

that the regiment of loyal Americans recruited for this expedition, largely from the south, was least affected. In 1740, in the expedition against Carthagena, its effects were most disastrous. In 1780 a force of 8,000 Spanish soldiers was landed at Havana, and in two months it lost 2,000 men from this disease. In Hayti, during the rebellion of the blacks, the French army of veterans was practically annihilated by yellow fever. Of this epidemic Lemure wrote: "In 1802 an army under the orders of General Leclerc embarked for San Domingo. The effective strength, on leaving Brest, was 58,545 men. In four months 50,270 men were dead; chiefly of yellow fever, which gave 82.5 per cent. of the mortality. Of



FIG. 1091.—Distribution by Months of Deaths from Yellow Fever in the Spanish Army in Cuba, per Thousand Strength, During the Epidemics of 1876 and 1896.

the 8,275 men remaining, 3,000 were sick or wounded. In 1809, seven years later, this army was reduced to 300 men, who returned to France." The French also suffered severely during their occupation of Mexico. According to Coustan, there were 1,705 cases; the fever breaking out six days after the troops landed at Vera Cruz. During the Civil War there were, in the Union forces, 1,371 cases and 436 deaths; and in 1867 the disease attacked a number of Southern posts and caused 1,520 cases with 453 deaths. For the period 1868-84 the disease recurred almost annually among such troops as were stationed in the South, the average for the whole army for this period, per thousand strength, giving a rate of .78 for admissions and .33 for deaths. For the period 1885-96 inclusive, there were no cases of yellow fever in our service.

In 1897 there were 7 cases with 3 deaths; and in 1898, at Santiago, there were 604 cases with 70 deaths. For the period 1868-98 the rate for admissions was 1.17, and for deaths .26 per thousand strength. The Spanish army in Cuba has always suffered severely from this disease, especially during the epidemics of 1876, 1877, and 1896. The British and French troops stationed in the West Indies, have been repeatedly attacked.

Nature and Mode of Dissemination.—With regard to the nature of the materies morbi of yellow fever nothing is as yet known, though investigations by many army medical officers have been, and are now being, vigorously prosecuted; hence it is impossible to say definitely whether it is disseminated by water, air, or insects. It is safe to regard the excreta of a yellow-fever patient as especially infectious. There is an abundance of evidence to show that yellow fever may be transmitted in clothing, merchandise, or similar articles. Such fomites as have been in the immediate vicinity of yellow-fever patients are to be regarded as especially dangerous. Infected habitations in the yellow-fever belt are probably the chief points from which the disease is spread. Apparently, the yellow-fever patient, removed to good surroundings, is not so greatly to be feared as is the place in which the sufferer contracted his infection. Experience has shown that, with proper precautions, those in attendance on the sick are not especially liable to contract the disease; and yellow-fever patients have often been treated in the same wards as susceptible patients without the disease having been disseminated. Such practice, however, is of course highly undesirable. While the patient, therefore, does not ordinarily affect others directly, he undoubtedly gives off, presumably in his discharges, the virus of the disease, and this is capable of infecting a particular locality and thus of giving rise to the disease in others. Outside the body the micro-organism probably undergoes development in the soil. The incubation period of the disease is short, varying from one to five days.

Predisposing Causes.—Absolute immunity to yellow fever is not possessed by any race as a peculiar characteristic; though relatively speaking, those individuals who are permanent residents in the endemic zones exhibit less liability to contract it than do strangers newly arrived from colder latitudes. In general terms it may be considered that the susceptibility to, and mortality from, yellow fever vary directly with the distance from the equator of the place of nativity and residence of the individual. According to Barton, of each 1,000 deaths from yellow fever which occurred in New Orleans in the epidemic of 1853, the distribution of mortality was as follows:

Native Creoles	3.58
Strangers from West Indies, Mexico, and South America	6.14
Strangers from Southern United States	13.22
Strangers from Spain and Italy	22.06
Strangers from Middle United States	30.69
Strangers from New York and New England	32.83
Strangers from Western United States	44.23
Strangers from France	48.13
Strangers from British America	50.24
Strangers from Great Britain	52.19
Strangers from Germany	132.01
Strangers from Scandinavia	163.26
Strangers from Austria and Switzerland	220.08
Strangers from the Netherlands	328.94

Long ago Blair wrote that among the West India islanders in the Seamen's Hospital at Demerara, Guiana, the percentage of deaths from yellow fever was 6.9; among French and Italians it was 17.1; among English, Irish, and Scotch, it was 19.3; among Germans and Dutch it was 20; among Swedes, Norwegians, and Russians it was 27.7. It has been thought that the Creole and the African, irrespective of place of birth or of residence, possess a racial immunity to yellow fever. This, however, does not appear to be the case. Such a relative immunity is probably only the result of an attack of the disease itself, which in early life may be so mild as scarcely to be recognized; or, to a much less degree, it may be due to the transmission of a relative unsusceptibility from ancestors immunized for generations through attacks of the disease.

It should be noted that the immunity to this disease undoubtedly possessed by many natives in the yellow-fever belt is more or less completely lost after they remove to cooler latitudes, and that such individuals on their return to the zone of endemic yellow fever often exhibit a susceptibility equal to that of total strangers to the district. There is, therefore, no reason to believe that the negro primarily possesses any greater powers of resistance than does the white man under the same conditions, or that the negro born and resident in cold climates is as unsusceptible as the negro from the yellow-fever belt. An acquired or an inherited immunity is the essential factor. It should be noted that yellow fever prevailed among the negro troops at New Orleans during the Civil War and caused considerable mortality. Thus also for the year 1898, the rates in our army for this affection, per thousand strength, were as follows:

	Admissions.	Deaths.
White troops	9.40	1.04
Colored troops	59.19	7.51

The negroes recruited for our service are rarely drawn from districts in which the disease has prevailed. The great difference above noted in favor of white troops, however, is largely to be explained by the fact that the colored troops of our army were nearly all present at Santiago, while a much less proportion of the total white troops were so exposed. Further, one colored regiment, on account of its supposed relative unsusceptibility to this disease, was selected to do guard and police work at the yellow-fever hospital, thus largely increasing its opportunities for infection. A fair comparison of the susceptibility of the unacclimated white with that of the negro native to the yellow-fever zone may, however, be drawn from the British troops in the West Indies. For the decade 1888-97 the rates for yellow fever, per thousand strength of these troops, were as follows:

	Admissions.	Deaths.	Constant sickness.
Europeans	3.0	1.66	0.16
Non-Europeans	.4	.15	.02

Prophylaxis.—As a preventive of the occurrence of yellow fever among troops, expeditions into an endemically infected district should not be carried out during the rainy season. Troops intended permanently to garrison infected points will be with advantage recruited from the native and immune population. Whether in camp or in garrison, general prophylactic measures of great importance have reference to careful sanitary policing, free ventilation, an avoidance of overcrowding, and a pure water supply, with proper means of maintaining personal cleanliness. During the Civil War the comparative freedom from yellow fever of Union troops garrisoning New Orleans was regarded as chiefly due to the vigorous sanitary measures introduced by General Butler. Recently, in the occupation of Cuba, the value of proper sanitation in controlling the disease has been strongly demonstrated. Troops should be prohibited from entering infected towns, and particularly from entering houses and shops. When an epidemic occurs among the surrounding population, a careful quarantine should be maintained. With the outbreak of the disease among the troops all cases should be promptly isolated, preferably in tents. All discharges from the sick, especially the vomit and excreta, should be disinfected; if possible, by fire. The clothing and equipments of the soldier, and those with which he may have come in contact, should be disinfected; as should the tent or barrack in which the case occurred. If possible, the troops should be moved to a locality in which the fever has not been known to occur. In this country troops have habitually been transferred from southern stations to Atlanta, when an outbreak of the disease was apprehended. If such a locality is not available, the troops should be moved to high ground—preferably to

an elevation of at least fifteen hundred feet. Moving camp even a mile or so may avert an epidemic, and this procedure should be repeated upon the appearance of every new case. Depopulation of an infected area is essential, a fact repeatedly demonstrated in our own service; as at Fort Brown in 1882 and at Santiago in 1899. If the disease appear on board a transport, the sick should be treated on deck and landed as soon as possible. A predisposition to the disease appears to be caused by fatigue, especially when combined with exposure to the sun; by the immoderate use of alcohol, and by insufficient or improper food. No prophylactic medication is known to be of value. Various methods of preventive inoculation have been devised, notably by Freire and Sanarelli, but experience has shown these to be without effect.

DISEASES DUE TO INTEMPERATE OR IMMORAL HABITS.

ALCOHOLISM.—The attitude of the soldier toward the use of intoxicants is largely determined prior to his entrance into the military service. That the majority of such soldiers as actually become drinking men after entering the army, do so as a result of social environment, cannot for a moment, however, be doubted. To drink and ask the companionship of others in consuming alcoholic beverages is the first step toward the development of the drunkard in the army, as in civil life. The idea that social superiority attaches to an ability to consume large quantities of alcoholics still exists to a certain extent among a few soldiers of a lower class; and by such, a novice in the art of drinking may be assailed with ridicule and contempt. Such men are largely responsible for the idea which sometimes prevails among recruits that a physical tolerance of alcohol is an essential attribute of the seasoned soldier, and that only he who is able to imbibe his share of intoxicant without apparent effect has demonstrated his fitness to enter upon the profession of arms. Besides the above class, a number of soldiers undoubtedly acquire the habit of alcoholism through favorable opportunity, particularly if they are men without aim or purpose in life beyond the perfunctory accomplishment of routine duties; men who are possessed of no internal resources for their amusement, and to whom the normal military existence is burdensome, dull, and monotonous. A certain class of susceptible individuals appear to be markedly influenced in their use of alcohol by atmospheric conditions; and excessive heat, cold, and moisture have been observed to develop a latent desire for drink on the part of soldiers which would probably otherwise have remained dormant. A small number of periodical drunkards are true degenerates. Without apparent cause, in the face of promises and protests to the contrary and in spite of inevitable court martial, disgrace, and punishment, alcoholic excesses are begun and continued until exhausted nature brings the debauch to a close. Then follow deep contrition and humiliation, renewed and earnest promises of reform, and an apparently sincere attempt to repair the damage done to health and character; a period of steady habits, and again a sudden plunge into alcoholic excesses. A large proportion of inebriates, however, as found in the military service, are men of unstable mental equilibrium, indecision, and weak character. Such, under any conditions out of the ordinary, find the mental strain beyond their power of endurance and promptly seek relief in the nerve-numbing effects of alcohol.

Frequency of Alcoholism.—In the army the abuse of alcohol is one of the most potent factors by which military efficiency is impaired; and in the past drunkenness has been largely looked upon as a distinctively military failing. Its influence, as well as its prevalence, however, is indifferently shown by statistics. All alcoholics do not enter hospital, and a certain proportion succumb to other affections, as gastritis, cirrhosis, and nephritis, in the occurrence and ultimate result of which the use of intoxicants may have played no minor part. Further, the term alcoholism includes many pathological condi-

tions and their symptoms, these varying according to the quantity of alcohol taken and the frequency with which it is consumed. Chronic drunkenness occurs chiefly among old soldiers; and this class is naturally not proportionately represented on the sick reports as compared with younger men, among whom the use of intoxicants more frequently occurs in the nature of periodical excesses. Acute alcoholism not rarely terminates life, and even at as recent a period as the decade 1886-95 it stood sixth in order of importance in determining the annual mortality among white troops. The proportion of discharges and constant non-efficiency from this cause is, however, at all times low.

The amount of alcoholism in our service has steadily decreased in the past fifteen years; this having been accomplished through greater care in the selection of recruits, a growing sentiment in favor of temperance in the social class from which the soldier is drawn, greater efforts on the part of the authorities for the elimination of inebriates from the service, and, finally, through the establishment of canteens, the favorable influence of which is discussed subsequently.

The following table shows the prevalence of alcoholism in the military forces of the United States during the thirty years of peace 1868-97, inclusive:

Year.	Mean strength.	Number of cases admitted to hospital per 1,000 strength.	Number of cases of delirium tremens per 1,000 strength.
1868.	47,472	32.59	
1869.	35,221	37.70	
1870.	31,831	38.20	
1871.	29,430	45.80	
1872.	26,844	47.50	
1873.	27,969	49.40	
1874.	27,021	58.10	
1875.	23,575	68	
1876.	24,886	64.50	
1877.	23,707	59	
1878.	23,381	59.40	
1879.	23,964	65.10	
1880.	24,004	61	
1881.	23,222	57.60	
1882.	23,239	68.70	
1883.	23,439	66	
1884.	24,034	62.10	
1885.	24,138	53.50	1.57
1886.	23,572	42.80	1.01
1887.	23,841	46.70	.88
1888.	24,726	40.20	.92
1889.	25,006	41.40	.51
1890.	24,234	40.70	.86
1891.	23,269	40	.90
1892.	24,203	37.20	.78
1893.	25,287	33.80	.55
1894.	25,376	30.90	.82
1895.	25,204	30.10	.83
1896.	25,119	28.80	.39
1897.	25,417	27.80	.58

In 1898, during the war with Spain, the admission rate fell to 15.1; the more active operations and novelty supplying much of the desired excitement, while the unusual conditions undoubtedly attracted a superior and more temperate class of young men to the colors.

ADMISSIONS FOR ALCOHOLISM AND ITS RESULTS, PER 1,000 STRENGTH, 1885-97.

Year.	White troops.	Colored troops.	Total for the army.
1885.	59.00	4.00	54.00
1886.	50.21	4.67	47.09
1887.	50.88	2.23	46.31
1888.	43.97	4.55	40.12
1889.	45.64	2.07	41.43
1890.	44.45	5.59	40.73
1891.	44.19	3.39	40.01
1892.	41.19	3.35	37.23*
1893.	37.23	7.47	33.97
1894.	33.79	4.79	30.94
1895.	32.16	6.47	30.11
1896.	31.20	5.70	29.06
1897.	30.02	4.62	27.86
Decade 1886-95.	42.37	4.89	38.69*

* Including Indian soldiers.

The remarkable difference existing between the white and black troops of the United States service as regards the prevalence of inebriety is illustrated in the preceding table—statistics which cover extended periods and which show that there is approximately only one-tenth as much alcoholism among the negro regiments as among the white troops. Few colored soldiers are hard drinkers, and as far as beer and other malt liquors are concerned, there apparently exists a racial distaste for these beverages. It is well recognized that where negro troops replace white soldiers in a post, the canteen profits from beer and wine are greatly diminished while the sales of cigars and confectionery are proportionately increased.

This racial difference as regards the use of alcoholics is further shown by statistics for the British army covering the European and non-European troops in the West Indies. For the year 1897 the admission rate per thousand strength, for the former class, was 15.6, while the death rate was .74. For the native (negro) troops during the same year the admission rate from this cause was .6, while the death rate was nil.

As to the amount of drunkenness existing in foreign services as contrasted with our own, no accurate comparisons can be drawn, from the fact that abroad none but the severe cases of alcoholism appear on sick report. Drunkenness, however, is fairly prevalent in England and Germany—much less so among the Latin nations, who are comparatively free from alcoholic excess. In France, where absinthe is much employed, the rates are said by Laveran to be only about one-tenth as high as in the English service, and Viry states that for the fifteen years 1875-90 the deaths from the use of alcohol in the French army amounted to only 11.5 annually, a considerable proportion of these occurring in Algeria. In Italy and Spain the rates are even lower than in France, and during the occupation of territory by our troops as a result of the late war, it was a matter of frequent comment that an intoxicated Spanish soldier was rarely, if ever, seen.

In both the British and French services the amount of alcoholism is much greater among troops serving in the colonies than among those at the home stations.

Influence of Alcohol on Military Efficiency.—The effect of moderate drinking in the production of an increased amount of sickness is well illustrated by the data collected by Carpenter relative to British troops serving in India, based upon 17,334 moderate drinkers and 9,340 abstainers. Of the former class he found that 1 out of every 7.28 soldiers was admitted to hospital, whereas of the latter group but 1 out of every 14.47 was so admitted. Still more favorable to the abstinence class are the figures for the average number of days spent in hospital; the moderate drinkers losing 102 days per thousand as compared with an average for the abstainers of 36.4 days. According to an editorial in *The British Medical Journal*, the admissions to military hospitals in India, during the year 1891, amounted to 5 per cent. for abstainers and to 10.4 per cent. for all others. Madden states that in three benefit associations in England, during the five years 1884-88, there were lost by each laborer 26.20, 24.68, and 27.66 weeks through illness—an average of 26.18 weeks; while during the same period, in the "Sons of Temperance," which admits only total abstainers to membership, the average number of weeks lost by each member were 7.48—less than one-third the rate given in the other organizations.

As to the actual effect of alcohol upon the death rate, it is obvious, as already remarked, that military statistics furnish little information on this point, since only acute cases of intoxication are noted on the records. Chronic alcoholism, however, while it cuts no figure in military statistics, imparts a peculiarly grave character to all diseases occurring in drunkards, and does much, through the organic changes, local congestions, and nervous depression which result from the continued use of intoxicants, to bring about a fatal termination in any serious affection.

Alcohol is one of the most frequent causes of insanity and suicide in the military service. In civil life some

writers attribute two-thirds of all mental diseases to alcohol, and it is said to be the chief cause of self-destruction in England, Germany, and Russia. According to Madden, in the years 1878 and 1879 it was found that in 27 per cent. of all male lunatics in the asylums of Germany the mental condition could be directly traced to the use of alcoholics. In Austria, according to Gauster, 40 per cent. of insanity occurring in males could be ascribed to alcoholic excesses. In our military service no figures as to the influence of inebriety upon insanity are available; but for the seven years 1887-93, out of 134 suicides occurring during that period, alcoholism was officially reported as being the cause in 31.3 per cent.

With regard to the use of alcohol upon marching troops Rosse states: "The experience of the Ashantee War in 1876 shows that alcoholic drinks are hurtful. The men who did not touch the supplementary ration of rum presented a mortality and morbidity inferior to the other soldiers." This statement will be supported by all who have served with troops on campaign.

As to the effect of drunkenness upon military morals and the maintenance of discipline, no argument is required to show that the infractions of discipline are largely the result of alcoholic stimulation. It was noted of the British troops in India, in 1891, that of all minor offences 1.5 were committed by abstainers to every 6.7 committed by moderate drinkers. As expressed by Smart, "the medical and court-martial records after pay day, in all camps where whiskey can be procured, furnish data sufficient for insistence on its exclusion as the cause of much disease and many injuries and accidental deaths."

As summed up by Parkes: "When debarred from spirits and fermented liquids, men are not only better behaved but are far more cheerful, are less irritable, and endure better the hardships and perils of war. The courage and endurance of a drunkard are always lessened; but in a degree far short of drunkenness, spirits lower, while temperance raises, the boldness and cheerfulness of spirit which a true soldier should possess. If spirits neither give strength nor sustain it against disease, are not protective against cold and wet, and aggravate rather than mitigate the effects of heat; if their use even in moderation increases crime, injures discipline, and impairs hope and cheerfulness; if the severest trials of war have not been merely borne, but most easily borne without them; if there is no evidence that they are protective against malaria and other diseases, then the medical officer will not be justified in sanctioning their issue or their use under any circumstances."

Woodhull adds: "It is not necessary to insist, from theoretical or medical grounds alone, upon the mischief that alcohol causes soldiers. The observation of any officer of experience is enough. Liquor, besides weakening men physically, tampers with their will power, disturbs their temper, makes them less trustworthy even when sober, is at the bottom of almost every violation of discipline, and is the one agent that can convert a regular force into a mob. The absence of liquor usually means a clear guard-house. Abundant liquor means a heavy sick list, a large guard report, and a general feeling of doubt as to the command. It follows without saying that if the use of alcohol is hurtful in a personal and in a martial sense to the private soldier, who is the lowest unit in the military scale, it is very much more mischievous in its ultimate consequences when an officer, who is so potent with those beneath him, is its victim."

For the United States service the discussion of alcoholism would be incomplete without reference to the canteen, which, more than any other one factor, has brought about a reduction in drunkenness and its results.

This institution, officially known as the post exchange, had its origin in our service at Vancouver Barracks in 1880, but it was not until February, 1889, that the institution was recognized by the War Department, and rules and regulations for its establishment and government published to the army.

The purpose of the army canteen, as officially an-

nounced, is to supply troops with goods at a low rate of profit and to afford rational recreation and amusement to all enlisted men. The sale of ardent spirits is strictly prohibited therein; but commanding officers are authorized to permit light beer and wine to be sold by the drink, on week days, in a room set apart for the purpose, when in their opinion such action is promotive of temperance. Gambling of any character is forbidden. Each canteen is managed by an officer selected by the post commander for his fitness for the position, he being allowed one or more enlisted men as assistants; under recent orders civilians only being allowed to serve as barkeepers. As showing the favor with which the system was received, it is only necessary to say that in 1894, five years after its inauguration, there were 75 canteens in successful operation, and that during that year the total receipts were \$1,417,079.62; of which sum no less than \$304,649.91 were returned to the men as dividend profits.

The effect of the introduction of the canteen system upon the rates for alcoholism was prompt and marked. For the decade 1878-87 the average number of admissions for alcoholism and its direct results amounted to 64.28 per thousand of white troops. This rate diminished during the next ten years in proportion as canteens were gradually established at various posts, omitting fractions, in the following ratio: 44, 46, 44, 44, 41, 37, 34, 32, 31, 30. On observing the admissions for alcoholism for the seven years 1885-91 which immediately preceded the general establishment of the canteen system upon a satisfactory basis, it is found that a yearly average of 1,214.8 men found it necessary to apply for treatment from this cause; while for the six years 1892-97, after canteens had been generally instituted throughout the army, an average of only 928.4 men annually required attention for this reason—a reduction amounting to 23.6 per cent. In 1890 there were 17 posts at which the admission rate for alcoholism exceeded 10 per cent. of the strength. In 1891 the number of such posts had decreased to 11, and in the six subsequent years diminished at the following rate: 10, 7, 4, 5, 2, 2. This favorable showing for the army at large was duplicated in the case of each individual post, the introduction of the canteen failing in no instance to be promptly followed by a diminution of alcoholism. For certain stations this improvement was extraordinary. In 1889, Willet's Point had an admission rate for alcoholism of 222.97 per thousand. In 1890, the year when the canteen was established at that post, it fell to 157.50, and in the next year amounted to only 70.46. At Fort Spokane the amount of sickness resulting from intoxicants was reported by the surgeon as having diminished 50 per cent. during the six months following the institution of the canteen. At Fort Douglas, in 1888 and 1889, the total number of admissions attributed to alcohol amounted to about 85 per thousand strength; while during 1892-94 this rate fell to 52.95 per thousand strength; and such instances might be multiplied many fold.

As to the value of the canteen in the tropics as well as at home stations, in reducing alcoholism, all are agreed. A report by O'Reilly upon the condition of the British troops in Jamaica states that the canteen, from which the men can always procure beer, has been largely instrumental in the disuse of stronger spirituous liquors and in a lessening of the evils which followed the free use of spirits in the tropics. In referring to the condition of the Fourteenth United States Infantry at Manila, Cardwell expresses his belief that a great improvement shown in the figures for venereal disease and alcoholism in this regiment was due to the establishment of a canteen, kept under admirable discipline; and he adds: "Cool American beer as a substitute for the 'beno' of the native gin shops has the most beneficent effect."

The cases of delirium tremens will be accepted by all as furnishing reliable data by which the gravity of the admissions for alcoholism may be determined. It is, therefore, of interest to observe that, for the seven-year period above noted prior to the complete adoption of the canteen system, the average annual admissions for this

cause, actual numbers, were 23.8; while for the six-year period of peace following the establishment of this system the average number of men admitted yearly for delirium tremens was 16.6, a reduction of 31.3 per cent. in this serious class of cases. It can scarcely be doubted that this remarkable decrease was chiefly influenced by the substitution of beer—a milder beverage, which rarely produces such effects—for distilled liquors, whose free use is well known to result in great mental excitement and nervous exhaustion.

It is recognized that alcoholism and insanity are closely related through the direct influence exerted by intoxicants in the production of mental aberration. Hence it is not surprising to find that the average number of cases of insanity annually coming under treatment was 35.1 for the seven-year period 1885-91, prior to the complete establishment of the canteen system, and only 24 as an annual average for the six subsequent years, 1892-97. These figures show a reduction in insanity amounting to 31.7 per cent. As to the number of days of service lost annually from insanity, the improvement since the institution of the canteen is even more marked. Figures for the years 1885 and 1886 are not available; but for the five-year period 1887-91, the average number of days lost was 1,563, while for the six years 1892-97 the service annually lost to the government from this cause amounted to only 924.5 days—a decrease of 40.9 per cent.

The canteen—for the maintenance of good order in which a commissioned officer is held responsible—is an aid to discipline as well as to the health and morals of troops. It provides a resort which, while under thorough military control, offers inducements to the men to remain at home and spend their idle time within the limits of the post; this condition obviously being far preferable to the one formerly existing, when the nearest and most generally patronized places of amusement and refreshment were the grog shops, usually with brothel annexes, which marked the limits of each military reservation. Except with the most dissolute class of men, the soldier is well satisfied to patronize the canteen to the exclusion of outside saloons; knowing, as he does, that he receives good value for his money in articles of excellent quality, and fully appreciating that the profits of the institution ultimately accrue entirely to his benefit, and are not, as is the case with outside establishments, diverted to the advantage of others. Besides the congenial resort which it furnishes, the influence of the profits of the canteen in promoting contentment among troops can scarcely be overestimated, contributing as they do to improvement of the food, to the attainment of wholesome amusement, and to the provision of much by which the soldier's life is made less irksome and he himself rendered more efficient in the performance of his military duties. The best index of the contentment of troops is to be found in the rate of desertions, since it is obvious that the soldier who is well satisfied with his lot will not endeavor to escape from the performance of his military obligations. That the canteen system has, from this standpoint, operated to the general welfare of the men is undoubted, the desertions and percentage of desertions in the regular army, from 1885 to 1897 inclusive, being as follows:

Year.	Average strength.	Deserted.	Per cent.	Year.	Average strength.	Deserted.	Per cent.
1885	24,816	2,626	10.6	1892	24,869	1,410	5.7
1886	24,305	2,012	8.3	1893	25,670	1,632	6.3
1887	24,438	2,525	10.	1894	25,661	926	3.6
1888	24,790	2,678	11.	1895	25,209	1,341	5.3
1889	25,564	2,736	11.	1896	25,143	858	3.4
1890	24,930	1,922	7.7	1897	25,300	726	2.9
1891	24,525	1,398	5.7				
Average for seven years before canteen system was thoroughly established				Average for six years after canteen system was thoroughly established			
9.18				4.53			

From the above table it is observed that during the first year after the canteen system was authorized the rate of desertions fell 26 per cent., while during the next year, as the system was more generally established, the rate was further reduced to 49 per cent. For the five years previous to the establishment of the first officially recognized canteen the number of men annually deserting from the service, per thousand strength, amounted to 101; while for the eight years immediately subsequent to the institution of this system the annual number of desertions was reduced to 50 per thousand strength. The decrease noted has been practically progressive, and for the two years immediately prior to the war with Spain scarcely one-fourth the number of men, as compared with the three years immediately prior to the introduction of the canteen system, found the military service so uncongenial as to desire to escape from completing their terms of enlistment. These results are certainly most gratifying, and there is no reason for believing that with the development of the canteen along its legitimate lines of growth a still further decrease in the present small rate of desertions may not be confidently anticipated.

Drunkenness is certainly prevented by the constant military supervision to which the canteen is subjected. The men themselves are usually careful not to indulge in alcoholics to the point of inebriety; while such few individuals as are inclined to be forgetful of the dangers of excess are usually restrained by companions, or by those connected with the canteen, from passing the bounds of actual intoxication. Should such a condition actually result the drunken individual is rarely left to his own devices or permitted to become offensive, but is usually prevailed upon by others to return to barracks without committing any breach of discipline. Hence, brawls and disturbances, with resulting court martial, have, since the introduction of the canteen system, become relatively infrequent, and pay day, formerly synonymous with debauchery and riotous disturbances, is now scarcely to be distinguished by its effects from any other day. As illustrating the marked reduction of convictions for drunkenness and for complications arising therefrom, since the establishment of the canteen, the following figures, from the reports of the judge advocate general, are of interest:

Year.	Total number of trials and convictions in the army.	Number of trials and convictions for drunkenness and for conditions arising therefrom.
1886	1,640	342
1887	1,730	289
1888	1,960	357
1889	1,752	423
1890	1,907	407
1891	2,000	417
1892	2,198	228
1893	2,185	163
1894	1,728	120
1895	1,486	142
1896	1,384	168
1897	1,245	143
Average for the six years 1886-91		
1,838 372.5		
Average for the six years 1892-97		
1,605 160.6		

From the above figures it is evident that coincident with the thorough establishment of the canteen system there has occurred a decrease, amounting to considerably more than one-half of the drunkenness which formerly tended to the impairment of discipline, to the demoralization of individuals, and to the occurrence of assaults, injuries, and deaths. It is idle to deny that this excellent result has been largely due to the attraction furnished by the canteen, combined with the military discipline which prevails in that institution and which reduces to a minimum the possibility of dangerous alcoholic excesses. The opportunity given the men of purchasing light,

nutritious lunches in the canteen is also certainly of much benefit. Many articles of food not obtainable in the company mess are thus brought within reach, and the monotony which often pertains to company cookery may in this manner be agreeably interrupted. It is probable, too, that this feature does much to prevent the intemperate use of alcoholics. The gastric cravings of hearty and idle men are thus satisfied, and a sandwich with the beer largely decreases the desire for an additional quantity of the latter.

It is claimed by the advocates of total abstinence that through the sale of beer in the canteen the health and morals of the soldiers are impaired; that such tacit encouragement on the part of the government favors indulgence in alcoholics, and that drinking habits are thus formed by those who might otherwise have remained sober men. These objections are purely theoretical, and are at variance with facts as observed since the establishment of the canteen. The sale of beer, under suitable restrictions, un-

brings with him into the service the result of the moral moulding to which he has been subjected during childhood and youth in civil life, and does not change his nature or moral standards concerning alcoholics with the mere donning of the uniform. The vice of drunkenness is certainly no longer either directly initiated or aggravated as a result of military service, and if the opinions held by some are correct as to the moral conditions obtaining in the army, then its cause must be sought for within the social classes and the conditions of environment from which the human material composing the army is drawn. It is certain that there has been no more drunkenness to be found in the army—if indeed there has not been less—during the past few years than has occurred in the corresponding classes of civil life.

VENEREAL DISEASE.—Of all causes, venereal disease is the one which, in time of peace, brings the soldier oftenest to hospital and which most affects his efficiency—this being particularly the case in our own service.



FIG. 1002.—Average Annual Admissions, per Thousand Strength, for all Venereal Diseases, in the More Important Armies of the World, for the Three Years 1890, 1891 and 1892.

doubtedly results in good rather than in evil to the troops at large, and may properly be looked upon as a safety valve for those accustomed to regard the use of a certain amount of liquor as both harmless and proper. Comparatively few men to-day become inebriated through a taste for alcohol acquired in the military service; and while there are a certain few individuals who may imbibe too much beer on pay day, they constitute a class which, in the absence of a mild beverage of this character, would probably resort to stronger—and frequently sophisticated—liquors outside the limits of the command. That beer-drinking, viewed in the abstract, is unproductive of good, will be admitted by all; that, when properly controlled, its sale in canteens, rather than its prohibition, redounds to the general health, morals, and military efficiency, few, if any, who are conversant with the subject will attempt to deny. It is certainly unfortunate that the temperance element in civil life, which is so constantly endeavoring to enact legislation against the sale of alcoholics of any character in the military service, cannot be brought to regard the matter from the practical rather than from the sentimental aspect, and thus assist in controlling and largely curtailing an evil which it is powerless to prevent, but which, if its efforts toward restrictive legislation should be successful, would undoubtedly be greatly increased.

It may here be remarked that the view is commonly entertained by the civilian class just mentioned that the soldier is a sinner above sinners and requires special legislative measures to safeguard him against his weakness—the fact being wholly ignored that the army is recruited from the general community, and merely reflects the qualities of the latter, whether they be good or bad. The recruit

The following table shows the ratio of admissions per thousand strength for all forms of venereal disease in the principal armies of the world, compiled from the most available and reliable data:

Year.	France.	Germany.	Austria-Hungary.	Russia.	Italy.	Holland home army.	Japan.	United States.	GREAT BRITAIN.	
									Home.	India.
1872	....	....	62	....	....	....	....	100.3	202.2	191.0
1873	....	....	59	....	....	....	....	101.7	167.6	181.6
1874*	....	38.4	53	....	....	....	....	92.5	145.7	207.5
1875	....	31.6	59	....	....	....	....	110.4	139.4	213.5
1876	57	28.8	65.8	....	....	....	....	107.6	146.5	203.5
1877	57.8	30	66.9	....	....	....	....	97.7	153.2	224.4
1878	59.7	36	75.4†	....	....	....	....	97.8	175.5	231.6
1879	63.7	38.5	81.4	....	....	....	....	95.1	179.5	233.3
1880	65.8	34.9	75.7	....	....	....	....	96.7	245.9	249
1881	60.6	39.2	79	....	....	....	....	91.8	245.5	259.6
1882	62	41	73.7	....	....	....	....	78.4	246	265.5
1883	58.9	38.2	73.3	....	....	....	....	76.6	290	271.3
1884	52.1	34.5	73.5	....	....	....	....	75	270.7	239.5
1885	50.7	32.6	69	....	....	....	....	79.6	275.4	342.6
1886	49.6	29.7	65.8	....	....	....	....	71.9	267.1	385.8
1887	51.6	28.6	64.4	....	47.5	....	39.3	74.37	252.9	361.4
1888	46.7	26.3	65.4	42.4	76.5‡	....	29.7	80.88	224.5	372.2
1889	45.8	26.7	65.3	40.7	66.6	....	24.7	84.66	212.1	481.5
1890	43.8	26.7	65.4	43	73.4	96	27.3	75.22	212.4	503.6
1891	43.7	27.2	63.7	41.5	71.5	....	60.4	37.5	72.46	197.4
1892	44	27.9	61.6	44.6	69	....	53.1	36	76.73	201.2
1893	42.8	....	64.5	43.1	93.3	45.8	....	73.38	194.6	496
1894	40.9	....	64.8	....	92	54.3	....	80.40	182.4	511.4
1895	....	....	....	....	84.8	48.1	....	73.70	173.8	522.3

* In the case of Germany, 1873-74, 1874-75, and so on.
† Bosnia and Herzegovina were occupied in this year.
‡ Compulsory examination of prostitutes abandoned.

Among European armies Germany has by far the lowest rate. Russia and France come next, then Austria-Hungary, then the home army of Holland, then Italy. No continental army included in the above comparison has so high a rate as that shown by the United States army—and with us, moreover, the actual prevalence of venereal disease, through its concealment to a considerable extent by the men, is probably greater than the returns indicate. The small amount of these diseases in the army of Japan is noticeable.

In all the above armies, with the exception of those of Great Britain and the United States, some special regulations are in force for preventing the spread of venereal disease. These generally consist of weekly or fortnightly examination of the men for the detection of venereal disease, non-commissioned officers and married men being in some services exempted, together with registration and periodical examination of all women ascertained to be leading a life of prostitution. In the Italian army, regulations of this latter kind were relaxed in 1888.

In the case of most of the above armies the comparison may be carried into further details as follows:

MEAN ANNUAL ADMISSION RATE PER 1,000 FOR THREE YEARS, 1890-92.

	Germany.		France.		Russia.		Italy.		Dutch Troops.		British Troops.		United States.
	Home.	East Indies.	Home.	East Indies.	Home.	East Indies.	Home.	East Indies.	Home.	East Indies.	Home.	East Indies.	
Primary and secondary syphilis	5.5	9.0	13.1	13.9	14.8	47.0	101.7	175.4	16.83				
All other venereal diseases	21.8	34.9	29.9	57.4	55.0	408.6	101.9	262.6	57.96				

In these three years, then, the German army had scarcely more than one-thirty-second, and no European army had as much as one-eleventh, of the amount of syphilis which devastated the British troops in India. The Dutch troops in the East Indies, with an exceedingly high rate of venereal disease generally, did not suffer from syphilis one-third as much as did the white soldiers of the British Indian service; in which the rate has risen rapidly since the period included in the above comparison, while at the same time it has materially declined in the Dutch East Indies.

Syphilis.—Figures with regard to syphilis are of particular importance as directly bearing upon the military efficiency of an army. The disease, even at best, seriously undermines the constitution and renders the soldier at all times less resistant to invasion by acute disease and to its fatal termination. Even in many cases ultimately returned to duty, the men have frequently been in hospital for considerable periods and are prone to later manifestations from a temporarily latent infection. In such instances the state has not only paid the man for the time he was unfitted for duty, but receives back a doubtfully efficient soldier, extremely liable to break down under the fatigue and privations of field service.

The prevalence of constitutional syphilis in the United States army, during the past thirty years, has been as follows:

Year.	Admissions to hospital per 1,000 strength.	Year.	Admissions to hospital per 1,000 strength.
1868.....	105.0	1883.....	35.6
1869.....	97	1884.....	29.8
1870.....	69.4	1885.....	24.8
1871.....	67.7	1886.....	22.3
1872.....	60.3	1887.....	22.9
1873.....	55.7	1888.....	22.2
1874.....	47.3	1889.....	22
1875.....	60	1890.....	19.7
1876.....	59.6	1891.....	14.7
1877.....	50	1892.....	16
1878.....	47.7	1893.....	13.6
1879.....	44.3	1894.....	14.1
1880.....	49.4	1895.....	11.1
1881.....	47.6	1896.....	10.9
1882.....	40.1	1897.....	12

During the year 1898 the admissions for this cause were only 10 per thousand.

As is seen by the above figures, syphilis has apparently diminished, during the past thirty years, to one-tenth of the amount existing in 1868. While it is probable that a certain proportion of this reduction is due to a more accurate differentiation between the hard and soft venereal sores, the fact nevertheless remains that the reduction in syphilis has been not only great but steadily progressive.

In the various armies on the European continent the tendency appears to be rather toward a reduction than an increase of syphilitic infection; but in the British army at home, and particularly among the British troops in India, a serious feature of recent years has been the disproportionately great increase in the amount of primary and secondary forms of this disease. This growth was not great prior to 1884, when the Contagious Diseases Act was revoked, but since that time the advance has been so extensive and rapid as to be appalling. In the following tables the rapid development of syphilitic disease among the British troops in India is well shown; though figures for primary syphilis cannot be given for the period prior to 1887, as the hard chancre was not required to be differentiated from the non-syphilitic sore until that year, and then only in part:

SECONDARY SYPHILIS, RATIO OF ADMISSION PER 1,000 STRENGTH.

Bengal figures—	1877.....	22.1
1867.....	1878.....	22.1
1868.....	1879.....	24.1
1869.....	1880.....	23
1870.....	1881.....	23.1
1871.....	1882.....	23.2
1872.....	1883.....	23.5
1873.....	1884.....	24.4
All India—	Mean for years 1872-84.....	23.3
1872.....	1885.....	28.7
1873.....	1886.....	33.3
1874.....	1887.....	29.4
1875.....		
1876.....		

Year.	Primary syphilis.	Secondary syphilis.	Year.	Primary syphilis.	Secondary syphilis.
1887.....	75.5	29.4	1892.....	102.6	57.8
1888.....	72.1	32.4	1893.....	120.3	61.6
1889.....	134.3	51.2	1894.....	173	74.6
1890.....	135.6	66.3	1895.....	174.1	84.9
1891.....	104	60			

In 1893, of the British troops in India, venereal disease caused 466 admissions per thousand strength. No less than 2,619 men, or equivalent to more than two regiments, remained constantly in hospital throughout the year from this cause. Each case required treatment, on an average, for thirty days, and the average rate of non-efficiency for each British soldier in India was twelve days lost. The admissions for syphilis alone were 275 per thousand. Of 70,642 British soldiers serving in India on the 15th of July, 1894, 19,892, or 28 per cent., had been admitted to hospital for syphilis since their arrival in India; and only 26,247 men, or 37 per cent., had never suffered in or out of India from any venereal disease. Of the 13,000 soldiers who returned to England from India in 1894, over 60 per cent. are reported as having suffered from some form of venereal disease. In 1895, an average of 45 men per thousand, or 3,200 of a total force of 71,031 British soldiers in India, were constantly in hospital for venereal disease. But these figures by no means represent the total amount of inefficiency due to this cause. Many cases of secondary syphilis, in the British service, have in the last few years been treated by hypodermic injection of mercury without admission to hospital, and do not, therefore, figure in the returns; while a large number of men who have been discharged from hospital as nominally cured are fit for service only under peace conditions. Among 5,822 men detailed for field service with the Chitral relief force, 462, or nearly 8 per cent., had to be rejected, prior to military operations, for exist-

ing venereal infection; 279 more, or an additional 4.5 per cent., had subsequently to be transferred from the field hospitals to the base for the same cause. On a basis of 8 per cent. rejected before starting on field service, and 4.5 per cent. more subsequently invalidated for disease contracted before crossing the frontier, 8,880 men out of the total British Indian force of 71,031 would have to be put down as useless, from this one cause, for field operations. The report of the Departmental Committee says: "In 1895 venereal disease attacked the British troops in India to an unprecedented extent. Out of the enormous total of 522 cases of venereal per thousand troops, syphilis contributed nearly one-half, i.e., 259 cases



FIG. 1063.—Chart Illustrating the Admissions for Venereal Diseases, per 1,000 Strength, among British Troops in India, 1860-95. 1, All venereal diseases; 2, all venereal ulcers, primary; 3, primary syphilis, proper (1887-95 only); 4, secondary syphilis. (From report of Royal Sanitary Commission.)

per thousand, a figure many times greater than the highest of which we can find any record in the statistics of continental armies for recent years either at home or abroad. Venereal disease caused more than one-third the total amount of sickness from all causes, the constant disablement of 3,200 men out of a total force of 71,000 and a vast amount of partial disability and unfitness for any but routine duties." In the mountain campaign of 1897, it is stated that out of an actual strength of 16,600 British troops on active service, 492, or 3 per cent., were incapacitated during the campaign from venereal disease. The 16,600 troops in the field were drawn from a force of 21,439 men. Of these, 989 were rejected as unfit for active service on account of venereal disease. Hence 1,481, or nearly 7 per cent. of the total strength, were disqualified for service through this cause.

As illustrating the constantly increasing proportion of venereal diseases, among British troops in India, as compared with all affections of a non-venereal character, the following figures are of interest:

MEAN ADMISSION RATE FOR NON-VENEREAL DISEASES.

Year.	Per 1,000.	Ratio of venereal to non-venereal admission rate.	Year.	Per 1,000.	Ratio of venereal to non-venereal admission rate.
Bengal:			India:		
1860-64.....	1,606	18.2	1890.....	1,016	49.5
India:			1891.....	978	49.9
1872-76.....	1,177	17	1892.....	1,107	37
1887.....	1,009	35.8	1893.....	949	49.1
1888.....	1,010	36.8	1894.....	997	51.3
1889.....	1,017	47.3	1895.....	940	55.5

In this service, also, the present greater virulence of venereal disease, as compared with former periods, is attested by a longer average duration of treatment and by an increase in the numbers of invalidings and deaths due to venereal disease, as shown in the following table:

Year.	Average duration of each case of venereal disease. Days.	Ratio of men discharged for venereal disease to total number discharged. Per cent.	Ratio of deaths due to syphilis to total deaths. Per cent.
1887.....	25.95	3.0	0.1
1888.....	25.68	7.7	.4
1889.....	28.39	7.2	.5
1890.....	29.07	6.3	.6
1891.....	29.50	10.9	.3
1892.....	29.01	9.	.8
1893.....	29.82	3.7	.5
1894.....	30.77	10.3	.4
1895.....	31.49	15.8	1.5

As showing the extraordinary prevalence of syphilis in the British army as a whole it is of interest to note that, according to Longuet, this disease, in 1888, was fifteen times more prevalent among British than among French soldiers; while for the year 1896 the number of constantly sick from this cause, per thousand strength, was 14.22 in the British service and only 1.29 in the United States army.

It is probable that there is less syphilis among the soldiers of the various European nations, excluding England, than exists among the unmarried male civilians of the same class, since those which appear to be severely infected with constitutional disease are promptly discharged from the military service.

In the United States service, gonorrhœa, in contradiction to syphilis, has been steadily on the increase for the past fifteen years; thus showing that there has been no improvement in the morals of the United States soldiers as regards chastity. In 1885, the admission rate for this cause was 37.76 per thousand, while in 1897 the rate was 56.21 per thousand. For the year 1896 the number constantly sick from this cause in the British service was 9.15, as compared with 3.22 in the United States army for the same period. In 1890 the admissions for gonorrhœa, per thousand strength, were 27.9 for the French army.

In the latter service, according to Marvaud, venereal