

disease of all varieties has steadily diminished, as follows:

Period.	Admissions per 1,000 strength.
1862-69.....	106
1872-79.....	74
1880-88.....	55
1889-90.....	45

Causes Affecting the Prevalence of Venereal Disease among Soldiers.—The influence exerted by race upon the prevalence of venereal disease is undoubtedly not sufficiently appreciated by medical officers. A marked difference in this respect exists even among the various armies of Europe, where similar measures of prophylaxis against venereal infections are in vogue; but it is when the rates for Asiatic forces are compared with those for white troops serving under the same conditions that the greatest difference is observed—this being particularly the case with reference to syphilis. It is undoubtedly true that this latter disease, introduced only comparatively recently among the white and negro races, commits far greater ravages among those in which it has not long prevailed than among peoples who have acquired a comparative immunity to the affection transmitted through a syphilitic ancestry extending through scores of generations. It appears to be true, also, that certain races possess in large degree peculiar powers of resistance to gonorrhoeal infection; a quality long since demonstrated to exist in certain individuals of even the most susceptible peoples. The following table, taken from the report of the commission investigating the prevalence of venereal diseases among the British troops in India, well shows the great difference in the admission rates for Europeans and Asiatics in respect to venereal disease:

RATIO PER 1,000 STRENGTH.

Year.	DUTCH ARMY IN THE EAST INDIES.				ENGLISH ARMY IN INDIA.			
	European Troops.		Asiatic Troops.		British Troops.		Native Troops.	
	Syphilis.	All venereal diseases.	Syphilis.	All venereal diseases.	Syphilis.	All venereal diseases.	Syphilis.	All venereal diseases.
1890.....	53.9	483.9	11.0	248.0	201.9	503.6	18.2	41.1
1891.....	43	442	11.6	243.6	164	400.7	16.3	37.9
1892.....	44	440.9	9.7	225.5	160.4	409.9	17.1	39.6
1893.....	40	370	8	218	190.9	466	17.9	36.4
1894.....	37	416	7.8	191.8	247.6	511.4	17.7	32.3
Mean for 5 years	43.6	424.7	9.6	225	195	458.3	17.4	37.5

From this it is seen that, in the Dutch East Indies, Asiatic troops suffer from all venereal diseases slightly more than one-half as much, and from syphilis but about one-fourth as much, as do Europeans. In the British forces in India the native troops do not suffer from venereal disease one-twelfth as much, nor from syphilis one-eleventh as much, as the white troops. It is probable that in India caste feeling helps to deter the native soldier from consorting with the lowest and most dangerous class of prostitutes, but his great freedom from venereal disease can be explained only on the ground of racial insusceptibility. It is of interest to note that while the admission rate for British troops in India has more than doubled since 1881, among the native troops there has been no appreciable increase. An inference which may be legitimately drawn from this fact is that venereal disease has not increased to any remarkable extent among the loose women of the country generally, but that among the class with whom the British soldier associates there has been an increase out of all proportion to their numbers directly as a result of such relations; both the native women and the British soldiers presenting rates far in excess of their racial normals. As between whites and negroes the greater resistance to venereal infection lies with the former, probably through a longer exposure to the processes of immunization through heredity. Comparative figures

for these two classes in the United States service, for all venereal diseases, are as follows:

Year.	Admission rate per 1,000 strength.		Admissions per 1,000 strength for entire army.
	Whites.	Colored.	
1884.....	75.00	101.00	78.00
1885.....	80.00	76.00	80.00
1886.....	74.37
1887.....	72.13	95.98	74.37
1888.....	78.08	98.51	80.07
1889.....	84.86	82.75	84.66
1890.....	72.02	105.39	75.21
1891.....	70.64	80.18	72.46 *
1892.....	75.71	86.94	76.72 *
1893.....	74.94	49.00	73.08 *
1894.....	82.21	47.46	80.43 *
1895.....	75.57	52.26	73.72
1896.....	80.04	56.53	78.08
1897.....	81.80	114.60	84.59
Decade 1889-95.....	75.89	78.48	76.32 *

* Including Indian troops.

No satisfactory explanation of the sudden and marked reduction of the admission rates for the colored troops for the years 1893-96 can be offered. The experience of the British in the West Indies shows a higher percentage of venereal disease among colored troops than among white soldiers, syphilis being more than twice as common among the former as among the latter.

Another point well worthy of careful consideration is found in the fact that venereal infection, particularly of a syphilitic nature, appears to take place more certainly and to assume a much more severe character when relations are entered into between individuals of different racial characteristics than when both are of the same nationality; the aliens suffering in this respect to a greater degree than the resident population. It would almost seem as if there were localized varieties of venereal disease the product of special environment, to one of which a race might be relatively insusceptible, although at the same time falling an easy prey to the allied diseases prevailing among peoples of other countries. Troops quartered among an alien but not entirely hostile population almost invariably suffer worse in respect to venereal disease than those at home. In the Austrian army a large increase in such diseases followed the occupation of Bosnia-Herzegovina in 1878; the French troops in Algiers are more affected with venereal disease than those in France, and the same is true to a marked degree in the case of the British troops in India and those of the Dutch in Java. In speaking of the native troops stationed in Bengal, it has been said with respect to venereal diseases that the "Gurkhas, being foreigners, have higher rates than other native troops." These conditions, however, do not obtain when a command is moving or during campaign. The following tables well illustrate the points just advanced:

AMOUNT OF VENEREAL DISEASE AMONG FRENCH TROOPS IN FRANCE AND IN ALGERIA, COMPARED. (Admissions per 1,000 strength.)

Year.	TROOPS IN FRANCE.				FRENCH TROOPS IN ALGERIA.			
	Syphilis.	Chancere.	Gonorrhoea, etc.	Total.	Syphilis.	Chancere.	Gonorrhoea, etc.	Total.
1892.....	8.3	5.6	25.4	41.3	15.0	11.9	28.6	55.5
1893.....	9.4	5.5	25.3	39.5	15.0	12.1	32.5	60.6
1894.....	7.4	5.3	25.5	36.1	13.2	11.4	26.6	51.2

ADMISSIONS PER 1,000 STRENGTH, FOR THE DECADE 1887-96, FOR BRITISH TROOPS IN INDIA AND AT HOME STATIONS.

Disease.	British army on the home stations.	British army in India.
Primary syphilis.....	59.2	127.5
Secondary syphilis.....	35.9	62.2
Gonorrhoea.....	86.2	176.3

AMOUNT OF VENEREAL DISEASE AMONG THE DUTCH TROOPS AT HOME AND IN THE EAST INDIES COMPARED. (Admissions per 1,000 strength.)

Year.	TROOPS AT HOME.			ABROAD.					
	Syphilis.	Other venereal diseases.	Total.	European Troops.			Asiatic Troops.		
				Syphilis.	Other venereal diseases.	Total.	Syphilis.	Other venereal diseases.	Total.
1885.....	No returns for these years.			58.9	335.0	393.9	15.7	188.0	203.7
1886.....				60	411	471	15	143	158
1887.....				61.8	447.7	509.5	16.3	221	237.3
1888.....				53	384	437	13.9	203	215.9
1889.....				49.5	417.6	467.4	12.6	254	266.6
1890.....	13	83	96	53.9	430	483.9	11	237	248
1891.....	18	42.4	60.4	43	399	442	11.6	232	243.6
1892.....	13.4	39.7	53.1	44	396.9	440.9	9.7	213.8	223.5
1893.....	10.8	35	45.8	40	330	370	8	210	218
1894.....	13.3	41	54.3	37	379	416	7.8	184	191.8

Climate also appears to influence the prevalence of venereal disease, as well as its intensity and character; a tropical climate appearing to lower the vital resistance as regards invasion by venereal infection, to induce disease of unusually severe type, and to cause, in syphilis, the determination of superficial rather than deep-seated lesions. The amount of venereal disease also bears a close relation to the age of the soldiers; young men, and particularly young recruits, being especially liable to such disease. The proportion of married men among the troops naturally exerts a marked influence on the occurrence of such affections; figures for the British army in India, for the years 1867-72, showing that the percentage of admissions for venereal disease among married men was one-fiftieth of the percentage for the unmarried. As might have been expected, recent investigations in the British service in India show that cases of venereal disease are much less numerous among abstainers than among those habituated to the use of alcoholics. In the French army, during the year 1887, it was found that the amount of venereal disease for each garrison depended directly upon the amount of clandestine prostitution; the prevalence of these affections varying directly with the rigor with which surveillance of prostitutes is maintained. According to von Tophy, the relative venereal morbidity in the armies of Austria, Germany, France and Italy bears a close relationship to the prevalence of this class of diseases among the civilians in the district in which they are quartered, and hence all measures for the restriction of the disease should primarily be applied to the civil population. The amount of venereal disease also depends, according to Jeannel, upon the virulence of the type of the affection as found in foreign countries, and upon the facility of communication with the civil classes.

Measures Looking to the Diminution of Venereal Disease among Troops.—Since no systematic attempt has been officially made for this end, within the limits of the United States, through the control of prostitution in its relations to our military service—save at Memphis and Nashville, during the Civil War,—it is necessary to turn for data on this subject to the ample experience of other nations. In our small army, containing, as it has in the past, a large proportion of married soldiers and scattered in small detachments over a vast territory, the necessity for the restriction of venereal disease among troops through the control of prostitution has not been markedly manifest; and the execution of such restrictive measures would indeed have been impracticable at home stations. With the altered conditions and changed moral and social environment which have, however, resulted from recent acquisition of foreign territory and contact with alien races, the subject at once assumes a vast importance, believing, as we must, that the experience of the United States as regards the occurrence of venereal disease among troops will not be greatly different in this respect from that of England, France, Holland, and other countries holding tropical col-

onies. That we may profit in the future from their mistakes of the past, and treat this matter forcefully, practically and with an absence of sentiment, is much to be desired, but, in view of the varying political conditions controlling the policy of a republican form of government, this is a result which is scarcely to be anticipated.

On examining the figures given in the British Army Medical Department Report for 1883, as illustrating the influence of restrictive legislation in England upon the prevalence of venereal disease, the fact which chiefly attracts the attention is the enormous difference between the number of admissions for primary syphilis in the districts in which prostitution was regulated as compared with the admissions in the stations not under the Contagious Diseases act. In the former the average annual rate for a period of thirteen years was 50 per thousand; in the latter the admission rate was 118 per thousand.

The following table gives the total admissions for primary syphilis and the average strength:

AVERAGE STRENGTH AND TOTAL ADMISSIONS FOR PRIMARY SYPHILIS, 1870-82.

Fourteen stations under the act.		Fourteen stations not under the act.	
Average strength.....	47.394	Average strength.....	19.218
Total admissions.....	31,105	Total admissions.....	29,582

If these figures be compared, it is observed that if in the subjected stations the ratio of admissions had been the same as for those not under the act, the total admissions for primary syphilis would have been 72,952. It is thus obvious that 41,848 men were prevented from contracting the worst form of venereal disease, in this one group of stations, owing to the enforcement of the provisions of the Contagious Diseases act. The number constantly in hospital for primary syphilis was only 3.97 per thousand in the group under the act, while in the group in which regulations were not in force it was 9.16 per thousand. The actual number constantly in hospital in the subjected group was 188, but if it were in the same proportion as in the group not under the act, the amount would have been 434; it is therefore evident that there was a daily saving of 246 men from being sick in hospital with primary syphilis. In May, 1883, the act was practically done away with, the compulsory examination of prostitutes having then ceased; and the following tables are of interest as showing the disastrous results of interfering with such an essential regulation:

CONSTANTLY IN HOSPITAL PER 1,000 STRENGTH, PRIMARY SYPHILIS.

Year or Period.	Group of stations under the act.	Group of stations not under the act.
1870-82.....	3.97	9.16
1883.....	8.66	15.81
1884.....	12.41	14.01

ADMISSIONS TO HOSPITAL PER 1,000 STRENGTH, PRIMARY SYPHILIS.

Year or Period.	Group of stations under the act.	Group of stations not under the act.
1870-82.....	50	118
1883.....	110	188
1884.....	138	160

Browning has compared the admissions for primary syphilis, in the year 1875, at Chatham-Sheerness and London, one subjected to, and the other not under, the act; the average strength of each being about 4,000 men and the places not far apart. For the former station the admissions for this cause were only 17 per thousand for the period mentioned, while for London the admissions were 187 per thousand. Before the act came into force the admissions at Chatham-Sheerness were 94 per thousand (average of 1860-66). From 1867 to 1882 the rate was only 49 per thousand. On abolishing the compulsory examination of

prostitutes the ratio for primary syphilis rose, in 1884, to 141 per thousand. The average for London for 1867 to 1882, not under the act, was 181 per thousand.

The effect of the Contagious Diseases act in the United Kingdom in the number of admissions for gonorrhoea was not so marked as in the case of primary syphilis; the ratio of admissions for this cause was 84 per thousand in the subjected group, while in the stations not under the act the ratio was 105 per thousand. It is computed, however, that the act prevented about 12,000 cases of gonorrhoea during the period 1870-82 at the fourteen stations where the regulations were in force.

Previous to 1885, in the British service in India, lock hospitals had been established for the treatment of women suffering from venereal diseases. All prostitutes living in cantonments were registered and subject to medical examination. In many cases special quarters were allotted to them in regimental or cantonment bazaars, and women evading the rules were subject to ejection from cantonments. In that year the Indian Government decided that a certain number of these lock hospitals should be closed, with a view to a comparison being made of the results at these stations and at protected stations. In 1887 the results obtained showed that there had been a marked and progressive increase of venereal disease at stations in which the lock hospitals had been closed, and the percentage of disease compared most unfavorably with the percentages at the stations at which these institutions had been maintained. The hospitals previously closed were directed to be re-opened, but in 1888 all control over prostitution in India was done away with by an act of Parliament. Since 1887, the last full year of the protective system, there has been an advance of primary venereal disease of 137 per cent., and of secondary disease of 188

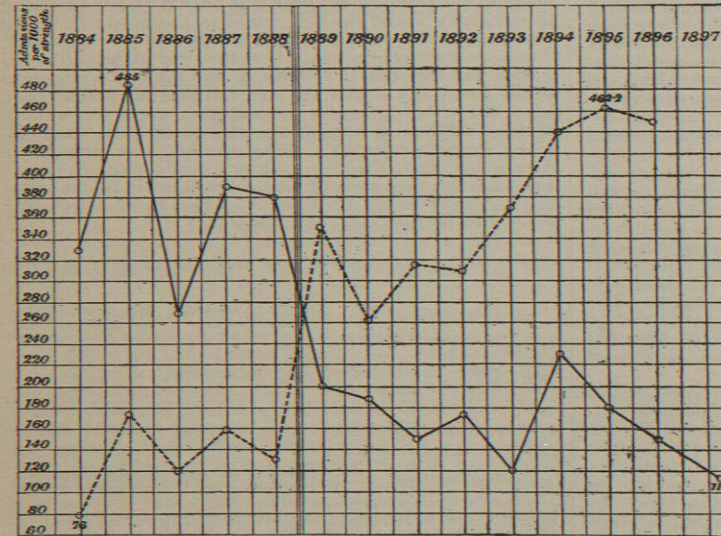


FIG. 1004.—Chart Showing the Influence of Laws Regulating Prostitution in the Rohilkhand District, India, and Cape Town, South Africa, upon the Admissions, per Thousand Strength, for Primary and Secondary Syphilis, from the British Troops Stationed at those Points. Black line, Cape Town; dotted line, Rohilkhand. Cape Town, without regulations, 1884-88, average admissions, 371; Rohilkhand, without regulations, 1889-97, average admissions, 370; Rohilkhand, with regulations, 1884-88, average admissions, 132; Cape Town, with regulations, 1889-97, average admissions, 168. (After Browning.)

per cent.; a progressive severity of cases expressed by an average stay in hospital of 31.5 days in 1895 as compared with 26 in 1887, and a temporary inefficiency of the force exemplified by the fact that in 1895, out of 68,331 men in cantonment 36,681 were in hospital for the above average period, of whom 22,702 were suffering from

syphilis. The number constantly inefficient from venereal disease was 3,164. The invaliding from this cause advanced from 1.13 per cent. under restrictive measures to 5 per cent. in the statistics for 1895. In regard to the prevalence of venereal disease in India in 1894-95, the army sanitary commission wrote: "The results of experience in India since 1885, when a number of lock hospitals were closed, and in subsequent years when all restrictive measures were gradually removed, show that a progressive increase of venereal diseases has taken place among the British troops serving in India; and there is, unfortunately, no assurance that this increase has reached its limits."

In the year 1889 a Contagious Diseases act was brought into force at Cape Town, South Africa, and in the same year all regulations for checking the spread of venereal disease were done away with in India; so, for a period of eight years it is possible to compare India, minus regulations, with Cape Town and an act in force. For the five years previous to the act coming into force at Cape Town, the average admissions for primary and secondary syphilis were 371 per thousand of strength. The Rohilkhand district of India, for the years 1889-96, had just the same proportion of admissions, viz., 370 per thousand, both stations not being under a Contagious Diseases act.

For the nine years (1889-97) during which the act was in force at Cape Town, the admissions gave an average of 178 per thousand; Rohilkhand, for a like number of years (1880-88), having nearly the same number of admissions, 134 per thousand, both stations being under a Contagious Diseases act. The accompanying chart graphically shows the influence of the acts upon the admissions for syphilis in these two stations; the heavy vertical lines marking the abolition of all restrictions in India, this

being followed by an immediate and extraordinary rise; and also showing the point at which unrestricted prostitution in Cape Town came under official control, a remarkable and permanent decrease resulting. To such a convincing argument of the value of controlled prostitution it would be almost superfluous to add.

Browning states that previous to the Contagious Diseases act coming into force at Cape Town, venereal diseases of all kinds were rampant, and the admissions to the military hospital from this cause appalling, they having reached 828 per thousand of strength. At no other region where British troops were stationed did the admissions reach such proportions. On comparing the admissions to hospital for venereal diseases for the quinquennial period before the act, and the years following the act, a vast difference in the total sick with venereal disease was apparent. The average for all forms of venereal disease for the years 1884-88 was 674 per thousand, while the average for the years 1889-97 was only 349. This was not a gradual fall which might be accounted for by an improvement in morals, but a sudden descent from 828 per thousand in 1888 to 347 per thousand in 1889, and the rate is still decreasing. In 1896 it was only 216 per thousand.

In comparing the figures for all forms of venereal disease at Cape Town, it appears that not only has the number of venereal cases fallen since the act came into force, but of late years a large proportion of such affections consisted of milder complaints. These, before the act, constituted 34 per cent. of the total; for the eight years subsequent to the act they averaged 49 per cent. It is interesting to notice the great fall in the admissions for

constitutional syphilis. In 1888 the ratio for this disease was 209 per thousand, while in 1896 it was only 27 per thousand. The average rate for the quinquennial period 1884-88 was 137 per thousand, falling to 51 per thousand for the period 1889-97. The disease was rapidly increasing when no regulations were in force, but twelve months after the act was promulgated the number of attacks fell to what must be considered a satisfactory ratio under the circumstances, and, with the exception of the years 1892, 1894, and 1895, the figures were under 50 per thousand.

That the supervision and control of prostitution produce a beneficial effect on the general health of the troops at Cape Town is evident from comparing the total admissions per thousand of strength for all forms of disease, other than venereal disease, before the act, with the admissions after the act. For the five years previous to the act, the average annual rate for diseases other than venereal affections was 553 per thousand of strength, while for the years after the act (1889-97) the admissions were 502 per thousand, a fall of about 10 per cent.

Browning concludes that the Contagious Diseases act of the Cape of Good Hope has "been the means of preventing thousands of soldiers in the garrison at Cape Town from being incapacitated by venereal diseases," and that "the men who still contract such complaints suffer from a milder form than existed prior to the act coming into force." He believes that "the act is a humane one, relieving the sufferings of hundreds of prostitutes and also alleviating the distress of women who, though not strumpets, contract venereal disease."

In the province of Pinar del Rio, Cuba, during its recent occupation by United States troops, the following order was published and enforced: "Clandestine prostitution will not be tolerated. Prostitutes shall be registered. They shall live in such locations as are indicated. Each prostitute shall have a book. In this her name, age, nationality, and address shall be recorded. She shall be examined at least once a week by a physician, and the examining physician shall sign the book. This examination shall be good only for one week. Any prostitute doing business when her book is not signed to date shall be punished. She shall not change her residence without the permission of the sanitary inspector. The proprietors of houses of prostitution will be held accountable for the condition of the houses and of the inmates, also for the orderly conduct of those living in or visiting such houses. No liquor shall be sold, given away, or drunk in houses of prostitution. Each prostitute will be required to provide the means necessary for securing her own and her visitors' cleanliness. Cases of venereal disease must be at once reported to the health inspector. When venereal disease is traced to any particular person, such person will be subjected to punishment." As to the results which followed the enforcement of this order, Kneidler writes: "In connection with the matter of regulated prostitution, this command has been in Cuba three months and numbers three thousand men. These men have free access to the towns. I have not been able to find more than nine men who have contracted venereal disease in the Department of Pinar del Rio."

In the report concerning the sickness among the British troops composing the Dongola expeditionary force, in 1896, the chief medical officer says: "On first arriving at Wady Halfa there was some trouble found in checking clandestine prostitution. There were a large number of native women who were living just outside the English lines, and it was from these women that the men con-

tracted disease. There was a licensed brothel under supervision in the native town of Wady Halfa, and the women there were periodically examined. Very few cases of disease were contracted there. Stringent police

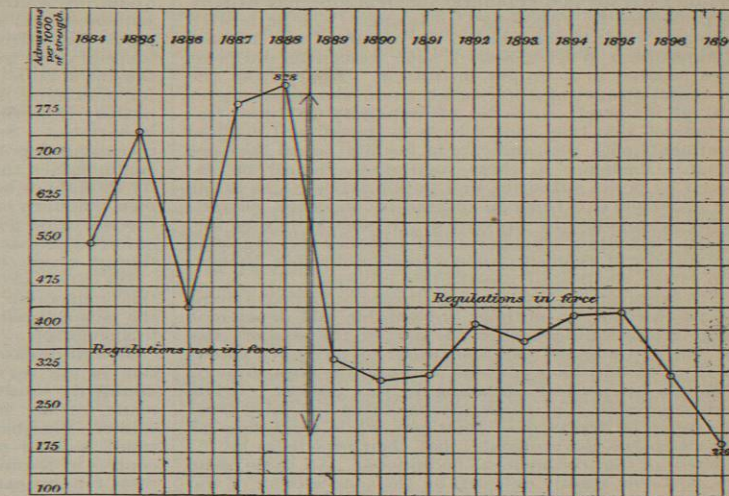


FIG. 1005.—Admissions for All Venereal Diseases, per Thousand Strength, among the British Troops at Cape Town, Before and After the Regulation and Official Control of Prostitution. (After Browning.)

precautions were taken, and a military patrol was placed outside the camp to prevent women from coming near, and this answered so effectively that after a few weeks the nuisance was almost stopped and there were hardly any admissions afterward for venereal."

For the period 1863-65 the Italian army had an admission rate for venereal disease of 120 per thousand; this falling in 1874-76, as the result of sanitary inspection and careful control of prostitution, to 66 per thousand.

Such facts as are given above may be greatly multiplied, and there can be no doubt that the intelligent regulation of prostitution results in a great decrease in venereal disease; this is to be accomplished by a system including careful registration and surveillance and frequent official medical inspection. The latter requirement is of the greatest importance, a fact of which the British Sanitary Commission in India was fully convinced when it reported: "We are satisfied from the evidence that the frequent examination of women is the most efficacious method of controlling the disease." These examinations should be made in private, and only in the presence of official examiners. The latter may be females who have been sufficiently trained for the intelligent discharge of this duty. Military garrisons attract to their vicinity lewd women of the lowest character, and largely subjects of venereal affections. Such being the case, great care should be taken to prevent loitering or importuning by this class or by their male associates within the limits of the command. Particularly in the tropics it is desirable that no females should be employed in, or in the immediate vicinity of, the barracks, since there is evidence that such women are frequently the source of aggravated forms of venereal disease. Clandestine prostitution should be prevented as furnishing a high rate of venereal disease. Colin noted that of 32 syphilitic French soldiers, 14 were infected by public prostitutes and 18 by women employed in so-called wine-shops. All public prostitutes should be segregated within well-defined limits as regards residence and public solicitation severely punished. Brief printed instructions should be furnished these women as to the dangers and prevalence of venereal dis-

ease and the importance of cleanliness as a measure of prophylaxis. Next to medical inspection, it is probable that care in maintaining cleanliness of the person is the most important factor in the prevention of venereal disease; it having been experimentally determined that infection from the non-syphilitic venereal sore may usually be prevented by a thorough cleansing of the parts with soap and water if done within ten minutes from the time of exposure. When diseased, such women should be at once isolated in a proper institution. Apart from the great importance of such action upon the general welfare, it is merely a matter of humanity to these unfortunates that they should have the benefits of medical treatment, with rest and care in hospital, until they are cured. Obedience to these regulations should be enforced by police authority, and public exposure, as far as the occurrence of venereal disease is concerned, should, as far as possible, be prevented. It should not be forgotten that when official control becomes too rigorous the number of avowed public women undergoes diminution, while clandestine prostitution increases.

The large amount of venereal disease occurring among troops—a condition entirely preventable and dependent upon vicious indulgences on the part of the soldier—has led many to suggest the institution of measures calculated to prevent its occurrence through the imposition of penalties upon those offending in this respect. It has been suggested that those incapacitated for duty from this cause be deprived of their pay while rendering no service to the government; that their privileges be restricted, or that confinement be imposed. All these plans are, however, readily defeated by the concealment of the disease; and the proper imposition of punishment for this cause could be made only with the assistance of a careful system of inspection. In the French service a month's imprisonment was at one time imposed upon every venereal case after discharge from hospital, but this led the men to conceal their diseased condition from the medical officers and place themselves in the hands of empirics, and the order was revoked. It is certainly subversive of discipline and unjust to the more continent class of men that they are obliged to perform the extra duty which results from the entrance into hospital, as a result of their own misconduct, of those by whom such work should rightfully have been done. Such a condition of affairs obviously puts a premium upon participation in vice, and it is much to be regretted that no satisfactory method for its punishment has as yet been devised. Where measures for the control of prostitution can be carried out, the soldiers affected with venereal disease should be required to state where and from whom it was contracted, with a view to the proper segregation and treatment of the women indicated. In the British service, however, during the existence of the cantonment laws, Welch states that some difficulty was experienced, in the attempt to identify the source of venereal infection, through the unwillingness of the soldiers to expose their co-partners in vice.

Many soldiers affected with venereal disease hesitate to declare its existence through the official publicity necessarily given to all cases, and through reluctance to have their names entered upon the records in connection with diseases of this character. As a result of such action the condition is, in many instances, aggravated either by being left without treatment or by the employment of patent medicines or unskilled advisers. Where venereal disease is concealed, the offender, if detected, should be severely punished; and where such practice is general the system of weekly inspection, as is customary in England and on the Continent, may have to be employed. This, in fact, has lately been carried out among certain of our regiments in the tropics. It should be thoroughly understood by the men that it is greatly to their interest, in the way of cure, to declare the existence of such a disease as soon as its appearance is noted. To further assist in the accomplishment of this object, it should be required that all non-commissioned officers knowing of the existence of cases of venereal disease in their troop or company

should be held responsible for the prompt appearance of the sick men before a medical officer.

It would certainly be of advantage to the military service if a short series of lectures by medical officers were required to be delivered annually for the purpose of acquainting soldiers with the grave and far-reaching consequences that are likely to result from immoral conduct, particularly from clandestine prostitution; the importance of early treatment and the dangers of concealment; the intractable character of syphilis and the necessity for prolonged medication; the dangers resulting to the healthy from the presence of concealed venereal disease in barracks. Such lectures would be of special value at recruiting depots. Chastity should be inculcated. The common idea that celibacy increases sickness and mortality should not be encouraged, since although many single men renounce marriage because of bad health or disease, this is a cause not met with in the army, where there is an enforced celibacy analogous to that of priests, who, although single, live as long as married men.

INSANITY AND SUICIDE.—These are best discussed in this connection, since they are largely dependent upon the personal habits of the soldier, particularly in relation to alcoholism.

Mental diseases have undergone a considerable diminution in our service during the past few years, this undoubtedly resulting from the greater provision officially made for the intellectual needs and recreation of the soldier, together with the withdrawal of troops from small isolated posts and their concentration near large centres of population. The following figures show the rates for this cause for a period of thirty years:

Year.	Admissions per 1,000 strength.	Year.	Admissions per 1,000 strength.	Year.	Admissions per 1,000 strength.
1868.....	1.7	1878.....	1.5	1888.....	1.7
1869.....	1.5	1879.....	1.9	1889.....	1.3
1870.....	2.1	1880.....	2.1	1890.....	1.3
1871.....	2.0	1881.....	2.5	1891.....	1.5
1872.....	2.4	1882.....	2.8	1892.....	1.9
1873.....	2.2	1883.....	3.0	1893.....	1.3
1874.....	1.8	1884.....	2.1	1894.....	.9
1875.....	2.2	1885.....	1.4	1895.....	.7
1876.....	1.4	1886.....	1.4	1896.....	.8
1877.....	1.6	1887.....	1.9	1897.....	.8

In contrast with the conditions prevailing in our service, as shown above, insanity would seem to be steadily on the increase in the French army. The figures given below refer to troops on home service and in Algeria, as sanitary statistics are not published regarding the garrisons at various other colonial stations:

Year.	Number of men invalidated for mental alienation.	Year.	Number of men invalidated for mental alienation.
1877.....	62	1884.....	73
1878.....	94	1885.....	120
1879.....	77	1886.....	112
1880.....	63	1887.....	130
1881.....	82	1888.....	150
1882.....	81	1889.....	158
1883.....	64	1890.....	192

In the British army the rates for mental disease for the ten years 1887-96 are given as follows:

Station.	Admissions per 1,000 strength.	Station.	Admissions per 1,000 strength.
England.....	1.2	Bermuda.....	1.5
Scotland.....	1.8	West Indies.....	.7
Ireland.....	1.6	Ceylon.....	1.3
Gibraltar.....	1.	China.....	1.2
Malta.....	1.7	Straits Settlements.....	1.5
Canada.....	.8	India.....	1.7

From the above figures it is seen that tropical service, contrary to what might be expected, does not apparently increase the liability to insanity.

The military spirit, which naturally cultivates indifference to life, is undoubtedly favorable to self-destruction, and does much to raise the rates for suicide in the military service above those prevailing in civil life. In addition to this feeling the soldier, constantly under the control of others, separated from home and friends and often occupying isolated and lonely stations, is more prone to melancholia and mental depression and the tendency toward suicide occurring therefrom. In the United States service, after the Civil War, the rate for suicide had increased greatly until within the last three years, when there was a sudden and great diminution. For various years the rates have been as follows:

Year.	Suicides per 1,000 strength.	Year.	Suicides per 1,000 strength.
1868.....	0.44	1889.....	0.83
1872.....	.51	1894.....	.79
1878.....	.63	1896.....	.43
1883.....	1.10	1897.....	.39

In 1898, a year of war, the rate greatly diminished, being only .04 per thousand strength. The suicides for the seven years 1887-93 inclusive amounted to a total of 134 cases: officers 7, and enlisted men 127. These were divided according to the branch of the service as follows:

Infantry.....	64
Cavalry.....	28
Artillery.....	15
Ordnance.....	1
Engineers.....	2
Medical and Hospital Corps.....	7
All others.....	13

Of these, 51 were under 30 years of age, 56 were between 30 and 40, and 27 were over 40. The methods of self-destruction employed were:

Gunshot.....	97
Poison.....	26
Drowning.....	4
Throat-cutting.....	3
Severing radial artery.....	1
Suffocation.....	1
Strangulation.....	1
Crushing by railroad train.....	1

In 37 instances the causes of the suicide were undetermined. In the others the causes were reported to be as follows:

Alcoholism.....	42
Despondency.....	12
Insanity.....	10
Love troubles.....	6
Temporary mental aberration.....	5
Fear of court martial.....	5
Domestic troubles.....	3
Fear of results of syphilis.....	3
Losses by gambling.....	2
Charge of theft.....	2
Jealousy.....	2
Homesickness.....	1
Nervous depression.....	1
Failure to obtain promotion.....	1
Tired of living.....	1
Distaste for service.....	1

For the four years 1894-97, of the 58 suicides committed, only 3 occurred in the first year of enlistment; thus corroborating the general impression that self-destruction prevails chiefly among old soldiers. It will be observed that in our army, recruited by voluntary enlistment and with a short term of service, the suicides from dislike of the service or other reasons depending upon a military life are much less frequent than in foreign armies maintained by compulsory enrolment.

According to Millard, the rate per thousand for suicide for the entire British army during the period 1852-56 was .155; for the period 1859-66 the rate was .26; in 1866-70 it was .443. In 1873 it had fallen to .25. For the British army on the home stations the rate was .23 in 1897, .21 in 1896, and .20 as an average for the preceding ten years. For stations outside the United Kingdom these latter rates were practically doubled. In most cases the causes of suicide were stated to be unknown. In others, they were variously reported as hypochondriasis, disappointment in love, excessive drinking, dislike

of the service, fear of punishment, insanity following diseases like malaria and typhoid fever, and "temporary insanity." The chief methods selected for self-destruction were, in order of preference, shooting, hanging, drowning and throat-cutting.

In the French army serving at the home stations, the rate for suicide, as given by Viry, was .47 for the period 1862-69, and .29 for the years 1872-90. In a study of 69 cases, 9 of which occurred in sergeants, Arnould divided the causes as follows:

Fear of punishment.....	21
Mental alienation from disease.....	13
Unknown.....	12
Disappointment in love.....	9
Hypochondriasis.....	8
Alcoholism.....	6

Viry states that only one-sixteenth of the suicides among French soldiers are attributed to dislike of the service; the greater number being due to the fear of punishment, brought about by neglect of duty and not by the severity of discipline. In Algeria and Tunis, for the period 1872-90, the suicide rate was .68 per thousand.

In the Prussian army, 1829-38, Baudin states that the suicides averaged .50 per thousand strength. From 1846 to 1863 the rate was .46; from 1867 to 1872 it was .60. For the entire German army, 1873-78, the rate was .61, and from 1878 to 1888 it was .67 per thousand. The Saxon army corps is said to have had an unusually high rate, the suicides for a long time averaging .92. The rate for suicides in the German army is nearly twice as great as that for the French service. In 1889-90 the proportional number of suicides, calculated for each thousand deaths from all causes, was as follows:

Under one year of service.....	87.7
From one to two years' service.....	30.9
From two to three years' service.....	25.9
From three to four years' service.....	8.6
Four years' service and upward.....	38.8

The causes of suicide may be roughly divided into one-third due to fear of punishment, one-half to mental diseases, and the remainder divided into disappointment from various causes and dislike of the service.

In the Austrian army the rate for self-destruction is extremely high, having been .97 in 1870 and .81 in 1873. For the former year, suicide was relatively four times more frequent in non-commissioned officers than in privates. Of late the mortality from suicide represents 1.5 per cent. of the general mortality, and this rate appears to be increasing. As in the German army, more than half the suicides occur during the first year of service; and mutilations of the index finger, middle finger and thumb of the right hand—to incapacitate for military service—are common. One-third of the suicides are ascribed to dislike for the service, one-third to fear of punishment and one-third to melancholia. About 70 per cent. are accomplished by shooting and 20 per cent. by hanging.

In the Italian army, in 1887, the rate for suicide, per thousand strength, was .30. In 1888 it was .45, and in 1889 it was .38. Three-fourths of the cases are officially attributed to causes foreign to the military service.

DISEASES INDUCED BY EXPOSURE.

BRONCHITIS.—This affection, in our army, is one of the most frequent causes whereby soldiers are rendered temporarily incapacitated for duty. Its mortality in young men of the military age, when occurring idiopathically, is, however, small. In the United States service the admissions for bronchitis, since the year 1860, have undergone a certain decrease during the period of peace, being as follows:

Period.	Admissions per 1,000 strength.
1861-66 (Civil War).....	92.94
1868-84.....	77.73
1885-94.....	68.67
1895-98.....	75.48
Year 1897.....	59.72
Year 1898 (war with Spain).....	100.65

Bronchitis may be brought about by a great variety of causes. There are those who regard it as largely due to the invasion of some specific micro-organism as yet undetermined; and any irritant gas or dust may produce it. In the military service, however, the evidence that an important part in its origination is played by exposure and cold, particularly the latter, is conclusive. Reports for our army have for many years shown its greatest prevalence to occur in the more northern military departments and posts; and the remarkable influence of cold weather in inducing this disease, as determined by months, is well shown in the accompanying diagram. It would seem to

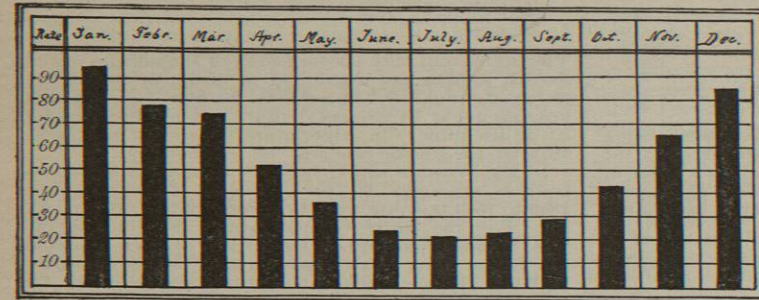


FIG. 1096.—Distribution of Cases of Bronchitis in the United States Army, by Months, per Thousand Strength, for the Decade 1875-1884.

be abundantly demonstrated that, for our army, idiopathic bronchitis chiefly results from exposure to cold; this interrupting the eliminative functions of the skin, whereby an increased duty is thrown on the pulmonary mucous membrane, thus inducing internal congestion. This hypothesis largely explains the commonly observed fact that outbreaks of considerable magnitude not infrequently occur among troops who are naturally exposed to the same meteorological and environmental conditions. Age is a factor of great importance in the occurrence of the disease, very young and very old soldiers being particularly liable to it. For the period 1890-96, figures showing the distribution of bronchitis, according to age, are as follows:

Age.	Admissions per 1,000 of each class.
19 years and under	132.08
20 to 24	83.70
25 to 29	60.66
30 to 34	57.15
35 to 39	53.98
40 to 44	60.52
45 to 49	61.39
50 to 54	70.75
55 to 59	88.00

The greater exposure incident to mounted service explains the higher rates, for the above period, given by cavalry, 76.08 per thousand strength, as compared with infantry, 63.18 per thousand strength. The same condition explains the greater frequency of this affection among troops in the field as compared with those in garrison; the proportion of cases during the year of war (1898) being almost twice as great as during the previous year of peace (1897). In many instances wetting of the person, where an early cutaneous reaction is not secured, is followed by bronchitis. In barracks, many cases appear to be directly associated with the use of an excessive quantity of water for the cleansing of floors, with the damp atmosphere thus produced.

In the prevention of idiopathic bronchitis the avoidance of surface chilling, whether from insufficient protection, draft or wetting, is extremely important. Wet clothing should be replaced by dry as soon as possible, the body being wiped and rubbed vigorously to restore capillary circulation. The barracks should be dry, warm, and

well ventilated without being drafty. The clothing issued should be of good quality and suited to the climate and season. More than that, its proper use should be enforced, and soldiers should not be allowed to go from warm barracks into a cold, damp atmosphere without donning additional protection or seeing that their outer garments are well buttoned up. On guard, especially in wet or foggy weather, it is important that the person be well protected. When men are wet and chilled from exposure the issue of hot soup or coffee is desirable. During a march in cold or wet weather, it would seem that mouth-breathers are more liable to be affected with bronchitis. As far as possible, duty which implies exposure to inclement weather should be avoided. There is no doubt that troops long in the field and habituated to exposure are less liable to contract bronchitis as a result of such exposure.

RHEUMATISM AND MYALGIA.—Under this heading are included, in our official nomenclature, all affections of a rheumatic nature not specifically diagnosed as rheumatic fever. Until 1884, rheumatic fever was also included in figures for rheumatism in general, and hence statistics for subacute and muscular rheumatism are not satisfactory prior to that year. These affections are responsible for a large amount of inefficiency and loss of service, notwithstanding the fact that many such cases, through their insignificance, receive treatment and are returned to duty without being taken up on sick report. On the other hand, it is probable that the rates for subacute rheumatism and myalgia are unduly raised by fraud, since these affections are the ones most frequently selected by malingerers for simulation. Since 1884 the admissions to sick report for these causes, per thousand strength, have been as follows:

Period.	Admissions.
Decade 1884-93	83.34
Year 1884	63.33
Year 1885	64.08
Year 1886	79.33
Year 1887	65.12
Year 1888	72.88

While the cause of these affections is unknown, they are markedly influenced in their frequency by moisture, and to a less degree by cold. They attain their maximum prevalence among troops in this country in early spring and late fall, coinciding with the periods of greatest rainfall. In their geographical distribution they are highest in those military departments in which the humidity is greatest; and in posts, in those in which damp casemates and old, badly constructed barracks are in use.

Among our troops the negro soldiers appear to be far more prone to affections of this character than the whites, the rates for these two classes being as follows:

Period.	Admissions per 1,000 white soldiers.	Admissions per 1,000 negro soldiers.
1884-93	79.68	121.60
1884	62.87	72.87
1885	61.40	95.07
1886	75.79	117.74
1887	61.80	100.74
1888	68.28	132.81

The great difference shown by the above figures is even more noteworthy when it is considered that the negro troops have, during the above period, been largely stationed in military departments in which, for white soldiers, the affections under consideration are of relatively infrequent occurrence. The figures for 1898, when both classes came under practically the same climatic influ-

ences, probably show very closely the greater susceptibility of the negro race. These diseases occur more frequently among young soldiers than among those of somewhat longer service, probably through greater carelessness with regard to exposure. In the class of very old soldiers the rate is, however, high.

In the prevention of subacute rheumatism and myalgia dryness of person and surroundings appears to be by far of the most importance. Wetting of the person by rain should, as far as possible, be avoided, and damp clothing and bedding should be at once removed and dried. Waterproof clothing, rendered impervious by the use of wool fat, should be issued; and all clothing should be sufficient and adapted to climate, season, and weather. Barracks should be warm, dry, and well ventilated, should have a sunny exposure, and should be located on a dry site. The use of casemates as quarters for troops is to be vigorously opposed. Where these affections largely prevail in a post or barrack, a general inspection of cellars and foundation walls is indicated.

ACUTE ARTICULAR RHEUMATISM.—Figures for the United States army with regard to the prevalence of rheumatism are not comparable for the period prior to 1884 with the period subsequent to that year. From 1861 to 1884 the official nomenclature included all forms of rheumatism under the same heading; but from 1884 to the present time the differentiation of rheumatic fever has been required. Since the year just named, the admission rates for acute articular rheumatism have been as follows:

Period.	Admissions per 1,000 strength.
1885-94	5.10
1895-98	5.26
Year 1897	4.36
Year 1898	7.03

These rates for acute articular rheumatism are much lower than those of nearly all foreign armies. In the German army the occurrence of this disease has been as follows:

Period.	Admissions per 1,000 strength.
1881-82 to 1885-86	9.2
1886-87 to 1890-91	9.8
1891-92 to 1895-96	8.9
Year 1895-96	7.7
Year 1896-97	6.5

In the Austrian army the rates for acute articular rheumatism appear to be higher than in any other service, during the past few years having attained the following high proportion:

Year.	Admissions per 1,000 strength.
1893	11.3
1894	12.2
1895	11.6
1896	10.4
1897	9.2

The true nature and origin of acute articular rheumatism are still unknown. Taking into consideration the many forms in which the disease manifests itself, it is certain that no neurotic theory and no theory of perverted metabolism can fully account for all the phenomena presented, many of which strongly suggest a microbial infection. No micro-organism has as yet been shown to be the cause of rheumatism; but the same is also true of such undoubtedly microbial diseases as measles, scarlet fever, whooping-cough, and syphilis. The strongly marked hereditary predisposition to rheumatism causes no difficulty, for the same fact is observed in tuberculosis. That exposure to cold and wet is often a factor in the causation of a rheumatic attack is analogous to what is often observed in pneumonia. Exposure, however, is a factor of such importance in the occurrence of rheumatism in the military service that, in default of accurate information as to its specific cause, the disease is most

conveniently classed with those induced by cold, wet, dampness, and exposure.

Rheumatism, in its prevalence, has a certain relation to season. Coustan showed that for the French army the amount of rheumatism was much greater during the winter months than during spring or summer; in autumn, rheumatism was only about one-third as prevalent as in winter. Local conditions, as shown by statistics for our army, appear to have far more influence upon the occurrence of rheumatism than do geographical considerations. Race exerts a certain influence; the admissions for this disease being lower for white troops than for colored troops. Age is a factor of some importance, the rates for the seven years 1890-96, per thousand strength, being as follows:

Age.	Admissions per 1,000 of each class.
19 years and under	8.61
20 to 24	5.71
25 to 29	4.11
30 to 34	4.06
35 to 39	4.26
40 to 44	5.01
45 to 49	5.58

There appears to be no great difference, with reference to the branch of service, as regards liability to rheumatism. Exhaustion and chilling—especially wetting—often appear to markedly favor the disease; yet it undoubtedly happens at times that regiments may be long exposed to damp, wet, cold, sudden and violent changes of temperature, and be obliged to sleep on wet ground with but scanty protection, yet no cases of acute rheumatism follow. The disease appears to be less prevalent in garrison than in the field; when it occurs in garrison it would seem that the causative agent finds its most favorable field for development in damp, illy drained barracks and casemates, and the same applies to damp bedding or clothing. Recurrences of rheumatism may be fresh infections, or they may possibly be caused by renewed activity on the part of germs lying quiescent in some part of the organism, as with tuberculosis. As the individual who has been infected with syphilis is always syphilitic, so it may be that the soldier who has once suffered from rheumatism may be permanently rheumatic, and temporary diminution of the powers of vital resistance by chilling may suffice to produce a second attack.

It is evident that, in the absence of knowledge as to the etiology of acute rheumatic fever, it is difficult to formulate any definite plan for its prevention. As a matter of the first importance in reducing the rates for rheumatism, all those once affected with the disease should be eliminated from the service. Much may be done toward preventing the development of rheumatic attacks among soldiers by insuring dry, sunny barracks; by frequent exposure of bedding and clothing to the sun; by the prompt changing of wet garments; and, in the field, by the location of camps on well-drained sites and the adoption of measures calculated to keep the men above the surface of the ground while asleep. A sufficiency of clothing, especially of woollen material, is of importance.

AFFECTIONS DEPENDING ON EXTREMES OF TEMPERATURE.

INSOLATION.—Sunstroke is one of the most serious calamities that may overtake troops in the tropics; and prostration and the extinction of vitality by extreme heat are also common in temperate climates during the heated period. Military history is full of instances of the disastrous effect of sunstroke. It is reported by Morehead that in India, in 1858, the Seventy-first Regiment lost 89 men by death from insolation between the 5th of May and the 15th of August. The frequency of sunstroke among the British troops in India was very great when the soldier carried the same weight and wore the same clothing as in England, but became much rarer when special modifications were adopted for tropical service. In the expedition of General Bugeaud in Algeria more than 200 men