"A Statistical Head, who will keep the medical statistics, case-books, meteorological registers," etc.\*

Besides these medical officers, there are an Inspector-General of Hospitals, a Deputy Inspector-General of Hospitals, Staff and Regimental Surgeons, Staff and Regimental Assistant-Surgeons, and Apothecaries.

The British army is plentifully supplied with these medical officers. For the army of 118,000 men there were provided one thousand and seventy-five medical officers under full pay in 1859. Four hundred and seventy surgeons and assistant-surgeons were attached to the hundred regiments of infantry.†

It is made the duty of the medical officer to keep constant watch over all the means and habits of life among the troops, — "to see that all regulations for protecting the health of troops, in barracks, garrisons, stations, or camps, are duly observed." "He is to satisfy himself as to the sanitary condition of barracks," "as to their cleanliness, within and without, their ventilation, warming, and lighting," "as to the drainage, ash-pits, offal," etc. "He is to satisfy himself that the rations are good, that the kitchen-utensils are sufficient and in good order, and that the cooking is sufficiently varied."‡

\* Dr. Farr, in *Journal of the London Statistical Society*, Vol. XXIV. p. 472.

† *Ibid.*

‡ *M.S. Letter of Dr. Sutherland.*

§ Dr. Farr, *ubi supra.*

\* *Army Medical Regulations*, p. 27, etc.

† *Report of the Army Medical Department for 1859.*

‡ *Army Medical Regulations*, p. 29.



Nothing in the condition, circumstances, or habits of the men, that can affect their health, must be allowed to escape the notice of these medical officers.

In every plan for the location or movement of any body of troops, it is made the duty of the principal medical officer first to ascertain the effect which such movement or location will have upon the men, and advise the commander accordingly. It is his duty, also, to inspect all camp-sites and "give his opinion in writing on the salubrity or otherwise of the proposed position, with any recommendations he may have to make respecting the drainage, preparation of the ground, distance of the tents or huts from each other, the number of men to be placed in each tent or hut, the state of cleanliness, ventilation, and water-supply."\* "The sanitary officer shall keep up a daily inspection of the whole camp, and especially inform himself as to the health of the troops, and of the appearance of any zymotic disease among them; and he shall immediately, on being informed of the appearance of any such disease, examine into the cause of the same, whether such disease proceed from, or is aggravated by, sanitary defects in cleansing, drainage, nuisances, overcrowding, defective ventilation, bad or deficient water-supply, dampness, marshy ground, or from any other local cause, or from bad or deficient food, intemperance, unwholesome liquors, fruit, defective clothing or shelter, exposure, fatigue, or any other cause, and report immediately to the commander of the forces, on such causes, and the remedial measures he has to propose for their removal." "And he shall report at least daily on the progress or decline of the disease, and on the means adopted for the removal of its causes." †

Thus the British army is furnished with the best sanitary instruction the nation can afford, to guide the officers and show the men how to live, and sustain their strength for the most effective labor in the service of the country.

\* *Army Medical Regulations*, p. 83.

† *Ib.*, p. 84.

To make this system of vigilant watchfulness over the health of the men the more effectual, the medical officer of each corps is required to make weekly returns to the principal medical officer of the command, and this principal officer makes monthly returns to the central office at London. These weekly and monthly returns include all the matters that relate to the health of the troops, "to the sanitary condition of the barracks, quarters, hospitals, the rations, clothing, duties, etc., of the troops, and the effects of these on their health."\*

Under these new regulations, the exact condition of the army everywhere is always open to the eyes of medical and sanitary officers, and they are made responsible for the health of the soldiers. The consequence has been a great improvement in the condition and habits of the men. Camps have been better located and arranged. Food is better supplied. Cooking is more varied, and suited to the digestive powers. The old plan of boiling seven days in the week is abolished, and baking, stewing, and other more wholesome methods of preparation are adopted in the army-kitchens, with very great advantage to the health of the men and to the efficiency of the military service. Sickness has diminished and mortality very greatly lessened, and the most satisfactory evidence has been given from all the stations of the British army at home and abroad, that the great excess of disease and death among the troops over those of civilians at home is needless, and that health and life are measured out to the soldier, as well as to the citizen, according to the manner in which he fulfils or is allowed to fulfil the conditions established by Nature for his being here.

The last army medical report shows the amount and rate of sickness and mortality of every corps, both in the year 1859, under the new system of watchfulness and proper provision, and at a former period, under the old *régime* of neglect.

\* *Army Medical Regulations*, p. 93.



## THE NUMBER OF DEATHS IN 100,000.\*

	Annual Average for 10 years, 1837 to 1846.	1859.
Household Cavalry . . . . .	1,039 . . . . .	427
Dragoon-Guards . . . . .	1,208 . . . . .	794
Foot-Guards . . . . .	1,872 . . . . .	859
Infantry Regiments . . . . .	1,706 . . . . .	758
Men in healthy districts of England . . . . .		723

The Foot-Guards, which lost annually 1,415 from diseases of the chest before the reform, lost only 538 in 100,000 from the same cause in 1859.\*

Among the infantry of the line, the annual attacks of fever were reduced to a little more than one-third, and the deaths from this cause to two-fifths of their former ratio. The cases of zymotic disease were diminished 33 per cent., and the mortality from this class of maladies was reduced 68 per cent.†

The same happy accounts of improvement come from every province and every military station where the British Government has placed its armies.

\* *Report of the Army Medical Department for 1859, p. 10.*  
† *Ibid.*

Our present army is in better condition than those of other times and other nations; and more and more will be done for this end. The Government has already admitted the Sanitary Commission into a sort of copartnership in the management of the army, and hereafter the principles of this excellent and useful association will be incorporated with, and become an inseparable part of, the machinery of war, to be conducted by the same hands that direct the movements of the armies, ever present and efficient to meet all the natural wants of the soldier, and to reduce his danger of sickness and mortality, as nearly as possible, to that of men of the same age at home.

\* *Report of the Army Medical Department for 1859, p. 6.*

## AN ARAB WELCOME.

## I.

BECAUSE thou com'st, a tired guest,  
Unto my tent, I bid thee rest.  
This cruse of oil, this skin of wine,  
These tamarinds and dates, are thine :  
And while thou eatest, Hassan, there,  
Shall bathe the heated nostrils of thy mare.

## II.

*Allah il Allah!* Even so  
An Arab chieftain treats a foe :  
Holds him as one without a fault,  
Who breaks his bread and tastes his salt ;  
And, in fair battle, strikes him dead  
With the same pleasure that he gives him bread !













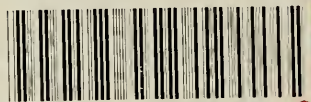








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