

For some years subsequent to the successful close of this war the army of the United States consisted of troops enlisted for short periods, with no provision for medical service other than that afforded by regimental medical officers.

In 1802 a new departure was taken in appointing army medical officers. The army at this time was so small that it was not possible for the few medical officers provided on a regimental basis to care for the sick of their commands, scattered as these commands were at various posts along the frontiers. Medical officers were therefore appointed to garrisons instead of to regiments. Additional troops levied in an emergency brought with them their regimental medical officers, and if the needs of the service required the establishment of general hospitals, surgeons of higher grade and rates of pay than the regular post surgeons were appointed for temporary service. In this manner the medical department was enlarged to meet the necessities of the army in the year 1812. During this war the only legislation materially affecting the department was a much-needed increase of pay for the regimental medical officers. Dr. James Tilton, who had been a hospital surgeon during the Revolution, was the chief of the department at this time with the title of "physician and surgeon-general." His management of affairs during the war appears to have given universal satisfaction. Many hospitals were established and broken up during the course of events, but all were well kept, fully provided with necessaries and competent for all the work thrown upon them. Some indeed, as that at Burlington, Vt., under the superintendence of Surgeon Lovell, Ninth Infantry, appear from the reports to have been model establishments. The regulations of these are extant, and it is readily seen that their high character was due to efficient administration, discipline, and cleanliness.

In 1818 a bill which organized the general staff of the army gave to the medical department for the first time in its history a permanent chief under the title of *surgeon-general*. To this position Surgeon Joseph Lovell was promoted on account of his excellent record. Hospital and garrison surgeons were consolidated under the title of *post surgeons*, and as these took rank after the surgeons of regiments, certain of the hospital surgeons who had served in high positions on important occasions had cause for dissatisfaction with the inferior status to which they were consigned by this arrangement.

The medical department was fortunate in having so able a man as Dr. Lovell appointed as its chief. He defined the duties of his subordinates, established an excellent system of accountability for property, improved the character of the medical reports, inspired his officers with the idea that as sanitary officers they had greater responsibilities than mere practising physicians and surgeons, and labored earnestly to have their pay increased and their official status raised in proportion to his views of the importance of their duties. He also established an equitable system of exchange of posts so that no officer would be retained unduly at an undesirable station.

In 1821 the finishing touches were given to the organization of the department by consolidating the regimental surgeons with the staff surgeons so that the corps consisted simply of one surgeon-general, eight surgeons with the rank and pay of regimental surgeons, and forty-five assistant surgeons with the pay of post surgeons; but as this number was insufficient to provide one medical officer to each of the military posts, the system of employing civilian physicians on contract was instituted.

Surgeon-General Lovell died in 1836 and was succeeded by the senior surgeon Thomas Lawson, then serving with troops in Florida.

Little of general interest occurred during the next ten years. The papers filed in the office of the surgeon-general during this period were arguments, opinions, and decisions on points connected with uniforms, rank, and precedence of medical officers and their right to enter into private practice in the vicinity of their stations. At last the concentration of troops on the Rio Grande and the

probability of war with Mexico led to some changes. Two surgeons and twelve assistant surgeons were added to the medical staff, and ten new regiments were raised, each provided with one surgeon and two assistant surgeons. These were intended to be merely provisional appointments to be vacated at the close of the war. Ultimately, however, not only were the staff appointments made permanent, but ten additional assistant surgeons were authorized on account of the increasing needs of the department after the acquisition of California and New Mexico.

During the Mexican war the senior surgeons were assigned as medical directors and in charge of general hospitals; certain of the juniors were on duty at the hospitals and purveying depots, while the others served in the field as regimental officers with regular troops. Volunteer surgeons were on duty with their regiments, but some were occasionally detailed to hospital duties.

The additions to the numerical force of the medical department during and after the Mexican war proved insufficient for the needs of the many small garrisons into which our army became broken up; but although the surgeon-general repeatedly called attention to this, no increase was made until 1856, when four surgeons and eight assistants were added to the corps.

Surgeon-General Lawson died in 1861, shortly before the outbreak of the civil war. From the calls for large levies of troops and the feeling North and South that a desperate struggle was before the country it was evident that without large reinforcements the medical department would be unable to do its work successfully. At this time it consisted of one surgeon-general with the rank of colonel, thirty surgeons with the rank of major, and eighty-three assistant surgeons with the rank of first lieutenant and of captain after five years' service. In August, 1861, the addition of ten surgeons and twenty assistant surgeons was authorized. Some of this small staff corps took charge, as medical directors, of corps and armies, instructing the volunteer officers in the duties pertaining to camps and field hospitals; others acted as medical inspectors, aiding the directors in their work of supervision and education; some organized general hospitals for the sick that had to be cared for on every move of the armies, while others kept these hospitals and the armies in the field provided with medical and hospital supplies; the remainder were assigned to field service with the regular regiments and batteries.

Each volunteer regiment brought with it a surgeon and two assistants appointed by the governor of the State after examination by a State medical board. The senior regimental surgeon of each brigade became invested with authority as on the staff of the brigade commander, but as seniority in many instances was determined by a few days or weeks, it often happened that the best man for the position was not secured by this method. Congress therefore authorized a corps of brigade surgeons of volunteers, who were examined for the position by a board of regular medical officers. One hundred and ten of these brigade surgeons were commissioned.

In April, 1862, a bill was passed by Congress to meet the pressing needs of the medical department. This gave the regular army an addition of ten surgeons and ten assistant surgeons, and provided for a temporary increase in the rank of those medical officers who were holding positions of great responsibility. It gave the surgeon-general the rank, pay, and emoluments of a brigadier-general; it provided for an assistant surgeon-general and a medical inspector-general of hospitals, each with the rank of colonel, and for eight medical inspectors with the rank of lieutenant-colonel. These original vacancies were filled by the President by selection from the army medical officers and the brigade surgeons of the volunteers, having regard to qualifications only, instead of to seniority or previous rank. At the end of their service in these positions, officers of the regular force reverted to their former status in their own corps with such promotion as they were entitled to by the casualties of the service during their temporary occu-

pancy of these war positions. About the time of this enactment Surgeon-General Finley, Lawson's successor, was retired at his own request after forty years' service, and Assistant Surgeon William A. Hammond was appointed the first surgeon-general with the rank of brigadier-general. In December following eight more inspectors were authorized. Their duties were to supervise all that related to the sanitary condition of the army, whether in transports, quarters, or camps, as well as the hygiene, police, discipline, and efficiency of field and general hospitals; to see that all regulations for protecting the health of the troops and for the careful treatment of the sick and wounded were duly observed; to examine into the condition of supplies and the accuracy of medical, sanitary, statistical, military, and property records and accounts of the medical department; to investigate the causes of disease and the methods of prevention. They were required also to be familiar with the methods of the subsistence department in all that related to the hospitals and to see that the hospital fund was judiciously applied. Finally, they reported on the efficiency of medical officers and were authorized to discharge men from the service on account of disability.

Shortly after this the corps of brigade surgeons was reorganized to give its members a position on the general staff similar to that of the army medical officer and to render their services available to the surgeon-general at any point where they might be most needed, irrespective of regimental or brigade organizations. They henceforth became known as the *corps of surgeons and assistant surgeons of volunteers*; and the appointment of forty such surgeons and one hundred and twenty assistants was authorized.

In the military service promotion should be the reward for duty well performed, but during the War of the Rebellion little incentive of this kind was offered to medical officers. Surgeons with the rank of major had nothing to look forward to. They saw their comrades of the line, formerly their equals or inferiors in rank, mount upward step by step. They saw at the same time that a medical officer on duty as a medical director had only this same rank of major, although responsible for the work of five or six hundred officers, one-third of whom had the same rank, pay, and emoluments as himself. Not until toward the close of the war did Congress recognize the responsibilities of certain medical officers by giving the rank of lieutenant-colonel to medical directors of corps and of colonel to the director of an army.

During this great war the work of the medical department was performed by the regular medical officers and the corps of volunteer surgeons and assistant surgeons, both commissioned by the President, and by the large body of regimental medical officers commissioned by the governors of States. In addition to these, civilian physicians were employed under contract, mostly in the wards of the general hospitals established in the vicinity of Washington, D. C., and other cities. Just before the close of the war another class of medical officers was authorized. Regimental surgeons whose regiments had been mustered out on the expiration of their term of service were offered positions as acting staff surgeons as an inducement to continue in the service.

The latter part of the year 1865 was devoted to the breaking up of the depots and general hospitals, and next year the medical department was again placed on a peace footing with a personnel consisting of a surgeon-general; an assistant surgeon-general with the rank of colonel; a chief medical purveyor and four assistants, lieutenant-colonels; sixty surgeons, majors, and one hundred and fifty assistants, captains and lieutenants. In 1872 provision was made for a chief medical purveyor, with the rank of colonel; but in the mean time promotions and appointments were interdicted, so that at this time the reports of the surgeon-general speak in urgent terms of the crippled condition of his department. In 1873 there were fifty-nine vacancies, and to meet the requirements of the service one hundred and eighty-seven sur-

geons had to be employed on contract. At this time Congress authorized the appointment of assistant surgeons, but cut off two of the assistant medical purveyors and ten of the sixty surgeons, prohibiting promotion until the number became thus reduced.

In 1876 the arguments in favor of increased rank for the medical corps were favorably considered by Congress, for in addition to the existing grades there were authorized four surgeons, colonels, and eight lieutenant-colonels, but the number of assistants was cut down to one hundred and twenty-five. No change has taken place since then except that of conferring on the lieutenant-colonels and colonels the respective titles of deputy and assistant surgeons-general, to correspond with similar titles in the other staff departments.

During the Spanish-American war the medical department of the army consisted of the regular establishment, with United States Volunteer surgeons appointed by the President, regimental surgeons and assistant surgeons appointed by the State governors, and surgeons under contract with the surgeon-general. At the present time (February, 1900) the regular establishment remains unchanged. The medical officers of the United States Volunteer regiments now serving in the Philippine Islands are appointed by the President, the State officers having all been mustered out with their regiments. The insufficiency of the present organization is such that over three hundred and fifty medical men are now serving under contract. It is hoped that the present Congress in legislating for the army will provide for the needful increase of the medical department. Charles Smart.

**ARMY MEDICAL STATISTICS.**—Broadly speaking, the main causes affecting the health of troops are the manner of living, the environment, and the food supplied. The first relates to the occurrence of overcrowding, imperfect ventilation, want of cleanliness, and inattention to personal hygiene. The second is typified in the accidents arising from atmospheric or telluric influences, such as rapid death from heat and cold, the comparatively transient influences of the seasons, and the slower and more durable effects of climate as modifying diseases of a restricted habitat. The last cause concerns the diseases brought about directly or indirectly by vicious alimentation. There are no diseases peculiar to the soldier; but military conditions are frequently such, particularly during a campaign, that the germs of disease are widely disseminated among an especially susceptible body of men—and hence a larger number are attacked and succumb than would probably have been the case in civil life. In character, the diseases developed in the military establishment call for no remark unless it be their unusually severe type, the regularity with which outbreaks of some affections recur, and the frequent tendency of others to become endemo-epidemic. The prevailing diseases in armies are, naturally, largely acute; and a large proportion of them are zymotic and hence theoretically preventable.

The purpose of army medical statistics is to define the influence of military life upon health and to permit the ready appreciation and accurate comparison of varying conditions of service and environment in their relation to the well-being of the soldier. Since each case of sickness in the military establishment at once becomes a matter of official record at the hands of competent observers, it follows that statistics so obtained are not only more comprehensive but more accurate than those bearing on the occurrence of disease among civilians. Un fortunately for their general utility, however, they are based upon a physically superior class, always existing under restricted and unusual conditions and frequently in unfavorable surroundings, and hence deductions which may be drawn from them cannot be legitimately applied outside the limits of the military service. Unfortunately, also, owing to the different systems of nomenclature and classification of diseases which have prevailed in the past, as well as to other causes which will be referred to later, it is not always possible accurately to compare the



sickness and mortality from special causes occurring in different armies, or even for the military establishment and civilian classes of the same nation. The committee on international military medical statistics which met at Budapest in 1894 has, however, formulated a plan which overcomes in great measure the difficulties with which army statisticians have had to contend, leads to a common basis of comparison, and will ultimately be the means of affording a large amount of information hitherto not available.

In the British army, statistics with regard to sickness and mortality were first compiled shortly after the close of the Peninsular war, but were published at long and irregular intervals. They gave much information with regard to the healthfulness of various stations, but the advent of the Crimean war caused their temporary discontinuance. In 1859 their publication was again resumed and they have since been issued annually. Army statistics have been collected in France and Germany since the Napoleonic wars, but have not been regularly made available for general use, frequently being issued only in part or not at all. Of late years, France has not given out full information as to the occurrence of disease and death among her military forces. In the United States army, satisfactory data for the period prior to 1840 are not available, and it is only since 1884 that figures sufficiently elaborate to be of any great value to the statistician have been compiled and published. At present the official returns show not only the amount of loss the army annually incurs from disease, but also the causes leading thereto; as influenced by race, age, length of service, arm of service, season, station, and other factors.

Little information is gained by recording the statistics of disease as a whole, since so many factors combine in the production of the final result that they must be separately studied to arrive at a proper understanding of the whole.

The main points upon which army medical statistics are based are as follows:

1. The number of admissions to sick report as compared with the number of persons furnishing the sick. This is accomplished by taking the actual numbers in both classes and reducing them to a comparable standard in rates per thousand. The numbers furnishing the sick are reduced by those sick in quarters or hospital; but as a general rule an equivalent number of men are returned to duty or are enlisted to replace the losses through death or disability. In our service statistics are based on the total strength.

2. The rate of deaths per thousand strength. This is obtained by the division of the total number of deaths occurring during the year by the mean annual strength, including the absent as well as those serving with the colors. The figures thus obtained are then reduced to rates per thousand.

3. The rate of discharges for disability from disease, per thousand strength—obtained by dividing the losses from discharge by the mean strength and then reducing to the above standard of comparison.

4. The total losses from disease; as determined by the sum of the rates for mortality and for discharge for disability from this cause.

5. The rate of constant sickness, or constant inefficiency. This is given by adding the numbers put down as remaining under treatment at the end of each day, week, or month and dividing by the number of days, weeks, or months in the period desired, again reducing to the comparable standard.

6. The number of days of service lost by each soldier. This is found by adding together the total number of sick days in a given period and dividing by the mean strength of the command for that period.

In all computations the figures are reduced to common terms of one year and one thousand strength.

*Comparative Loss in Campaign from Sickness and Wounds.*—Since the great military epidemics of antiquity—the destruction of the Assyrians under Sennacherib; the plague described as occurring during the Peloponnesian war; the pestilences which ravaged the Roman and

Carthaginian armies; the great losses sustained by the army of Severus in the marshes of Caledonia—it has been established as a general rule that, in protracted wars, armies suffer much less from wounds than from disease. The constant advance in sanitation, however, based upon an accurate knowledge of etiological factors, has exerted a marked effect in diminishing military morbidity and mortality; and while in the future a comparatively high sick and death rate among troops engaged in war is always to be expected, it is scarcely possible that such disastrous epidemics as have prevailed in times gone by could be repeated in the future. Wars become shorter as they become, through modern refinements, more expensive; and troops, particularly in an aggressive and decisive campaign, are not now exposed to unhealthful influences to as great a degree as was the case when hostilities were more protracted. With improvement in the effectiveness of arms, both as regards range and rapidity of action, the proportion of casualty for any period of action must naturally be increased—and hence there is a constant tendency toward the approximation of the rates from wounds and disease.

From the records of the past, however, many valuable lessons can still be drawn. In 1809, during the Walcheren expedition, the mortality in the British army from disease was 346.9 per thousand effectives, while only 16.7 per thousand were killed by the enemy. A few years later the British army in Spain lost three times as many men by disease as by the result of conflict, and the sick rate mounted to such proportions that more than twice the number of men composing the army passed through the hospitals during a single year. In the Russian campaign against Turkey, in 1828, it was estimated that 80,000 men died of disease and 20,000 in consequence of wounds. During General Scott's campaign in Mexico the losses from disease alone exceeded 33 per cent. of the effective strength of the forces under his command, and in a single regiment of Indiana volunteers which entered the service 1,000 strong only 400 returned to the State for muster out. Laveran states that in the Crimean war the allies lost 52,000 men in six months, of which number 50,000 men were unharmed by the Russians; while during the entire war, according to Viry, the French lost, in round numbers, out of a total force of 300,900 men, no less than 95,000, of whom 75,000 died of disease and only 20,000 died on the field or succumbed to wounds. In this campaign nearly one-fourth of the French medical officers are said to have succumbed to sickness. During the war in Italy, in 1859, a period of hostilities of only short duration, there were, from the French force of 200,000 men, 129,950 admissions to hospital. In the war carried on by France in Mexico the mortality from gunshot and that from sickness was as 10 to 29.

The mortality among the United States forces in the civil war was divided as follows:

Mortality.	White.	Colored.	Total.
Killed in battle.....	42,724	1,514	44,238
Died of wounds.....	47,914	1,817	49,731
Died of disease.....	157,004	29,212	186,216
Died, cause unknown.....	23,347	857	24,184
Total.....	270,989	33,380	304,369

From the most reliable data available the deaths in the armies of the Confederate States during this struggle did not fall short of 200,000, three-fourths of which number were due to disease and one-fourth to the casualties of battle.

In 1866, in the war against Austria, out of a total strength of 437,260, the Prussians lost in an unusually brief and decisive campaign 6,427 men by sickness and 4,450 at the hands of the enemy. The Franco-German war, in 1870-71, furnishes the only exception to the general rule that more men are killed by disease than by the weapons of the enemy, since of the German army 33.7 per thousand strength fell in battle while only 18.6

per thousand died of disease. This admirable result was largely due to the proper observance of sanitary precautions; assisted, no doubt, by the brevity of the campaign, the rapidity of the movements, and the fact that active operations were conducted during the most healthful season of the year. In the Russo-Turkish war of 1878, according to Viry, the Russians lost 102,799 men, of whom only 16,578 were killed by the enemy. During the Spanish American war of 1898, for the five months which included the total period of hostilities, of the 274,717 officers and men enrolled in the United States forces there were only 345 men killed by the enemy while 2,565 succumbed to disease. For the whole year of 1898 the deaths from wounds in our service gave a rate of 0.62 per thousand strength, the killed in battle amounted to 2.79 per thousand strength, while the deaths from all causes aggregated 30.31 per thousand. Even in July, the month in which aggressive operations against Santiago were conducted, the killed in action amounted to only 1.25 per thousand while the deaths from disease were 1.78 per thousand.

An interesting side light on the later results of hard campaigning is given by Rosse, in his statement that of the old soldiers carried on the United States pension rolls those disabled by disease are more than four times greater in number than those pensioned for wounds.

*Death Rates in Civil and Military Life.*—The difficulties attending an accurate comparison of death rates for the military service and those of civil life are necessarily very great. Owing to the rejection of intending recruits many individuals are at once returned to private life whose early demise would otherwise have gone to swell the military death rates. Further, the army is maintained as a select body of physically sound men, and its weaklings are constantly undergoing elimination from the service ultimately to increase the mortality of civil life. Hence the civilian rates are unduly increased, while army statistics fail to show all the deaths presumably due to military service—and it is obvious that the more rigorously the standard for the soldier is maintained as regards physical excellence, the more favorable the showing apparently made for a military life. Vallin, in France, in 1871, placed the probable error due to the above causes at as much as 9.19 per thousand, thus practically doubling the figures for the military death rate of his time. Viry considered this allowance to be too high, but believed that a rate of 3.60 per thousand, for such as leave the colors with incurable disease should be added to the military and subtracted from the civilian death rates; thus making a difference of 7.20 per thousand. The estimates of Marvaud placed the probable error at 4 per thousand. While it is probably correct for the French service to add 3.60 or even 4 per thousand to the military death rate, to deduct the same number from the civilian rate involves the broad assumption that the numbers in each class exactly correspond. For our own service the immense disproportion existing between the present small army of 65,000 men and the large number of males of the military age living in the United States renders the influence of the comparatively small number of soldiers who may be discharged for incurable disease upon the civilian death rate of so little importance that it may practically be disregarded. The census returns for 1880 give the annual death rate for disease as 6.97 per thousand for all males between the ages of twenty and forty-five years. During the same year the mortality from disease in the United States army was 5.88 per thousand—apparently a distinct advantage in favor of the military service. If, however, Viry's factor, above mentioned, be accepted as correct for our service, the true military mortality becomes 9.48, or 2.51 per thousand in excess of the civilian rate for the same period. As it is probable that since that time the death rate in the military service has diminished in proportionately greater degree than has been the case in civil life, it may be fairly assumed that, under conditions of peace, the death rate in our army is at present but slightly in excess of the mortality for the same class in civil life. The results obtained by

Farr in his comparison of the death rate in the British army with the corresponding classes of civil life, made a generation ago, are as follows:

Age.	Death rate per 1,000.
20-25.—Soldiers.....	17.0
Civilians.....	8.4
25-30.—Soldiers.....	18.3
Civilians.....	9.2
30-35.—Soldiers.....	18.4
Civilians.....	10.2
35-40.—Soldiers.....	19.2
Civilians.....	11.6

According to Notter and Firth, the present death rate of the civil male population in England, at the soldier's age, is as follows:

Age.	Mortality per 1,000.
20-25.....	5.4
25-35.....	7.4
35-45.....	12.8

Between the ages of 20 and 34 the mortality is in favor of the soldier, but after 35 the mortality is reversed and the civil rates are lower.

For the British service the death rate for the home stations was 3.42 per thousand in 1897 and 4.68 per thousand for the decade 1887-1896. If the civilian death rate for all males of the military age be accepted as about 7 per thousand, the showing made compares favorably with similar figures for the German army and is superior to the French mortality rates. This is certainly a great improvement over the conditions existing in 1856, when it was shown that the mortality in the army at large was twice as great as among the civilian population, and in the case of the Foot Guards three times as great.

As regards the German army, it was recently stated by its surgeon-general that during the early part of this century the death rate of the male civil population of Prussia, between 20 and 30 years of age, was lower than that of the military death rate, the figures being 14 per thousand for the army and 10 per thousand for the civil population. This condition is now reversed, and in 1893 the death rate in Prussia for the civil male population from 20 to 30 years of age was 6.38 per thousand, while at the same time the mortality for the German army was 3.00 per thousand. While these results are certainly admirable and are undoubtedly in large part due to careful observance of sanitary regulations, it should be remembered that soldiers unable to maintain the required physical standard are probably more thoroughly eliminated in the German army, and at an earlier period in their military training, than in other services.

In the French army, on the home stations, the average annual death rate from 1882 to 1890, inclusive, was 7.88 per thousand strength; while Bertillon fixed the annual mortality among the civilian male population, between the ages of 20 and 25, at 10.60 per thousand. Marvaud, however, believed that the estimate made by Bertillon was too low, and placed the annual death rate for civilians of the military age at 12 per thousand. Using Marvaud's coefficient of error, given above, the corrected rate for the French military service would become 11.88, while it would be 8 per thousand for the same class in civil life. Marvaud concludes "that, in spite of all ameliorations which have been introduced, chiefly of late years, into the hygienical surroundings of the French soldier, his mortality rate is still elevated and certainly exceeds that of the same sex and age in civil life."

*Loss of Time from Sickness.*—In the United States service the annual average number of days lost per man, for the decade 1886-1895, was 14.64. For the year 1896 it was 12.43, and in 1897 it was 13.08. In comparing the number of days lost by white soldiers with those lost by colored troops, the showing is slightly in favor of the latter. For the entire British army during the decade 1887-1896, the number of days lost per man was 21.38, while during 1897 it was 22.72. Among the British troops at the home stations the number of sick days per



man did not differ very greatly from those of our own army for the same periods, being only a fraction of one day in excess. According to Rosse, in a statement of the morbidity of various armies issued about 1884, the lowest rates given were those of the Portuguese, Austro-Hungarian, Italian, and German armies, the sick days of each man in the effective force being from 13 to 15 yearly among the troops of these nations, while in the French and English armies, prior to that date, the rate had been 16 to 17 annually.

As compared with the time lost by the corresponding classes in civil life, Rosse noted that for the period 1862 to 1892 the average annual number of days of sickness was 6 to 8 for each workingman belonging to various mutual aid societies; he fixing the general military morbidity for the same period at figures two and one-half times greater than those of the corresponding civil classes. According to Paget the following rate of sickness may be expected for different ages for males of the English working classes, such as incapacitates for work: at 20 years expect 4 days of sickness yearly; at 20-30 years expect 5 to 6 days of sickness yearly; at 45 years expect 7 days of sickness yearly.

Marvaud states that, in 1894, the French soldier lost 13 days annually—9 in hospital and 4 in barracks—while his civilian compatriots of corresponding age lost on an average only about half that time; notwithstanding the fact that the hygienic surroundings in the military service were much superior to those of civil life. While in time of war or active operations the existence of a high rate of inefficiency and the loss of a greater amount of time are to be anticipated, such conditions, as compared with those of the corresponding classes of the male civil population, should not, theoretically, obtain in time of peace. Their actual existence under the latter condition is probably due to the fact that the workingman does not feel able to stop his daily task except for serious illness, while the soldier—whose pay and living are assured and whose medical attendance is gratuitous—is inclined to abuse his privileges, often endeavoring to get his name on sick report for the slightest indisposition, or none at all, and to have it retained there for as long a period as possible; this being particularly attempted when any unusually irksome or disagreeable task is to be performed. That such, indeed, is the case is demonstrated by the fact that, according to Billings, it may be estimated that for every case of death there is an average of two years sickness in the civil community; while in the United States army, for the absolute number of deaths occurring and days of service lost during the year 1897, the proportion was such as to show a total of 3,867 days of sickness to each death reported. This gives a total of 10.6 years sickness for each death; a rate more than five times greater than that obtaining in civil life and one which can be explained only by the above hypothesis. In view of the unfavorable showing, in this respect, made by military statistics it would appear that greater discretion and severity should be exercised in admitting the soldier to sick report; and that, if once admitted, his earlier return to his duties would usually be productive neither of injury nor hardship.

**Race as Influencing Military Mortality and Morbidity.**—While satisfactory data on this subject as regards foreign armies are naturally not available, the several rates from disease in our own service, with its heterogeneous personnel, have been calculated according to nativity. For the seven years 1890-1896, they were determined, per thousand strength, to be as follows:

	Admissions to hospital.	Constantly non-effective.	Discharges for disability.	Deaths.	Total losses.
United States . . . . .	1,043.43	30.74	12.98	3.96	16.94
Ireland . . . . .	962.05	26.87	14.52	5.46	19.98
Germany . . . . .	810.10	24.67	13.20	4.14	17.34
England . . . . .	907.11	23.56	12.46	4.26	16.72
Canada . . . . .	1,033.14	32.51	18.87	4.16	23.03
Scandinavia . . . . .	886.08	26.55	13.33	5.17	18.50

	Admissions to hospital.	Constantly non-effective.	Discharges for disability.	Deaths.	Total losses.
Scotland . . . . .	852.38	25.64	12.50	1.47	13.97
Switzerland . . . . .	893.75	27.82	12.31	2.90	15.11
Austria . . . . .	807.14	21.63	16.53	2.67	19.20
Denmark . . . . .	836.33	26.21	13.33	5.55	18.88
France . . . . .	1,049.43	30.89	10.56	7.04	17.60
All others . . . . .	821.42	23.90	13.66	3.86	17.52

It should be noted, however, that the figures given for the countries named in the latter half of the above table are not to be considered as absolute, since they are not based upon a sufficiently large number of men to avoid the possibility of error. These rates are, however, of particular interest, since, so far as they go, they tend to bear out the popular belief that the native-born American possesses a greater proportion of vital force and greater power of resistance against death than does the foreigner.

Race proclivity, as regards sickness, is well shown by the records of the British forces in the West Indies, in which, for the ten years 1876-1885, the admissions per thousand of strength for the whites were 893.5, colored 1,074.1; discharges, white 13.95, colored 58.88; deaths, whites 15.42, colored 15.38. (See also chart on p. 499.)

In the United States service, for the decade 1877-86, the death rate among the whites per thousand was 9.97 and for the colored 12.91. There has been, however, a constant tendency for the past twenty years toward the approximation of the rates for the whites and blacks in our service; and the relative rates per thousand for the white troops of all nationalities as compared with those for the colored troops, during the year 1897, were as follows:

	Admissions to hospital.	Constantly non-effective.	Discharged for disability.	Deaths.	Total losses.
Whites . . . . .	35.72	11.04	9.62	5.05	14.67
Colored . . . . .	37.24	10.89	9.51	5.89	15.40

In the distribution of diseases according to nativity, typhoid fever and rheumatic fever had their greatest prevalence in our service, for the years 1890-1896, among the Canadians and Scandinavians. The highest admission rates for consumption were 5.70 among the French and 4.76 among the Scotch; the lowest rates were 1.42 among the English and 1.49 among the Germans, the rate among the natives of the United States being 3.33. Pneumonia was more frequent among Canadians, 5.18, and Scotch, 4.76, than in men of other nationalities. The rate for this disease for the natives of the United States was 3.90. Venereal disease prevailed more among men born in the United States and Canada than among the others, the admission rates for these two classes being 93.98 and 91.92 respectively; the Irish and Swiss had the lowest rates; 47.66 and 50.96. The Irish, however, had by far the largest relative number of cases of alcoholism, 90.96. The smallest rates for this cause were given by the Danes, 12.59, and Austrians, 19.00; the admission rate for the native-born American soldier having been 28.51 for this cause.

**Sickness and Death Rate as Affected by Season.**—Military morbidity and mortality are to a certain extent influenced by seasonal changes; varying according to the climatic conditions prevailing in each country or locality, by which the propagation of certain affections is either favored or retarded. In the French army the admissions to hospital for disease, in time of peace, reach the maximum of 57 or 58 in January and fall to the minimum of about 38 per thousand in September. In the Italian army, for the period 1872-1892, the greatest amount of sickness occurred in March and the least in November. In the United States service the mid-summer period is

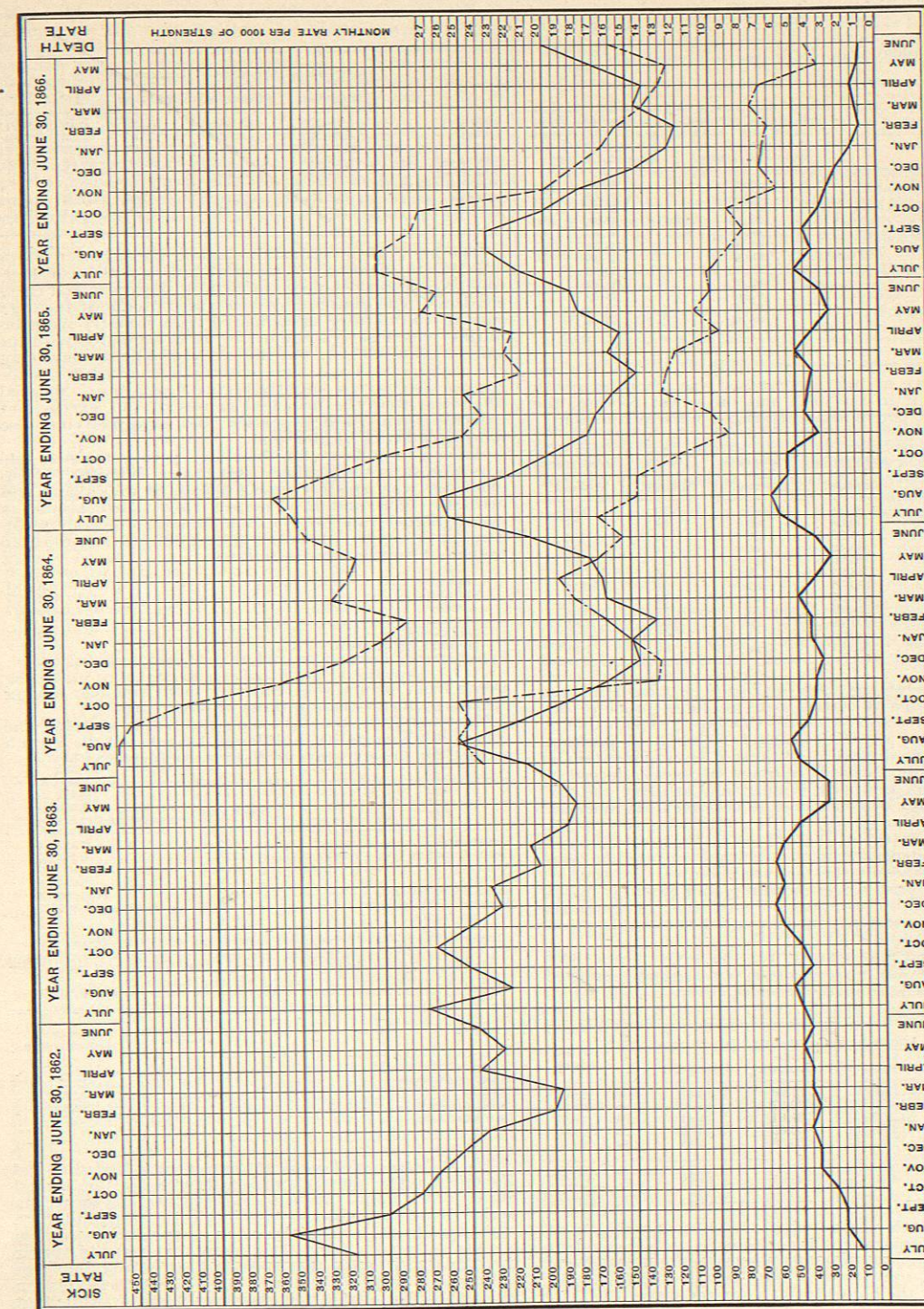


Diagram Showing the Sickness and Deaths among the White and Colored Troops of the United States Armies during the Civil War and the Year Following That War, Expressed in Rates per Thousand Strength. (From the "Medical and Surgical History of the War of the Rebellion.")