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NAVAL WAR COLLEGE  
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SEP 14 1910

THE SCOPE OF HYGIENE IN  
THE ADMINISTRATION OF THE FLEET.

1910  
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Keeping in mind the request of the President of the War College, that I should address you upon some of the higher questions of Naval Hygiene, as affecting the efficiency of the fleet, I shall bring to your attention today, certain broad general aspects of this science, and more especially its relation to the prevention of certain diseases that figure prominently in naval statistics.

I shall point out that these diseases not only create a high degree of non-effectiveness and invalidism, assuming thereby great economic importance to the Government, but also that they damage efficiency to a degree that may even affect the preparedness of the fleet for war, should we long neglect to adopt appropriate measures of limitation or prevention.

It will also be my purpose to indicate in a general manner wherein an application and enforcement, in the fleet, of certain basic principles of naval hygiene and prophylaxis will enhance efficiency.

It is the function of naval hygiene to secure as high a degree of freedom from disease as is consistent with conditions existing at sea on naval vessels, realizing always that hygienic perfection and complete freedom from disease is unattainable, owing to the very nature and structure of a ship and of the element in which it floats. It should also be remembered that the unit with which we are dealing, namely, a naval vessel, is constructed primarily for war, and that between the exigencies of war and the requirements of hygiene, there will always exist, in many situations, a conflict that is irreconcilable. It is fully appreciated that in any final adjustment of conflicting interests affecting this unit, the question of how best to overcome the enemy must prevail.

In these days of keen competition, especially in matters naval and military, other things being equal, a slight variation from the normal in the health of the command, a slight

superiority in mental, moral or physical vigor on the part of one contestant may well turn the scale of battle in his favor. So it behooves us to strive in matters hygienic for just as high an ideal as possible, having due regard to the demands of military efficiency, for the exercise of which the navy exists. The disease rate of a ship, other things being equal, should be an index of her efficiency, and it may be assumed that a high or abnormal sick rate in any ship compared with the sick rates in similar types of ships, and under similar conditions, constitutes a lowered efficiency and affects the value of the fleet as a whole. \* ( Looking to its correction, such a condition <sup>i</sup> on any ship should be made the subject of investigation. To arouse general interest in this matter, it might be well to inaugurate a system of competition in sick rates, such as is in vogue at the present time with respect to gunnery and economy of coal consumption. )

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\* "All repairs necessary to ensure efficiency or to preserve the health of the personnel will be regarded as urgent." (Atlantic Fleet Reg. 1910, Art. 7.)

You will note that in speaking of an efficiency based on freedom from disease, I have spoken of sick rates rather than death rates. Given a diminution of disease it follows that there would be a much decreased death rate, but as a matter of fact, the controlling factor in any military command, is a disease rate, and not a death rate, as activity is less interfered with by diseases causing a comparatively sudden death than by diseases that disable completely and continue for a comparatively long period. Ten deaths from an acute disease like yellow fever is less disabling to a naval or military command, than a similar number of cases of dysentery or typhoid fever.

" The reason is that the care of the sick, particularly of the seriously sick, is a greater drain upon the resources of the living and is especially to be deprecated because of its interference with mobility.....fatalities only represent physical capital lost, which recruits may replace; whereas substitution for the man who is ill, whether present or absent, cannot well occur until his case terminates one way or the other."<sup>I.</sup>

Apart from the immediate question of military efficiency, the importance of disease from an economic aspect should not be overlooked. Even in a peace status, the cost of preventable disease is a heavy drain on a Government's resources and every case of disease may create an obligation against Government in the direction of pension that is beyond estimate. In a military service, therefore, loss from sickness should be regarded not only as a military loss but also as an economic loss, inasmuch as the Government is expending pay for which no return is made, not taking into account the cost of treatment involved and the possibility of subsequent pension.

As many writers have pointed out, in dealing with this question the essential basis of a navy's hygiene, is a knowledge of its diseases, and this knowledge, as well as an idea of the relative importance of diseases, must precede all intelligent effort directed toward their prevention. With the commander-in-chief or the division commander, this knowledge need not be

of a profoundly technical nature in order to prepare him for a successful administration of sanitary matters. He should know of course, the relative importance of diseases that damage the navy afloat, and he should also know the fundamental principles of sanitation and disease prevention or prophylaxis in order to assign a proper value to the hygienic recommendations made to him.

It is assumed that a commander-in-chief will naturally turn to his medical expert for advice in matters involving the purely technical details of hygiene, with which he may, of course, not be familiar, and therein lies the essence of <sup>the</sup> relation that a fleet surgeon should hold to a commander-in-chief, toward whom he should be "a patient as well as efficient and unbiased counsellor."

The question might here be ask<sup>ed</sup>, and with propriety in this connection, what means have been afforded a commander-in-chief in our service of acquiring the necessary fundamentals in hygiene? In the dim past of his career at the Naval

Academy, he may recall what may have been a very excellent course of lectures on hygiene, to which, however, he attached a very minor importance as compared with other subjects in the curriculum. Very often his basis of knowledge in this direction rests solely upon information derived from his personal experience, which may or may not have been sufficiently comprehensive to cover requirements. Self instruction in hygiene is very apt to be neglected, even by medical men, and there is no reason for expecting that a commander-in-chief with the multitude of duties thrust upon him by the ever-broadening demands of an expanding navy, will have the time, even if he has the inclination, to devote himself to the study of this subject.

The apparent lack of an elementary knowledge of hygiene and its failure of diffusion and application in the service is by no means peculiar, for similar deficiencies are only too evident in many of our shore communities.

The basis of instruction for fulfilling requirements,

is, I am convinced, a method of personal education, throughout an officers' career, by the medical officer, of whom it can only be hoped that he has the happy gift of knowing how to impress his hearers with the essentials of the subject, omitting the non-essential. ( It is anticipated that the day is not far distant when the instruction initiated at the Academy in the Department of Hygiene and Physiology will be carried on throughout the service in the manner above stated, and together with that information which comes from active personal experience at sea, will constitute valuable assets in hygienic knowledge, so that officer when an finally hoists his flag and faces the necessity of deciding questions of sanitation in the fleet, he will possess an appreciation of and a sympathy with this subject commensurate with requirements. )

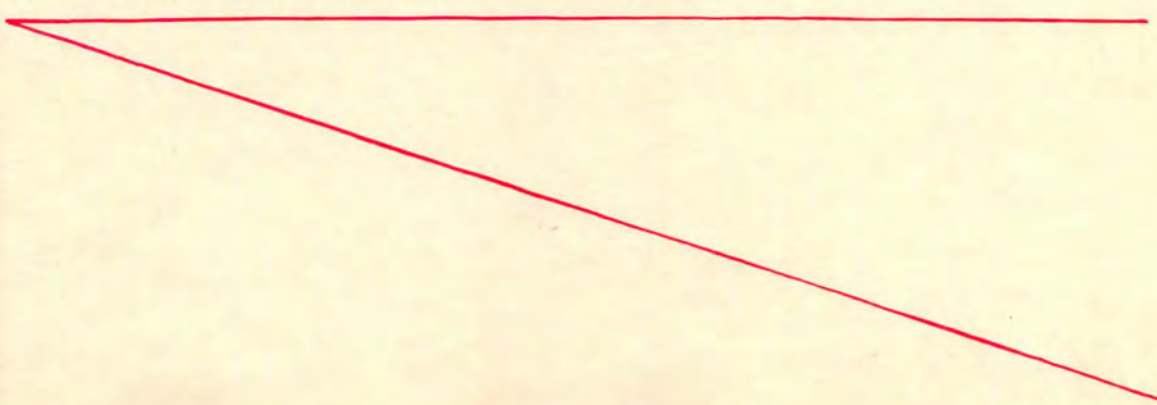
Turning to the Navy Regulations, we find many references, under the duties of the commander-in-chief, division commander and commanding officer, that serve to govern in questions of



naval hygiene and sanitation. Even outside the sections of the Regulations applying solely to medical officers, there are dozens of precautionary articles relating to matters of health. These Regulations would seem to be adequate, but scarcely informing as such, and the necessity of additional instruction, as outlined above, is self apparent.

To show the relative importance of diseases in the navy, I present this table, slightly modified from a similar one in Dr. Gatewood's Naval Hygiene.

If the total damage inflicted by all diseases in the Navy over a period of ten years be expressed by 100, this table may be considered as a list of the principal diseases arranged in order of their relative occurrence in accordance with the percentage of damage inflicted by each:



DAMAGE FROM DISEASE, U.S. NAVY.

1895-----1905. (*exc. 1898.*)

<u>No.</u>	<u>DISEASE</u>	<u>PERCENTAGE VALUE.</u>
1.	Venereal Diseases.....	22.08
2.	Tuberculosis.....	7.57
3.	Malarial Diseases.....	2.92
4.	Heart Diseases.....	2.45
5.	Rheumatic Fever.....	2.24
6.	Typhoid Fever.....	2.07
7.	Tonsillitis.....	1.95
8.	Chronic Rheumatism.....	1.94
9.	Middle Ear Disease.....	1.81
10.	Abscess.....	1.78
11.	Pneumonia.....	1.66
12.	Grip.....	1.50
13.	Itch.....	1.09
14.	Appendicitis.....	1.01
15.	Diphtheria.....	.89
16.	Eczema.....	.64
17.	Measles.....	.64
18.	Mumps.....	.63
19.	Boils.....	.49
20.	Dengue.....	.40
	* Cerebrospinal Fever.....	.22
	* Heat Exhaustion.....	.22
	* Beriberi.....	.18
	* Smallpox.....	.17
	* Scarlet Fever.....	.15
	* Cholera.....	.05
	* Yellow Fever.....	.05
	TOTAL.....	56.80
	Other Diseases.....	43.20
	All Diseases.....	100.00

*\* Included on account of general interest.  
(modified from Gatewood.)*

The striking fact revealed by this table in the pre-  
dominance assumed by the group of affections known as venereal  
diseases. You will note that the recorded cases of these affec-  
tions, in the period embraced in this table, ( i.e., 1895 to  
1905, inclusive, but not including 1898, a year of war ),  
caused over 22 percent. of the total damage from disease, and it  
is notorious that during that period not all cases were of  
record. When this latter fact is appreciated and it is further  
considered that this figure takes no account of the ultimate  
effects of venereal affections, it is a conservative estimate  
to state that they cause at least 25 percent. of all damage  
from disease in the service. While this condition of affairs  
excites amazement, it is by no means certain that it is peculiar  
to the navy and that a similar or even worse condition does not  
prevail in civil communities. There are, in fact, no very  
reliable statistics showing the prevalence of these diseases

among the corresponding classes in civil communities. ( Their prevalence there is thus indicated by a noted specialist:

" It is a conservative estimate that fully one eighth of all human disease and suffering comes from this source. Moreover, the incidence of these diseases falls most heavily upon the young, during the most active and productive period of life. It is a fact worthy of consideration that every year in this country 770,000 males reach the age of early maturity. It may be affirmed that under existing conditions at least 60 percent, or over 450,000 of these young men will sometime become infected with venereal disease, if the experience of the past is to be expected as a criterion of the future. These 450,000 infections, be it understood, represent the venereal morbidity incident to the male product in a single year. Each succeeding group of males who pass the sixteenth year furnishes its quota of victims, so that the total morbidity from this constantly accumulative growth forms an immense aggregate." <sup>3.</sup>

It is not my purpose to go into the ethical or moral ~~features~~ <sup>aspects</sup> of this subject, except in a general way, nor to enter into the controversial features of it, but since our service has, within the last year or two, begun to take a serious interest in this matter, and as measures of relief have actually

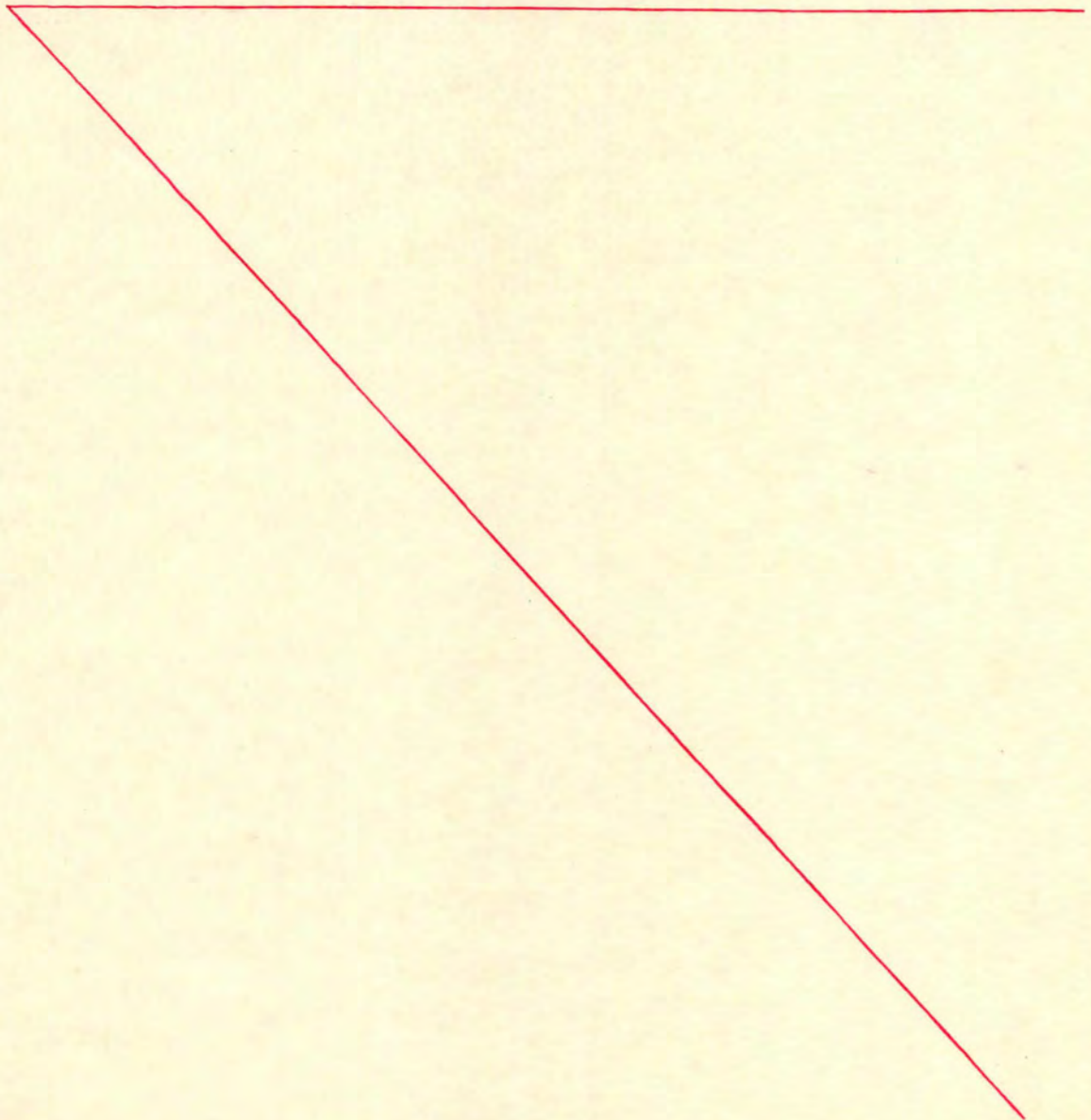
passed from the theoretical to the practical stage, it is deemed worthy of a liberal notice. \* Neither can we enter into a consideration of the legislative control of prostitution, which bears closely upon this subject and about which there is much serious difference of opinion. From a statistical point of view this control in civil communities of countries where exercised has given rather dubious results, but so far as the government services in these countries are concerned, a low incidence of venereal disease is undoubtedly due to a system of legislative control. "It is a significant fact that the two great Anglo-Saxon States, whose attitude in opposition to legislative control is similar, have a far higher incidence of venereal disease in their armies than have any other country."<sup>4.</sup>

It is usually assumed that there is a close connection between the prevalence of venereal diseases and the standard of cleanliness prevailing in any community, and in a general way they correspond, but notwithstanding a wider knowledge of these affections in recent years, more habitable ships, increased

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*See "Appendix" pp 1-10.*

habits of cleanliness and closer attention to personal hygiene on the part of the enlisted personnel, it is a noteworthy fact that the movement of venereal disease in the navy has been in the direction of increase rather than decrease. This may readily be seen in this table:



T A B L E 6.

V E N E R E A L      D I S E A S E S.

Admission ratio per 1000 of strength.

Year.

1895.....	86.19
1896.....	81.50
1897.....	80.90
1899.....	96.78
1900.....	95.13
1901.....	94.06
1902.....	92.31
1903.....	107.54
1904.....	120.50
1905.....	129.40
	<hr/>
Aggregate.....	103.77

*(Gatewood.)*

Thus we see an increasing prevalence, under vastly improved sanitary conditions, and the inference is justified that sanitation has had very little direct causative relation to these affections in the navy. As a matter of fact, they may be said to be mainly dependent upon conditions wholly beyond naval control.

The causes of this increased <sup>prevalence</sup> ~~incidence~~ in the navy are to be sought in certain changed conditions that have followed service expansion of recent years, and in the conditions obtaining in civil communities, where the existence of venereal diseases is ever an established fact, and where they occur usually under conditions of an uncertain supervision that permit of no reliable estimate being made as to their prevalence.

On examining the table it is seen that the increase followed the Spanish-American War, after which event, cruising beyond the limits of home ports became a more frequent practice,



and the exposure that liberty men underwent in consequence in certain West Indian and Asiatic ports, was doubtless <sup>largely</sup> responsible for this augmentation of cases.

It is recognized that naval authority can have no direct jurisdiction over the regulation of health matters in civil communities, but where it is shown that these diseases prevail in a wide-spread manner or virulent form in any port, it is within the province, and should be the duty, of naval authority to avoid giving liberty in that port, until evidence of better conditions is to be had. \* Unfortunately no civil community where liberty is given is ever entirely free from these diseases, and as men must be allowed liberty, it follows that a certain percentage will suffer exposure and become infected. Our problem consists then in making that percentage represent as far as possible the irreducible minimum.

It is important not to look upon a governments interest in the matter <sup>merely</sup> ~~solely~~ as a selfish one, namely, to decrease

\* Fleet Regulations (Atlantic) May 8, 1910. Art. 48. "Liberty": "When the sanitary and other conditions of the port do not render it inadvisable, commanding officers will grant liberty, etc. x x x."

disease and <sup>thereby</sup> increase efficiency, for in addition on its part a distinct obligation extends to every young man whom it enlists in its service to point out the dangers that surround him in this direction and to teach him how to avoid them. In speaking of this phase of the problem, a British writer remarks:

"And first I would point out that the State is responsible for placing the young soldier in a sexually abnormal condition, particularly abnormal considering the early marriage age of the class from which he comes. It is therefore not only to the advantage of the State, it is its manifest duty that it should do all in its power to prevent the young soldier from falling into these habits of promiscuous incontinence to which his position renders him liable. This duty, it can, of course carry out only through its officers." <sup>4a.</sup>

A very pertinent inquiry arises whether the service should not, in view of the very great economic and hygienic importance of these affections, fully acknowledge their existence and prevalence and proceed to the adoption of every possible means in its power to lessen their incidence and awaken a general interest in their abolition. I am very glad to state that within two

years much has been done in this direction and with very encouraging results.

Before proceeding further I should like to mention briefly the relation of alcoholism to these affections. Other conditions remaining the same, it is generally considered that increased temperance is associated with a decrease in venereal diseases and there is no gainsaying the influence of alcohol in this connection, but in our navy we have had, during the last decade, the unusual record of an increase of venereal disease associated with a decrease in alcoholism. An examination of Table 7 will show the progressive diminution of cases of alcoholism over the period mentioned. This anomaly may be explained on the one hand by the changed conditions succeeding the Spanish-American War, as mentioned above, where a largely increased area of contact with virulent sources of infection followed active cruising in other than home ports, and the decrease in alcoholism on the other hand by the influence

TABLE 7.

ALCOHOLISM

Admission ratio.

<u>Year.</u>	<u>per 1000.</u>
1895.....	14.2
1896.....	14.1
1897.....	11.9
1899.....	9.2
1900.....	10.4
1901.....	8.6
1902.....	7.9
1903.....	6.6
1904.....	6.4
1905.....	6.9
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Average.....	8.6

*(Gatenwood)*

brought to bear in the navy in the restriction of alcoholics, following a wide-spread temperance agitation.

It is a salient fact however, that the experience of most other countries shows that as temperance has increased venereal disease has steadily diminished. How far this movement may be expected to further influence this special class of diseases is by many considered a matter of doubt. A prominent British author states, with reference to this matter:

" Whether we may expect from this cause alone any further great reduction of venereal disease under present social conditions is to be doubted. Amongst every 1,000 men there will always be some whose passions are so unbridled that they will indulge in promiscuous connection at any risk, while there will be a larger number who will oscillate between discretion and promiscuity, according to their moral stability, this condition of moral stability depending largely upon their sobriety at the time. It is this last class which can be most largely affected by the temperance movement and as long as this continues to hold its present influence we may hope to see the total rate lowered....." *H.A.*

Official interest in the matter of the prevention of

venereal diseases in the service has been aroused by the fact that their prevalence was becoming a severe drain on the physical resources of the navy, not to mention the economic loss which they were attaining. As I have previously noted, the damage to the service has approximated 25% of the total damage from all diseases. The resulting economic loss is difficult to state, except approximately, and is largely a matter of estimate. ( Dr. Mink of our service has stated in a recent article in the Naval Medical Bulletin that with respect to syphilis alone, the loss of services is equivalent to having the average number of men constituting our total naval personnel, during the period from 1895 to 1905, entirely out of commission from this disease for about one and a half days each year, and that if we attempt to give this loss a money value, based on the assumption that each man is paid on the average \$1.00 a day, we find that \$34,295 yearly has been expended for which the Government has received no return and this sum takes no account

of the cost of medical treatment.) The attitude presented by officers in the service with regard to this question is unfortunately not a uniform one. A certain number ignore it altogether, preferring not to acknowledge its existence, and this attitude represents that of a large majority of well-meaning people in civil life; another group believes in aiming at results by a purely moral system of instruction; and the third category seek to combine with instruction certain prophylactic measures. There is nothing to be said in favor of the first method of dealing with this question. As for those who seek for a limitation of these diseases by moral instruction alone, it may be said that such instruction has a large sphere of influence for good, first in disseminating a knowledge of the danger of these affections and the far reaching consequences that result from them, and secondly in preaching that continence in entirely compatible with health. Unfortunately it is a fact that cannot be denied, that in spite of a full knowledge of the evil consequences that may result from promiscuous incontinence, a

large proportion of men are not influenced thereby and will suffer exposure in spite of all admonition and instruction. The question then arises whether we are not justified in supplying personal measures of prophylaxis to this latter class, after full warning has been given them, and with the express understanding that no measure of prophylaxis is infallible and that "the only reliable prophylactic measure is sexual purity"<sup>5.</sup>?

The argument against such a practice is that it appears to favor immorality but to this contention I can only say with a recent writer that "the practical problem is the prevention of disease and not the enforcement of moral precept."<sup>5a.</sup> Moreover, any such argument has been refuted by the experience of one of our fleets where this treatment has been in active use for over a year. While prophylaxis, as offering a certain security from infection, might be alleged to encourage incontinence, the results have indicated quite the opposite, and in the fleet above mentioned, the constantly increasing number of men who



avoid exposure and therefore the diminished number who are exposed, is a most noticeable and gratifying feature of recent reports.

The transcendent importance of this subject warrants the active and equal interest of every officer in the service, especially the line officer, medical officer and chaplain, involving as it does the moral and physical welfare of the enlisted men, and bearing directly on service efficiency, which it is our aim to enhance.

What measures then should be adopted to render the incidence of these diseases in our fleet as low as possible ?

1. The commander-in-chief may withhold liberty in any port where it has been determined upon reliable information, or through previous experience, that venereal diseases prevail unduly or in a virulent form. It is realized that it is often an extremely difficult matter to take this course, without assuming a burden of proof, often impossible to establish, and

the pressure and influence that is brought to bear in the direction of granting liberty in certain localities is often so great that it requires a well fortified argument to maintain a position which may be attacked on the one side by the interested community and on the other by a paternalistic central authority.

All praise is due the commander-in-chief, whose responsibility in such a position is manifest and whose autonomy should therefore be assured, who, fortified by the advice of his officers, holds **out** against all pressure and influence to expose his force to this and similar dangers in a community whose only thought may be a sordid gain !

2. By instituting routine instruction on this subject in the fleet, and establishing the procedure that all medical officers shall submit for approval a scheme of instruction on venereal diseases for inclusion in their lectures to officers and men on first aid, much good is accomplished, especially among the better class of men.

While it is realized that some men will not be deterred from venereal exposure by a full knowledge of its possible consequences, conveyed in this manner, a certain number will be, and if only the latter are influenced, systematic instruction is profitable and should be required. An essential feature of such instruction should aim at combatting the opinion prevailing, among otherwise intelligent individuals, that continence is incompatible with perfect health. (On this point the remarks of a recent writer are appropriate:

"The counsel(of continence) may be one of perfection, but it is therefore not one of impossibility" and " that in-  
continence, so far <sup>from</sup> being a sign of manliness and a character-  
istic to be proud of is a sign of weakness and a thing to be  
ashamed of." "Fortunately this opinion is already beginning to  
spread and we may hope that in time it may be considered no  
more manly to be incontinent than it is manly to get drunk.  
It is no question that the latter used once to be the general  
opinion of young men, and not so many years ago. The former  
opinion still survives, though it is less popular than it once  
used to be." "This then is the first part of a rational system

of prevention, to teach that continence is possible and healthful and that it may best be attained by leading an active, temperate, clean thinking and clean talking life. The second part is to teach the dangers of incontinence and the possibilities of ill-health that may result from a single false step. Thirdly and lastly, if in spite of all encouragement, assistance, advice and warning, the man persists in a course of life that renders him from time to time incapable of performing his duties, the powers of discipline may fairly be called in to punish him for so doing, as in the case of the analogous vice of drunkenness." "Human nature being what it is we must still have recourse to fear and the danger of possible ill consequences, to keep men in the narrow path and in the last resort the scourge of discipline to drive those who will neither lead nor be led." <sup>4c.</sup>

Quite another view of this question of venereal prophylaxis may be taken. It might well be held that the right of government is undisputed to apply any measure the purpose of which is to enable the enlisted man to perform the duties for which he enlisted, especially when it is considered that the loss of service due to venereal disease is the result of his

own indiscretion. <sup>TP</sup> Among other factors tending to diminish these diseases in the service is the policy, now quite general, of frequent liberties while in port, as well as the establishment of home ports and the consequent increase of family ties, and that of fostering athletics, and finally of the establishment in navy yards or their vicinity of institutions designed either to furnish meals to enlisted men or facilities for indoor amusement and access to a library and lecture hall. These latter have done, and will continue to do, much good. They furnish healthy distraction for liberty men and serve a high purpose in keeping them from brothels and grog shops.

An adequate list of running boats and especially a late evening boat for enlisted men, operates in the same favorable direction.

The bearing of healthy outdoor sports is also altogether in the direction of limiting vice of this sort, and these now find a substantial encouragement in our fleet.

" Nothing counteracts so strongly the irregularities of the imagination and sensual affections consequent upon a lazy sedentary life..... than bodily exertion and methodical, pleasant exercise. It develops force of character and energy, which are useful for all purposes in life, and ability to act; in short a well trained body is not compatible with drink or sexual excesses." 6.)

In past years before the present methods of dealing with venereal troubles was in vogue, a feeling existed among a large number of officers that the continued enforcement of the so-called "restricted list" worked a distinct harm, as tending to encourage concealment of disease, and that it still operates in many instances as a punishment there is no question. It is considered that it would be better policy to award no punishment unless disease is wilfully concealed, and the present navy regulations adequately cover this situation.

" It may be objected that in punishing a man for contracting a venereal disease, we are punishing him, not for committing a crime, but for being so unfortunate as to be found out. But this objection applies to all discipline. We do not punish a

man for drinking, but for being so unfortunate as not to be able to conceal the effects of drink. His comrade with a stronger head may drink much more and escape detection. So, too, one <sup>4d.</sup> may by incontinence expose himself repeatedly to the risk of infection and escape, while his unfortunate comrade falls a victim to his first false step. This cannot be helped."

Commencing with the year 1907 and continuing to date, a vigorous campaign against these diseases has been waged in our service, and with generally favorable results. This campaign has in the main been a concerted one on the part of all interested and has had the support of central naval authority. Briefly, it has consisted in the educational limitation of these diseases by "persistent and full instruction of the crew by the medical officers"<sup>7.</sup>, and this instruction has sought in addition to inculcate the principles of personal cleanliness, to preach that continence is compatible with health, and to impress upon men that while prophylactic treatment may be successful, no absolute prevention of venereal infection is possible; and

finally of a scheme of prophylactic treatment applied to those who admit exposure.

The statistics thus far collected show a most decided reduction in the development of venereal infection where these measures, including prophylaxis, have been enforced. Experience has shown that the value of voluntary resort to this treatment is doubtful and the results have not been so striking where the matter has been left optional with the men.

Disciplinary action, looking to the enforcement of this measure on board ship, has, of necessity, been left largely to the discretion of the commanding officer, but adequate disciplinary control is a most essential feature of success.

Preliminary reports in 1908 from a number of ships on the Asiatic Station indicated a greatly reduced incidence of these affections as compared with the previous year, amounting in some instances to 75%, and in subsequent reports this reduc-



tion has been as high as 95%. Success has been most apparent on the smaller vessels where the reduced size of liberty parties makes the technical difficulties of application much less. Another essential feature in the success of this treatment is the provision of an appropriate space ~~on a~~ board ship where the necessary privacy may be secured. The question of providing such a space as a regular feature in future ships should be given consideration.

Before proceeding further with this subject, I should like to invite attention to one variety of infection that stands apart, and which, in spite of the unusual concentration of individuals on board ship, achieves a greater prevalence in civil life, and that is the one represented by those who acquire venereal disease in an entirely innocent manner, through chance contact with infection in some way. Such cases are not as rare as is generally supposed, and should public sentiment not become sufficiently aroused with regard to these diseases, force a

recognition of their real danger and eventually devise methods of relief, it is feared that their continued increase in our civil communities will give rise to a constantly increasing number of cases innocently acquired, and it will become a matter of great personal importance to every one who travels, and who comes in contact with the traveling public, to know how to minimize this danger by attention to certain details of personal hygiene.

In civil communities the common public drinking cup is perhaps the most prolific source of danger, but there are numerous other ways in which contact with various objects may give rise to infection. In the service, except for the professional acquirement of syphilis, of which there have been not a few cases among our medical officers, this class of infection has not figured largely in our statistics, and the adoption of the so-called sanitary scuttle-butt attachment has done much to

minimize the danger. In addition, in the service, there is a closer medical supervision of affected individuals than is possible in civil life. There are, however, other possible sources of innocent infection ~~on~~<sup>ab</sup> board ship that should be borne in mind, such as may reside in a community of interest in mess gear, soap, towels, razors, pipes, plug tobacco, cigarettes and finally the barbers' implements and in hand instruments of the wind variety. Especially in this connection should the matter of the sterilization of the implements of the ships' barber be given consideration. Tattooing, once quite prevalent in the navy has now become relatively an unimportant source of danger, and vaccination, done solely by bovine lymph on individual points, has, in spite of the anti-vaccinationists claim to the contrary, practically no importance in this connection.

( With the idea of furnishing to the enlisted men all necessary information on this question, the Bureau of Medicine

and Surgery has recently prepared, in connection with the Department's promulgation of information regarding the prophylactic treatment, a series of circulars which are available for confidential distribution on board ship to members of the crew.)

In the interests of service welfare and efficiency, if not for humanitarian reasons, it is believed that a further vigorous but rational prosecution of the measures of instruction and prophylaxis outlined above should be further pursued in the service, and to confirm a belief in their efficacy by a concrete statement, it may be said that the most favorable results thus far secured from this treatment, if applied to the force afloat for a single year, say 1907, would have operated approximately to restore to the fleet for a full months operation, three battleships with a complement of 1,000 officers and men each.

As with all questions of disease prevention, either for

venereal disease, tuberculosis or any other, success is largely dependent upon the creation of a favorable public sentiment among those interested and especially among those charged with carrying out the work of the propaganda. It is particularly for the latter to see that such a sentiment is aroused. It should be understood that <sup>in</sup> this as in any other movements affecting the common weal, the men take their cue from the officers, and indifference on the part of the latter means indifference on the part of the former. Good results are especially dependent upon the favorable and interested attitude of the higher officers.

To render these diseases far less prominent in our service and perhaps in the near future force them to occupy a trivial place in our statistics, should be the aim and purpose of all, from the commander-in-chief down to the lowest rating.

In closing the consideration of this subject, I cannot do better than quote the following conclusions in a recent report of the Fleet Surgeon on the Asiatic Station,<sup>\*</sup> as to the efficacy of these measures, which conclusions were arrived at after a full years trial, being based upon the statistics obtained from over 70,000 liberties during the year 1909.

1. Venereal diseases can be almost entirely eliminated from the naval service by timely prophylactic treatment.
2. Since venereal diseases cause greater damage to efficiency and loss to the Government than any other, nothing should be permitted to stand in the way of the general adoption of this treatment.
3. Its efficient application is dependent upon departmental authorization and the cooperation and support of those in command and having disciplinary power.
4. With such support and authorization the medical officer is responsible for the existence of venereal disease and upon him must fall the opprobrium of its existence.

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*\* This lecture was written in May, 1910.*

TUBERCULOSIS.

Returning to our table, we see that the second most important cause of damage from disease in the navy is tuberculosis.

When we consider that there are about 1,250,000 cases of tuberculosis in the United States, and that of these about 110,000 die annually, it cannot be considered unusual to find a comparatively high prevalence of this disease reflected in naval statistics.

( If we examine the ratios of this disease in the navy for the past ten years, it will develop that there was a material increase in the number of cases following the service expansion of 1898 and succeeding years, but it is somewhat questionable, whether this increase represents a true increase as compared with former years, and whether it was not due to the active recruiting of young and susceptible material from centers

having a comparatively high rate of incidence of tuberculosis. It was also doubtless true that more cases were detected by medical officers about this time owing to increased facilities for making a careful microscopical examination of the sputum, and also perhaps on account of a greater care in making physical examinations.

In the former days of scurvy and typhus or ship fever, these diseases with tuberculosis and dysentery constituted the principal causes of death. " Today scurvy and typhus fever have no place in our statistics and dysentery excites relatively little attention, but tuberculosis, typhoid fever and pneumonia cause nearly 40% of all deaths in the navy from disease." <sup>5<sup>th</sup></sup> Hence as a disease of naval life, tuberculosis still holds an important place in our statistics and in view of its contagious nature, long course and relatively high mortality, it calls for a continuous and special effort to prevent first its admission to ships and secondly its prompt elimination when once



detected there. In the mortality rates of the service, deaths from this disease are only exceeded by deaths from drowning, and, in some years by those from burns.

The previously mentioned increase in the number of cases of tuberculosis occurring subsequent to the Spanish-American War, when service expansion was noticeable, naturally leads one to suspect a connection of this increased prevalence with recruits or recruiting. It has already been stated by another writer with respect to this disease in our service, that "tuberculosis is a disease that is frequently ascribed to causes prior to enlistment," and that "there is no doubt that the statistics of our service show an increasing number of cases and that the actual increase has been chiefly incident to service expansion." <sup>50.</sup>

This statement constitutes a rather important conclusion, for assuming that no cases of incipient or quiescent tuberculosis, or tuberculizable individuals were enlisted during that period, an entirely different view might be entertained, namely,

that conditions in the service had a distinct causative relation to its increase there.

No such conclusion, however, is warranted by the facts for when we examine the statistics bearing on the invalidating ratios of this disease, we find that they have tended to follow the general invalidating ratios of all the other diseases that are distinctly incident to service expansion and this correspondence indicates that the latter operates as the originating factor.)

While under ordinary conditions prevailing at sea <sup>i</sup>on our ships, the balance is in favor of a general good health, and a sea voyage has, especially in past years, been considered on the whole favorable to health and often advised for "weak lungs", the opposite view with respect to a developed tuberculosis has for some time prevailed, and it is now generally held that the conditions of ship life, especially <sup>i</sup>on a crowded man-of-war, are especially propitious for the further

progress of a tuberculous process that is once established, so that if an individual with active tuberculosis remains there for any length of time, the tendency is very distinctly not toward betterment. The humidity, close and intimate contact of one individual with another, absence of sunlight and limitation of air, as well as the restricted activity ~~on~~ a ship, represent conditions favorable to the advance of the tuberculous process when once implanted. It is to the amelioration of these conditions, that we must direct our efforts in the limitation of this disease in the service.

Firstly it is essential to prevent the introduction ~~on~~ aboard ship of the individual with latent or incipient tuberculosis, as well as the individual predisposed to the disease, and to achieve this requires that a high degree of judgement and care be exercised on the part of those charged with the examination and selection of recruits and above all on the part of those concerned with their maintenance on the receiving station before

x being sent aboard ship. The hygienic conditions prevailing <sup>on</sup> on a receiving ship or barracks are of paramount importance in this connection.

It has well been said that the health of a navy is primarily in the hands of the medical officers at the recruiting stations, and with no disease does this axiom apply with equal force. The selection of good material for the various ratings is just as important in preventing disease as is the maintenance in health of that material when selected. While we all realize how navies are endeavoring to evolve the best designs for ships, few appreciate that "the most indispensable physical mechanisms are the men themselves." Therefore, a high physical standard in recruiting should be uniformly and consistently maintained to prevent cases of this disease appearing in the service.

The spread of tuberculosis <sup>aboard ship</sup> ~~on shipboard~~ comprehends two things, first the presence of the active causative germ, the tubercle bacillus, and second the susceptible individual.

It is one of the major functions of hygiene to enhance as far as possible the vital resistance of the human machine to the implantation and growth of the specific cause of this disease. Much of the prophylaxis in tuberculosis, therefore, consists in providing ample and proper food, sunlight and an adequate amount of fresh air, a proper and uniform temperature, facilities for bathing, adequate clothing, and careful attention to certain details regarding the disposition of sputa.

There is no longer any question that this disease is contagious, both practically and technically, and that the active agent causing it is mainly spread through the medium of the expectorated material raised from the lungs, which, becoming dried, becomes readily disseminated by air currents. This latter method of spread being by far the most important one, a proper disposal of all expectorated material is indicated as the first essential preliminary in prophylaxis.

"The crux of the tuberculosis problem is prevention of

implantation. Without the tubercle bacillus, there can be no tuberculosis, and without implantation there can be no cases. There are many predisposing causes to tuberculosis which facilitate implantation and growth but they are secondary and in their greatest potency cannot produce the disease. On the other hand tubercle bacilli when scattered about freely may produce the disease without any of the predisposing causes.....

There are, no doubt, individuals who can resist the development of tuberculosis to a fatal termination under any amount of exposure, but in such cases implantation probably takes place and dies out. As there is only one essential cause of tuberculosis, so there is only one positive prevention for it. Prevention of implantation is positive; improvement of sanitation, sociological and financial conditions is problematic. When these are bad, they predispose to tuberculosis and their improvement may contribute to prevention, but cannot in itself prevent the disease!"

It is of extreme importance therefore, that the diagnosis of any case ~~on~~<sup>a</sup>board ship should be made as soon as possible. Once made, a transfer to hospital should be effected at the earliest practicable moment. ( The difficulties that ordinarily exist in determining just what cases are dangerous and when they become so, and the obstacles that attend the necessary degree of care of a contagious case of tuberculosis on board ship, without endangering others, are so great that there should be no hesitancy in getting rid of any suspicious case as soon as possible. Pending such transfer, any suspicious case should of course be isolated and kept under strict medical supervision.)

The prevention of one contagious disease on ship board is governed by much the same principles as the prevention of another. Many of the precautions before mentioned under venereal diseases apply equally well to tuberculosis and to many of the other contagious affections. In these diseases especially, the mouth secretions constitute a prominent source of danger; there

fore anything contaminated by them demands a close attention and a careful treatment to render it innocuous.

It has been shown by actual experiment, that a tubercular person often leaves tubercle bacilli on the cup from which he has drunk, and their presence on the common communion cup, and in the common cup of schools has been demonstrated beyond doubt in a number of instances.

Hence the sanitary scuttle-butt now quite generally introduced in the service exerts a high and important function in preventing the extension of this as well as other mouth-borne diseases ~~on~~board ship.

In this connection, it may be stated that a perfectly sanitary spittoon for the navy is yet to be devised. From a<sup>n</sup> hygienic point of view, however, there is little question that the usual wooden variety of spitkid now in general use is far from being ideal. The most radical treatment in the cleansing of a wooden utensil is entirely unsuccessful in rendering it



safe when once contaminated by infectious material, nor will the application of the usual chemical disinfectants accomplish with certainty a degree of harmlessness consistent with perfect safety in its subsequent use. A wooden surface, however well the grain may be filled, becomes roughened and absorbent under use and once soiled with tubercular sputum may be assumed to be a source of danger ever afterwards.

In another naval service the question of what constituted a proper spitkid or spittoon for ships use assumed, some years ago, a considerable importance in view of an investigation, which grew out of the agitation over a very material increase in tuberculosis in their navy and in connection with the means adopted to control its introduction and spread. That service presented *some years ago* ~~in the years 1904 - 1906~~, a very material and alarming increase of this disease compared with former years and among the hygienic measures projected was the adoption of an enamelled metal spittoon susceptible of thorough disinfection by ordinary means available aboard ship.

In this day of wood elimination from our ships, among the articles to be disposed of, it would appear most advisable to include that insanitary one, the present wooden spitkid.

Given appropriate receptacles in sufficient number on all the occupied decks of ships, then it should be made a punishable offense for expectoration to be deposited elsewhere.

It has long been known that a projection into surrounding space of minute particles of saliva occurs in talking and coughing and this fact has an immediate relation to the present berthing arrangements on board ship. So long as hammocks are used by the men for sleeping purposes and their number and arrangement in relation to berthing spaces remains what it is at present, it is realized that it will be a difficult problem either to increase the distance between sleeping men or to arrange hammocks so that the mouth secretions and the expired air of one man are not to influence his neighbors.

It has been suggested as an improvement over the present method

of berthing that hammocks be arranged like the spokes of a wheel, the heads of the sleeping men being at the periphery and the feet toward the center, but it is apparent that this arrangement is not feasible *in* the usual type of ship owing to considerations of space. However, the evolution of naval vessels is such that perhaps a more hygienic arrangement of hammock berths and spaces may be achieved in future types of ship.

There are ample instances of record, especially in cold weather on a closed gun deck where one case of either cold, tonsillitis, grippe, pneumonia, diphtheria, mumps, measles or other similar affections has, from proximity to others at night, proved the starting point of similar cases in the immediate neighborhood.

It follows that a plentiful supply of fresh air is an important prophylactic measure against tuberculosis, and, as a

rule, our ships are extremely well ventilated under the ordinary conditions of mild weather. Once a ship remains, however, in cold or wet weather, defects of ventilation becomed most apparent, first on the gun deck at night, where, cold weather prevailing, the natural inlets are closed and no fresh air is then available owing to their being no artificial supply, and again in other places in the ship where the artificial supply is eliminated by individuals closing louvers because they create cold draughts, not tolerated by the ordinary sleeping man, and finally on the berth deck forward, where, in the majority of ships, there is no air supply in weather that requires the unshipping of intake ventilators on the forecastle. One of these conditions is to be mitigated in future types of ships, where thermo-tanks will be installed to warm the cold air before its delivery to a compartment.

( The conditions of ventilation prevailing on our gun decks at night in the colder weather, where no artificial supply of air is available, either when at anchor or under way at sea, constitute at present a source of much preventable illness and a consequent lowered efficiency. Under the conditions above named originate many of the colds, sore throats and cases of tonsillitis that besiege the sick-bay at these seasons. The same criticism applies, with few exceptions, to the ventilation on the berth deck forward, when, in heavy weather at sea, the intakes on the forward deck, serving the fans that ventilate the berth deck compartments forward, are necessarily closed to prevent ingress of water. )

That these defects are not entirely incapable of remedy is evident, since in certain ships they do not exist and in future construction care should be taken to remedy these as far as possible.

A matter of considerable importance in the navy with regard to this disease is that connected with the question of a return to duty ~~by~~<sup>aboard</sup> ship of an officer or man, who has once been affected by undoubted tuberculosis. The experience of other navies, as well as our own, has determined the unwisdom of returning to active duty at sea any individual who has once had a frank tuberculosis of the lungs. This does not mean that the disease is incurable or that for the purposes of a shore existence under modified conditions a man may not lead a useful life, but that these conditions are not to be obtained on a vessel at sea must be granted, even considering all the comforts and ameliorations of modern ships. The policy is therefore a fixed one that " no man in the service clearly shown to have had tuberculosis should ever be returned to duty.....or discharged in any other way than by medical survey in order that the character of discharge may forever be a bar to reenlistment."

*S. d.*

The relation of nutrition, and character of food-supply, to tubercular infection has a two-fold bearing. It is a well known fact that any depreciated condition of the system pre-disposes to the lodgement of disease germs, vital resistance for the time being lowered, so that an ample nutrition by good food is a substantial bulwark against this invasion. Fortunately, in recent years our ration has not been lacking either in quality or quantity. There is at times perhaps, a failing in variety due to a lack of knowledge of proper methods of cooking but this defect is mainly dependent upon the incapacity of cooks, and a real deficiency of food material is rarely complained of. Improved methods of cooking, however, and the establishment of a cooking school for training cooks are doing much to remedy any defects of the character mentioned.

( It has been a matter of much agitation of late whether a tuberculous process of the lungs is invariably due to the inhalation of the tubercle bacillus, or whether this organism

may not be ingested in certain foods, reaching the lungs by the way of the alimentary canal, filtered out from the blood or lymphatic current. This is still a matter of dispute, as is also the relation of bovine tuberculosis to human infection. There is no question that the active bacilli of bovine tuberculosis may be found not infrequently in butter and milk, and especially with children it would seem that infection occasionally occurs through the medium of an infected milk supply, but with adults the inhalation theory of infection is still of acknowledged importance and may still be considered the prominent one.

So far as the navy is concerned, it is practically committed to the non-consumption of raw milk, owing to the precautions considered necessary to avoid the introduction of typhoid fever, but apart from this consideration, it is fast becoming a custom in many communities to require the sterilization of raw milk before use, unless the supply is subject to a rigid and detailed inspection and is derived from a tuberculosis-free herd.



Other foods that may be open to suspicion in the navy, as possible causes of tuberculosis such as meat, sausage, etc., usually reach the mess table in a thoroughly cooked state, so that practically they may be disregarded in this connection.)

To summarize the measures that are assumed to be of importance in limiting the occurrence of tuberculosis in the navy and which are indicated for adoption as far as is consistent with a successful military policy, the following are prominent:

1. When ships are being prepared for commission and are inspected as required under the Navy Regulations, the medical officer of the inspecting board should endeavor to determine that the living compartments of the ship have not been infected by tuberculous workmen. If in doubt as to any compartment, it should be subjected to appropriate disinfection before the ship is commissioned.

2. Recruits selected for sea-going ships should be carefully re-inspected at the receiving station before transfer to ship is

made, as well as when received aboard ship, with the idea of eliminating incipient or latent cases, or tuberculizable individuals, particular attention being given to the ratings whose duties require them to remain below decks a considerable portion of the time. These latter should possess a physique appropriate to their duties.

3. Cases of tuberculosis discovered ~~on~~ aboard ship should be carefully isolated and removed to hospital as soon as possible.

4. A man once declared tuberculous should never be returned to duty on ship board.

5. In instruction of men by medical officers, the nature of this disease and the manner of its spread, together with the measures of prevention, should be thoroughly explained.

6. Moral, as well as physical depression in the enlisted force should be combatted. During long periods at sea, or when away from home ports, encouragement of sports, sailing races, fishing, seine hauling, beach bathing, etc., do much to

enhance the physical condition of crews and minimize a moral discontent not uncommonly seen in recent recruits of a certain temperament.

7. The early treatment of colds and catarrhal affections should be instituted by medical officers and their limitation and prevention should be sought by proper ventilation in cold or wet weather, mainly by improving the gun deck air supply and berth deck supply forward. In addition, an improved berthing arrangement of hammocks should, if possible, be secured.

8. An adequate number of spitkids in all occupied spaces, of a type that will permit of absolute disinfection, should be provided.

9. The educational limitation of alcoholism, explaining its depressive influence on the system, notoriously predisposing to infection by this disease, and that excesses of any character similarly predispose to tuberculosis, should be taught in lectures to the men.

10. Moist cleaning of decks and side walls should be required

and the avoidance of dust by sweeping, insisted upon. A high relative humidity from flushing decks is also to be avoided. A routine system of steam disinfection of cleaning mops and swabs, as well as dish cloths should be secured. To these might be added, the more universal installation of dish-washing machinery and laundries.

11. The fireroom, engine<sup>r</sup>room and dynamo-room force and those ratings whose duties keep them below should be encouraged and required when off watch to remain on deck in the open air and sunlight as much as possible, and to take part in the daily exercise on the upper deck.

In closing I may state that various motives actuated the selection of these diseases as a basis upon which to frame certain hygienic measures of repression. First of all, they show greatest prevalence, hence inflict superior damage in the service; secondly, the hygienic principles of prophylaxis invoked against them, operate to equal advantage in the prevention of other diseases in the fleet; and lastly, inasmuch as measures of pro-

prevention against these two diseases are attaining a wide application in civil communities, it behooves the navy, on its part, to do all in its power toward this movement.

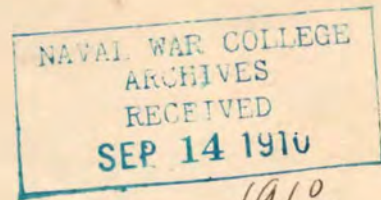
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"Appendix."



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CONFIDENTIAL CIRCULAR LETTER FOR THE INFORMATION OF COMMANDERS IN CHIEF, COMMANDING OFFICERS, AND MEDICAL OFFICERS.

NAVY DEPARTMENT, WASHINGTON, *January 9, 1909.*

The success attending the application of a prophylactic treatment for venereal diseases among the ships composing the Third Squadron, United States Pacific Fleet, has suggested the desirability of its extension to other vessels. The department has, therefore, approved the promulgation of full information on this subject to those concerned in the fleet, and the following instructions are issued and will be observed:

Complete reliance should not be placed in this measure alone, but in addition the educational limitation of these diseases should be sought by persistent and full instruction of the crew by the medical officer. The nature, frequency, and scope of this instruction must be left largely to the discretion of the commanding and medical officers, but it is important to educate men to an appreciation of the seriousness of this subject and make them fully understand the advantages of the treatment. Finally, they should be given to understand that, while the treatment is efficacious in the large majority of cases, no absolute prevention of venereal infection is possible. It is important to combat the prevailing belief to the contrary, that continence is entirely compatible with a condition of perfect health. Further instruction on this subject by circulars to be distributed to the men is desirable, and the Bureau of Medicine and Surgery has in course of preparation a series of circulars for issue to the medical department on board ship.

Commanding officers will cause the enlisted men of their commands to be systematically and fully instructed by the medical officer as to the desirability of the most careful personal cleanliness on their own part, and as to the purpose and limitations of the prophylactic treatment for venereal diseases. The ambition to maintain a clean ship, not only for their own sakes and for the sake of their shipmates, but to enable them to maintain and attain in their own persons the highest physical state of fitness for all the duties which may devolve upon them, is to be inculcated and fostered by every practical means, to the end that there may be aroused in the ship's company the pride and boast of being and maintaining a clean crew in a clean ship.

The commanding officer shall require that a sufficient and proper space, as may be most convenient, in the sick quarters or elsewhere, be provided for the administration of prophylactic treatment to such of the enlisted force as may desire it. As it is the intention of the department to call for a full report of the methods adopted to carry out this treatment and the results obtained, it is important for all officers concerned to keep a strict account of the operations and any methods adopted and their results.

A circular for the information of medical officers concerning prophylactic treatment is herewith enclosed. The Bureau of Medicine and Surgery will honor requisitions for such additional medical supplies as may be necessary to carry out this order.

TRUMAN H. NEWBERRY,  
*Secretary.*



United States Atlantic Fleet,  
U. S. S. Connecticut, Flagship,  
Navy Yard, New York, N.Y.,  
May 22, 1910.

*Copy*  
Sir:-

1. The prevalence of venereal diseases in the fleet is assuming such proportions as to constitute a factor in battle efficiency aside from the question of health and suffering. It is necessary to do all that is possible within the bounds of a wholesome propriety to diminish this suffering and loss of efficiency. Prophylaxis has proven to be of material value and it is only its mode of employment that is a question of expediency, it being most important that the moral and healthy-minded young men should not be subjected to measures which they might consider an indignity nor have the suggestion constantly borne in upon them that immorality is expected of all who go on liberty.

2. It is directed that the following measures be taken:

(a) In carrying out Article 176 of the Fleet Regulations, men will be instructed as to the nature of venereal disease, and emphasis laid upon the fact that indulgence is not necessary for health as many believe it to be. The effect and value of prophylaxis will be explained; and it will be pointed out that those who have been exposed may secure probable immunity by immediately reporting at the sick bay and taking the

treatment which is provided, and furthermore that those who do not avail themselves of this care and who develop a venereal disease are liable to disciplinary action in the same way as if their services had been lost for the like period of time through drunkenness or any other misconduct.

(b) Every case of venereal disease occurring will be admitted to the sick list and continued for at least one day so that it may appear on the morning sick report.

(c) Special report will be made to the Commanding Officer of such venereal cases as have not protected themselves by taking the treatment; and it is recommended that disciplinary action be taken in all such cases.

(d) All instances of concealment of venereal disease or treatment thereof by improper means will be promptly reported to the Commanding Officer in accordance with Articles 946 and 947 Navy Regulations.

(e) The following records will be kept, of which copies will be retained by the Senior Medical Officer for incorporation in a special yearly report which will be submitted as a part of the annual Sanitary Report:

The number of men going on liberty;  
The number reporting for prophylactic treatment;  
The number not so reporting;  
The number of primary venereal admissions;

The number of such admissions after the treatment;  
The percentage of admissions based on number going  
on liberty.

Respectfully,

SEATON SCHROEDER

Rear Admiral, U. S. Navy,  
Commander-in-Chief,  
United States Atlantic Fleet.

The Commanding Officer,