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MOBILIZATION ON THE MEXICAN BORDER

1916

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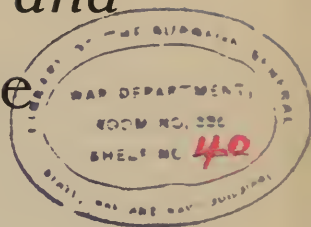
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Soldiers' Welfare and National Defense



Report upon Conditions:

National Guard and United States Army Troops

Mobilization at Mexican Border
in 1916

for

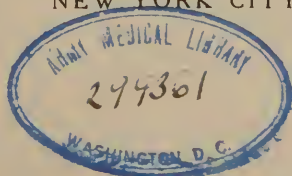
Soldiers' Welfare Committee
The National Civic Federation

by

Dr. Thomas Darlington

Delivered at Seventeenth Annual
Meeting, The National Civic Fed-
eration, Tuesday Morning, January 23,
1917, Hotel Astor, New York City

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NEW YORK CITY



Executive Section

Soldiers' Welfare Committee

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RALPH M. EASLEY,
MISS GERTRUDE BEEKS,

Purpose of the Committee

To make a first hand study of transportation, food supplies, camp sanitation and causes of disease; to acquaint the public with the progress made by the Government in the care of its soldiers since 1898; to report to the War Department any shortcomings, with recommendations for changes; and, if necessary, to bring to bear upon Congress the collective pressure of the relatives and friends of the soldiers to aid the War Department in securing legislation providing for betterments requisite for health and comfort.

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The National Civic Federation.

SANITARY AND HEALTH CONDITIONS IN THE MOBILIZATION ON THE MEXICAN BORDER.

Dr. Thomas Darlington, Former Health Commissioner of
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Foreword

At the time of the recent mobilization of troops on the Mexican border, The National Civic Federation organized a Soldiers' Welfare Committee for the purpose of making a first-hand study of camp sanitation, food and water supplies, transportation methods and causes of disease.

The investigation was undertaken in the interest of the families of the boys and men in the State militias and the United States army, who had gone to the border. It was desired, first, to be in a position to relieve the anxiety of parents and relatives of the soldiers if it should be found that the various published stories of hardships, poor food and sickness were untrue or exaggerated. Beyond this, the larger purposes of the undertaking were to acquaint the public with the progress which has been made by the government in the care of the soldiers, covering important improvements since 1898; to report to the War Department any shortcomings, with recommendations for changes; and if necessary, to bring to bear upon Congress the collective pressure of the relatives and friends of the soldiers, for the purpose of aiding the War Department to secure legislation providing for such betterments as are requisite for their health and comfort.

The effort was made with the approval and hearty co-operation of the War Department as well as the cordial endorsement of the American Red Cross Society. Arrangements were made with Dr. Thomas Darlington, former Health Commissioner of the City of New York, and Consulting Sanitarian of the Welfare Department

of The National Civic Federation, to make a study, on behalf of the committee, of conditions on the border.

In addition, Dr. E. E. Smith, Consulting Bacteriologist and Chemist for the Federation's Welfare Department, made a sanitary inspection of Camp Whitman, located in Dutchess County, New York State, and reported upon the situation with reference to mobilization of the National Guard. He covered such subjects as equipment, camp sanitation, disposition of refuse, cleanliness of grounds, tents, kitchens, food, water, latrines and shower-baths. His thorough and scientific work was of distinct value to the committee with reference to that and other mobilization camps.

Prior to Dr. Darlington's departure, the chairman of the committee called upon the Secretary of War in Washington and explained the objects of the proposed inspection. Secretary Baker expressed himself as entirely in accord with the idea, stating that he courted full investigation of everything that was going on at the border and would be glad to have information and suggestions from every source that might enable the Department to put into effect desirable changes in policies or methods. The Secretary furnished Dr. Darlington with a general letter of introduction and, in addition, the following specific letter to Major General Funston:

WAR DEPARTMENT.

WASHINGTON.

JULY 11, 1916.

MAJOR GENERAL FREDERICK FUNSTON,
Commanding General, Southern Department,
Fort Sam Houston, Texas.

MY DEAR GENERAL:—

The bearer of this letter, Dr. Thomas Darlington, is connected with The National Civic Federation. I have recently had a conference with Mr. Samuel Gompers and Mr. Ralph M. Easley, vice-president and chairman, respec-

tively, of the Executive Council of the National Civic Federation, and that organization has selected Dr. Darlington to go to the Mexican Border to study the situation as to the health of the enlisted men of the Army and the State Militia on duty there.

It is requested that you give to Dr. Darlington every possible assistance in making his investigation, a report of which will be made to The National Civic Federation, which in turn will forward it to me.

I would also appreciate it very much if you would address a letter to the commanding generals under you, requesting them to assist Dr. Darlington in securing the information he desires.

Any courtesy which is extended to Dr. Darlington will be appreciated.

Very respectfully,
(Signed) NEWTON D. BAKER,
Secretary of War.

These letters enabled Dr. Darlington to go wherever he wished within the lines and observe conditions without restriction.

On his way to the border Dr. Darlington had an interview in Washington with Brigadier General Henry G. Sharpe, Acting Quartermaster General. On June 29 General Sharpe addressed a letter to Mr. Ralph M. Easley, Chairman of the Executive Council of The National Civic Federation, which I am permitted to reproduce here, as indicating the attitude of the army officials towards the proposed inquiry:

WAR DEPARTMENT,
OFFICE OF THE QUARTERMASTER GENERAL OF
THE ARMY,
WASHINGTON.

JUNE 29, 1916.

MY DEAR MR. EASLEY:—

Your favor of the 28th instant is received, and I have read carefully all of the enclosures you forwarded.

Today I had a thorough and gratifying talk with Dr. Thomas Darlington, and feel that most satisfactory results will come from the co-operation of your Committee, and that the Army will have your earnest and considerate support.

If there is anything wrong, it should be corrected, but it seems so much better not to exploit the trouble in the

newspapers in a sensational way, which makes the sufferings of the mothers and others who are the real burden bearers in these days doubly keen under the circumstances. It would be altogether a better and more humane plan to take up in a cool and sensible way whatever is wrong and remedy it, and the Army is eager and solicitous of doing this, and would greatly appreciate your help to this end. It must be realized that in a time like the present and because of action on such a vast scale, it is impossible to wholly escape mistakes and hardships.

I suggested to Dr. Darlington that your Committee might investigate conditions down in Texas, or on the border, where we have had 30,000 troops for months, and get a first hand view and knowledge of affairs, and give us the benefit of your judgment, which will be sincerely appreciated and every effort be made to remedy whatever is found that needs correction.

Anything regarding the question of transportation will be under the control and direction of Mr. Atterbury's Committee, of which Mr. Fairfax Harrison is Chairman, and who will, I feel certain, be glad to consult with you and take any steps which may seem desirable.

After conferring with Dr. Darlington, you will be in possession of our view point and desires, and also the situation so far as we know it, and thus be able to proceed with an earnest, intelligent and patriotic purpose which, I am sure, inspires your association.

In conclusion, I beg to state that the co-operation of your Committee is most cordially welcomed and appreciated, and promises the happiest results for all concerned.

With the repeated expression of my appreciation and thanks, I am,

Cordially yours,

HENRY G. SHARPE,
Brigadier General, Q.M. Corps,
Acting Quartermaster General.

A number of telegrams and partial reports were received from Dr. Darlington during his visit to the border, which were given to the public through the press at the time. The full description of conditions as he found them, together with his conclusions as to needed improvements and changes in methods, appear in the general report herewith made public.

While on the border, Dr. Darlington addressed one of the regular meetings of the officers on the subject of "Fatigue", and was able from time to time to make recommendations in respect to matters within the scope of his investigation, all of which were well received and some of them put into effect.

After Dr. Darlington's return the chairman of the committee accompanied him to Washington, where they called upon Secretary Baker and the Surgeon General of the army. Dr. Darlington reported in substance what he had found at the border, but at the time he had not formulated his complete report. At the chairman's suggestion to the Secretary, and also in accordance with Dr. Darlington's preference, it was decided to postpone publication of the report until after the forthcoming election, in order that no opportunity might be afforded to either political party to make capital for campaign purposes of anything contained in the report whether favorable or unfavorable to conditions existing at the border.

The opportunity is now before the country to consider in a non-partisan spirit the matters treated in this report, and it is deemed that the time could not be more opportune, in view of the many and serious uncertainties in our foreign relations and the importance of profiting immediately by the mistakes of the past in planning for the future.

Many of the constructive suggestions in this report seem to the chairman of the committee to be of great significance, particularly with respect to the methods of transporting troops, co-operation with the medical department in the selection of camp sites, the handling and protection of food and other supplies, the establishment of permanent reservation training camps, simpler administrative methods and the doing away with much useless red tape, better co-operation between the several departments in the service, and closer relations between the army and the public.

Particularly, it seems to the chairman, attention should be given to Dr. Darlington's remarks on the subject of the national guard, the reasons for the short-

comings which developed in this branch of the service, and the injustice of any reflections upon the men of the rank and file in the guard, who at least cannot be charged with responsibility for mistakes due to faulty system or cumbersome administration. What must be the effect of recent experience upon the future of the national guard is one of the serious problems to be faced in the working out of an effective national military system.

Whatever may be the final consensus with regard to the specific recommendations in this report, they are entitled to serious consideration as the matured conclusions of an expert, not alone in matters of sanitation and health, but in public administration as well. The Soldiers' Welfare Committee expects within a short time to submit to the War Department, and perhaps to the congressional committees on military affairs, certain definite recommendations based largely upon this investigation and partly upon its own study of correlated aspects of the problem.

LOUIS B. SCHRAM.

Chairman Soldiers' Welfare Committee,
THE NATIONAL CIVIC FEDERATION,
New York City.

Soldiers' Welfare and National Defense

*Report to
Soldiers' Welfare Committee,
The National Civic Federation,
New York City,
By Doctor Thomas Darlington.*

NEW YORK, NOVEMBER 17, 1916.

Under instructions from your Committee and with the permission of the Secretary of War, I left New York on Thursday, July 13, 1916, to visit the various bodies of troops on the Mexican border and make an inspection of conditions affecting their general welfare, with particular reference to sanitation and health.

Itinerary

The principal points visited were Fort Sam Houston, at San Antonio, the New York Division at McAllen, Pharr, and Mission, other troops at Brownsville, Eagle Pass, Fort Bliss, and El Paso, the camps at Columbus, Douglas, Warren, Nogales, and General Pershing's command at Colonia Dublan.

There were some large camps at other places, Laredo, Mercedes and Llano Grande, and numerous small camps at other points, such as single companies at each of the Southern Pacific Railroad bridges. The entire situation of some of these small stations could be noted from the train in passing. All were practically alike and as a rule did not present the more serious problems which demanded all the time at my disposal at the larger camps. At all points I was accorded every courtesy by army and

guard officers, and full opportunity to study conditions in my own way.

Scope and Objects of the Investigation

The scope of the inquiry included transportation of troops, purity and wholesomeness of the water, food and other supplies, sanitary arrangements, the character of diseases to which the men might be subjected, provisions for recreation and other features of their environment in camp.

There were three principal objects in view in this undertaking:

First, to relieve as far as possible the minds of relatives and friends, particularly of parents, who might be worried about the care their sons were receiving in the army;

Second, to make suggestions which might immediately be helpful to those on the ground and to communicate with your Committee relative to good and bad conditions, for the purpose of better conserving the health of the men both in the militia and the regular army; and

Third, to make a final report, should I see anything of such nature as would suggest recommendations for the improvement of conditions and avoidance of mistakes in the future, not alone with reference to health but chiefly with that prime requisite in view.

General Impressions

With regard to the first object, the health of the men, I was able to a certain extent to assure friends and relatives that strenuous efforts were being made to prevent illness and that compared with former efforts the troops were receiving excellent care. Whatever criticisms I

have been obliged to offer in this report are not in the spirit of fault-finding but are intended to be constructive. When we consider that since the Spanish-American war little has been done towards preparation, until the outbreak of the great European war roused us to at least some realization of our need; when we remember that we have been unready for any war emergency and that the public has taken little interest in army affairs, I find much to praise in what was done on the border this summer. If it was not rightly done in many respects, the fault lies to a great extent with the general public because of lack of interest. Congress will do what the public demands. It will follow public opinion.

In furtherance of the second object of my trip I was able to make a number of suggestions from time to time to those with whom I came in contact, and these suggestions were well received. I also communicated, as you know, certain criticisms to the committee. I desire to make clear the fact that most of these criticisms applied to conditions during the first six weeks after the troops were ordered to the border. After that time many of the conditions, then reported upon, were corrected, and supplies urgently needed from the first were in hand and available for use.

Importance of Preparedness

But it is just during these first weeks in the transportation and care of troops unused to the hardships of camp life and field duty, that full preparation, advance planning and prompt executive action are most essential. An army of splendid human material may be rendered ineffective, if not almost wiped out, if it is thrown into the field at this critical period without proper food and water supply and with insanitary camp arrangements

such as breed disease upon the one hand and weaken the resistance of the men upon the other.

This is to my mind one of the chief arguments for thorough all-round preparedness. The health of the soldier is the first condition of his effectiveness as a fighting man. Strength, endurance and courage, the qualities most needed in the soldier, come only with good vigorous health. This is fully recognized by the army in its rules and regulations for the enlistment of a recruit. He is examined for every sort of defect and if found diseased or defective in any way he is rejected. Certainly the necessity of proper care, from the time of the first call to service, should be beyond argument when the army regulations themselves demand health and strength as the first essentials.

The soldier is, or should be, a high class man; he should be in the very best possible health, and we should conserve his health, not alone for the use which shall be made of him but because the care which is given to the soldier has a strong influence upon the enlistment of recruits. If we are careless of the lives of our young men who enlist, very few will come into the army, and we may be left without any adequate defensive force, unless we resort to conscription.

Lack of Public Confidence in the Military System

During my stay on the border I frequently heard it said that patriotism is dead. Patriotism is not dead, but there is a lack of confidence in the official supervision of military affairs. The general public is far better educated than formerly in sanitation, in health matters and in business methods. It is able to pass judgment upon the care given to soldiers, and is disposed to demand reasons for bad management. When the public has abso-

lute confidence that the life and health of the recruit are properly safeguarded there will be less trouble in securing universal training. It is largely up to the officers of the army to convince the public that they are capable of taking proper care of the men entrusted to them.

Constructive Suggestions

The third object of this investigation, as above stated, was to study the general situation with a view to making constructive suggestions for the better handling of similar problems in the future. The present report is devoted, therefore, to a description of some of the actual conditions as I saw them and a statement of recommended changes in methods, with the reasons why they seem to me important. Some of the minor recommendations will be found embodied with the accounts of conditions at the different camps, while the suggestions of a general nature form the concluding portion of the report. I have taken the liberty of including some matters not originally contemplated by your committee.

In connection with the various recommendations throughout the report, I have taken up in footnotes certain matters of hygiene and physiology, to indicate their vital necessity. It will be apparent to what extent these physiological principles for the care of the human body were observed in the care given the soldiers in the recent mobilization.

It should be understood that all the suggestions and recommendations in the report are my own and that your committee is not to be held responsible for them.

Review of Actual Conditions

Transportation of Troops

Those who have travelled abroad may have noticed that freight and other cars on the railroads have been

labelled for a certain number of cattle, of horses, or of men, and understand that they are for the transportation of troops. But what has been done abroad is not a criterion for what should be done in this country.

One reason why we cannot compare our transportation with that of Germany, for instance, is that the distances we are called upon to transport our troops are very much greater. If Germany had to send her troops the distance from New York to El Paso, they would land far beyond the confines of even her neighbors' territories. Besides, our knowledge of disease and of its causation has of late years been advancing rapidly, and we are a rich country and can afford to put into practice the things that we know will conserve the health of the soldiers.

How Were Our Troops Moved?

Many of the cars used were old, uncomfortable, unsightly and insanitary. Part of the troops were not loaded upon trains at the time appointed but were kept standing for hours in railroad yards and other inconvenient places, awaiting the making-up of the trains. The army regulations call for sleeping cars but they were not supplied. For much of the distance the troops were moved in day coaches, which necessitated their sitting up from one to six nights. Three men were assigned to each two seats. This made it necessary for one of these men on each side to endeavor to sleep in the narrow aisle, which of course was almost impossible. Moreover, some of the troops were moved by long and circuitous routes and were thus delayed in reaching their destinations. Whether the object of this was to give many roads a share in the transportation earnings or to put as many roads as possible to the test of handling emergency movements, the effect upon the men was equally bad. There was also great difficulty in

feeding the troops properly en route under these inadequate transportation methods. All this was the cause of considerable illness and possibly of some deaths.

Fatigue greatly lowers resistance to disease. In the transportation of some of the troops south, there were quite a few cases of pneumonia, notwithstanding it was summer. How did this occur? In all probability bacteria, which are in the mouth, cause pneumonia.¹ Among the troops the disease developed, partly because of lowered resistance due to fatigue induced by sitting up in cars and lack of proper rest. There was no reason why these men, travelling such distances, could not have been comfortably housed in sleeping cars so that their rest would not have been broken and that they would have arrived in good condition. It is also well known today that disease is spread not so much by clothes or by objects that have been touched by persons ill, as by body contact, particularly the mouth and its secretions, or by the hands; so that under no circumstances, when it is possible to do otherwise, should two soldiers sleep in the same berth. Had the transportation taken place in the winter instead of in the summer, there would probably have been an enormous number of cases of coryza, sore throat, influenza, pneumonia and measles, and probably many deaths.

(1) During one year of my service as Commissioner of Health of New York City, pneumonia was exceedingly prevalent, the death rate from that cause exceeding for the time the death rate of tuberculosis. The Board of Health appointed a commission of eminent physicians to investigate the subject. In the effort made to find how prevalent were the germs that caused the disease an examination was made of the mouths of students in a certain medical college, and also those of many other persons. It was then ascertained that the germs of pneumonia were found in seventy per cent. (70%) of the mouths, though only a certain percentage are capable of transmitting the disease. A study of the mouth may show not only the germs of pneumonia but many other disease-producing bacteria.

Care of the Troops upon Arrival

How did the soldiers fare when they arrived at their destination? What care was given them? As an illustration, let us take the care accorded to the New York division at McAllen, Pharr and Mission.

An army travels on water.² I was given to understand from the laboratory tests that the water supply at McAllen was wholesome. True it had (in the camp) a muddy and turbid appearance so that it was not attractive, thus lacking one of the desirable attributes of drinking water. It had to be piped from the town through the camp. For this purpose a very small pipe laid on the surface of the ground was used, so that the water became very warm. A portion of the pipe was so small in diameter that it was inadequate to supply the troops. The statement made to me was that no larger pipe could be secured, and certainly much of the larger pipe was

(2) *Drinking Water Supplies.*—How important are they? Water comprises two-thirds of the body weight. It enters into the composition of all of the tissues. It is the main ingredient of the fluids of the body and helps to maintain their proper degree of dilution. If there is insufficient water in the body all secretions are lessened and there is a change in the functional activity of the various organs. Taken with food it aids in absorption. Solution is one of the essential steps in digestion. Water carries away waste. It lessens fatigue. It lessens friction. It regulates the degree of temperature of the body. It acts as a distributor of heat and this helps to equalize the temperature. As water is of so great importance, it should be palatable so that a sufficient quantity shall be drunk. It should not be turbid, nor too warm. It must not be contaminated with sewage or intestinal discharges. It must not carry disease-making bacteria, nor worms nor other animal parasites. All containers must be kept clean and protected from dust. Someone has said that "an army travels on its belly." As a matter of fact, food is much less necessary than drink. One can go many days without food but only a few hours without water. Let us change the aphorism. An army travels and camps on water.

not secured for many weeks, a portion of the camp being entirely without water part of the time. In the meantime, those who were interested in the town were making large sums of money by the sale of drinks. Later on, a portion of the artillery and cavalry were obliged to drive wells at their own expense.

As water is necessary for life, and as the rules and regulations of the army call for washing of hands,³ brushing of teeth⁴ and for bathing, is it not possible that from New Orleans, Birmingham, St. Louis or even Pittsburgh, pipe could have been obtained? Money is not a factor to be reckoned when the lives of a large number of our soldiers are at stake. When I returned to McAllen just one month after making the observations above outlined, the supply of water was still short; and

(3) *Cleanliness of the Hands.*—Of especial importance is the cleanliness of the hands. They should always be washed before meals, not only because of the unappetizing effect of eating with soiled hands, but also because the cleaning of the hands reduces the number of bacteria and disease germs. The success of the modern surgeon is due not so much to the elimination of dust in operating rooms, not so much to the boiling of instruments, not so much to the disinfection of the patient's skin—though these things are necessary—but to the thorough washing and disinfection of the hands of the operator. So dangerous are the hands as a source of infection that modern surgeons also wear rubber gloves in order that their hands may not touch the body of the person being operated upon.

(4) *Mouth Hygiene.*—Food can be properly masticated only if the teeth are in good condition. Decayed teeth and abscesses affect the whole body. We know that the origin of many diseases formerly obscure, such as rheumatism and heart disease, arise from focal infection. Various disease-making bacteria inhabit the mouth and are often found in great quantities. In pyorrhoea there are millions of microbes. Constant swallowing of these is harmful. Much stomach trouble is due to bacteria from an unclean mouth. It is of importance to the soldier and to all other persons that the teeth be brushed frequently and the mouth kept clean. Probably if the mouth were kept in a cleaner condition there would be less infection and disease of the tonsils, another great source of disease.

showers had not yet been provided.⁵ A large portion of the camp adjoining the town was quite level, too level for good drainage. Passing south from the camp there was a large hollow which, from the contour of the ground, could not be drained and where, from the character of the soil, the water could not sink into the ground and could disappear only by evaporation, so that in the rainy season there must of necessity be a pool.

It must be remembered that this is a mosquito country,⁶ that in such a place mosquitoes are liable to

(5) *Advantage of Shower Baths.*—The skin, and the tissues immediately beneath the skin, contain a network of blood vessels, so much so that the surface of the body contains a large portion of the blood. It also has a network of nerves, and contains many glands and pores which open on the surface. The surface of the body regulates largely the temperature of the body, principally by loss of heat through evaporation. A cold shower contracts the vessels and sends the blood internally to the various organs, producing a redistribution of blood in the body and affecting the secretions of the various internal organs as well as the secretion of the skin. By actual count more red corpuscles are found in the blood stream after the bath than before it. This change often lasts two or three hours. A cold bath tends to increase muscle tone, muscular action and to stimulate the heart. Shower baths eliminate more rapidly the products of waste, and thus constitute one of the best methods of relieving fatigue. In addition, when the skin is clean and reasonably free from bacteria, the danger of blood poisoning in case of accident is greatly reduced.

(6) *Mosquitoes.*—Mosquitoes interfere with rest and sleep and also carry disease from the sick to the well. Different diseases are carried by different species, malarial fever by one kind, yellow fever by another, dengue by another. Mosquitoes breed preferably in dirty water. They lay eggs, some a few, others as many as three hundred eggs at a time. The eggs float on water, and hatch, becoming larvae or "wrigglers". These "wrigglers" breathe through a small tube at one extremity. If unable to obtain air, they die. In about a week the "wiggler" becomes a comma-shaped creature, called pupa, from which in about two more days the mosquito emerges. As mosquitoes breed only in water, we must remove or guard places where water collects. Petroleum used to cover the surface of the

breed in quantity, and that here was found more than one variety. That there were plenty of mosquitoes here I can testify, having been bitten by them at night and also having found the larvae in two pools. Where so many persons are collected together it is always possible that someone of the number is a carrier of malaria. There was more than a strong possibility here of the spread of disease.

It has long been known that dengue, a fever believed to be carried by the *culex fatigans*, appears in Brownsville and vicinity, though I myself did not see any authentic cases while there. Were these any of the undetermined fever cases? Whether they were or not is not the point. Placing troops near a mosquito-breeding pool is a danger. Sometimes, no doubt, an army cannot get away from such places. If such was the case at McAllen, the soldiers should have been furnished with mosquito nets to place over their cots. Unfortunately, the majority of the soldiers did not have cots and those who did were not furnished with nets.

As a still further criticism of the site, I shall say that upon my arrival I found that a portion of the camp adjoined some goat corrals and that a portion of the ground on which the camp was situated had been used for goats. There were several hundred of these animals adjoining the First Cavalry. I do not know of anyone having acquired malta fever, but that certainly was not due to any wise judgment on the part of those who selected the site. Some few years ago in the *Journal of the American Medical Association*, two medical men connected with the army demonstrated the existence of malta fever in certain goat raising sections of Texas. They found that

water kills the "wrigglers" as the oil shuts off their air supply. Fish feed on "wrigglers" as do also dragonflies. To prevent mosquitoes carrying disease, windows, doors and cots must be screened.

20% of the animals suffered from the illness and that several herders were also affected. Havard's *Military Hygiene* says "It is probable that, in those regions, many cases are overlooked, being mistaken for atypical typhoid fever."

One of the main difficulties in placing a camp near a town, particularly a small town, is that from lack of sanitary supervision such places always breed large numbers of flies and McAllen is no exception. The flies were there when the troops arrived. Not only were there many house flies, but there were many large green flies which bit savagely. If it were necessary to select this site, it was necessary immediately to do away with straddle trenches, to erect latrines, to screen food, to protect the food while being prepared in the kitchens and also while the men were eating it; and that traps, fly-paper and other devices be provided immediately. Straddle trenches lasted a week, but the screening and other protection of food had not been accomplished at the end of four weeks. At the time when I was about to leave, the screening arrived at the station, making six weeks in all during which the troops were unprotected from fly infection. Small wonder that the army suffered from diarrhoea! True, before this, some organizations had purchased lumber out of their own company funds or out of their own pockets for mess halls, screening of kitchens and other necessities, and some spent large sums.

Sick Rate

Leaving further consideration of McAllen, let us take up some matters of general application. Several times in my reports from the border I mentioned the low rate of sickness and also the comparatively low death rate. By this I meant that it was low compared with usual army

reports, but these rates are not low from the standpoint of a physician and sanitarian. The care given by the officers of the regular army to their troops was better than the care given by the national guard officers to state troops, which in fact ought to be the case, since this is their business in life and they are especially trained for it. I have discussed this matter further in my general conclusions. Nevertheless, the sickness rate was higher among the regulars. The rate averaged about 2.50 per hundred for the national guard and about 3.00 per hundred for the regulars, never exceeding the sick rate of troops at a home station, and the greater part of the time being better than the home rate.

Given absolute control over a body of young men who have just been examined physically and found to be free from disease, in good and vigorous health, with sufficient money to care for them, how many should become ill? How many should die? There are no statistics with which we can make a comparison. Even if we were to compare a similar number of good risks of the same age in any insurance company with the death rate of the troops on the border, we still would not have a proper basis of comparison. For with the insured, the personal hygiene is left to the individual; whereas, in the army it can be controlled by the officers. With a careful previous examination to exclude malignant diseases, and proper training in the rules of hygiene, why should any of these men either become ill or die, except as the result of accident, such as might occur anywhere?

Let us for a moment examine a single cause of death. Take for instance appendicitis. The death rate in large cities from such a cause is extremely low, and death when it occurs is due largely to the fact that the patient has not had early care. But in the army a man reports sick immediately; there is, therefore, no ex-

cuse for a late diagnosis or a late operation. In a very hot climate with such temperature as the soldiers experienced last summer, there is danger in any delay. The heat takes the blood to the surface of the body, thus robbing the internal organs of their normal blood supply. Hyperaemia of the surface produces a corresponding internal anaemia. There is, then, lack of resistance in the appendix and the part rapidly becomes gangrenous. This means that the operation should take place earlier than it would in New York. But even with this knowledge, operations were delayed and deaths occurred.

Schedule of Hours

The daily schedule of hours varied considerably in different places and in different commands, particularly in the national guard. Frequently I noticed that the time allowed for certain duties was not sufficient for the purpose; thus, there was not always time to eat. Where men had to line up with mess kits to be helped from a kitchen, frequently the last few in line had no time whatever to eat, and these last were oftentimes there from courtesy to others. Thus, where only thirty minutes is allowed for breakfast with nearly one hundred men to be helped, the last few had but one or two minutes to eat, and one morning I noticed five men who had been unable to get anything to eat. With better organization of the eating arrangements, probably all could have been properly fed within the half hour. Again, some schedules made it impossible for some of the men to go to a latrine, and especially was this true in the early morning when some men who had formed regular habits of life were unable properly to continue these habits. This happened frequently to enlisted men, often unnoticed by officers whose hours were different.

Character of Food⁷

I saw very little spoiled and unwholesome food, though I carefully examined the food everywhere and also many kitchens. The only really bad food was some corned beef, into a few cans of which nails had been driven in careless packing. None of this spoiled food was eaten. Otherwise, the meats I saw were universally of a wholesome character, and the same is true of the quality of the other food. Under military orders, no meat prepared for one meal may be saved over for the next. If too much is cooked, the surplus must be destroyed unless it can at once be utilized in soup. For this reason, cooks some-

(7) *Food*.—What has food to do with health? All human energy is derived from food. Food is therefore of great importance. It must be of sufficient quantity, wholesome—namely, fresh and unspoiled by bacteria—well selected and properly prepared. Moreover, foods must be taken in suitable proportion: that is, the diet should be properly balanced. A person who does not have a properly balanced dietary is, as a rule, much more easily fatigued and has less resistance to disease. The most important point relative to food is that it shall not have undergone degeneration from bacteria, as such bacterial change causes ptomaine or toxin poison. Exposure to flies or dust, or washing in polluted water, or contamination by handling may result in bacterial infection. But in addition to those things the digestion of food depends upon many other factors. It depends upon proper preparation and cooking and flavor, and also upon an appetizing appearance, on cheerful surroundings while being eaten, on proper mastication, on the cleanliness of the teeth, etc. It has been shown by physiologists that taste, flavor and the enjoyment of food, and its consequent effect upon the mind, have much to do with the secretion of the digestive glands. As Shakespeare says: "Good digestion waits on appetite and health on both." Unless a person enjoys his meal it is not well digested. If there is any mental disturbance, such as anger, worry, a "grouch", or if the food is unappetizing in appearance or not of the proper kind, there is a lack of secretion of gastric juice. As a consequence food does not properly digest; and as a further consequence, the body is not sufficiently nourished, is easily fatigued and therefore not efficient.

times do not prepare a sufficient quantity of food.

The serious menace to the food supply from swarms of flies I shall speak of again in another place.

The dietary was not always well balanced, nor was there sufficient variety. Much might be accomplished in this line. I think that in some cases the standard of food set in calling for bids is not high enough but that is a question too difficult for discussion in this report. I saw much food that was appetizing, mostly well cooked though occasionally not sufficiently done. Thus, rice and other cereals were not always cooked long enough. A craving for sweets among the soldiers was almost universal, in both the regular army and the national guard. I do not think that the ration carries sufficient sugar to meet the demands of the system nor does it always contain sufficient vitamins. To overcome the difficulty of underdone food in motor car trains, fireless cookers were carried in the kitchen car.

Cooks

The cooks that I saw were not all clean. I watched cooks go from the latrines to the mess tents and kitchens to prepare food without washing their hands. Indeed there seemed to be no basins to wash in, had they so desired. Besides that, there is danger that some cooks are carriers of disease.* There were some whose hands were not washed and whose clothes were soiled.

*The attention of the Health Department in New York City was called to one Mary Mallon, a cook, who had been employed by various families and in each family where she had worked typhoid fever developed. She was taken to one of the Department hospitals and it was found that her discharges were nearly pure cultures of typhoid. She was detained for several years as a menace to the community—but, upon a change of administration, was permitted to go free upon her promise never again to be employed as a cook. Three or four years later, a number

One great need of the army is a larger number of well-trained cooks. To meet this need, the army has a school for cooks. I asked many if they had attended such a school, and found but few who had. The army provides a cook book but few of the cooks read it. Not only should cooks be educated in preparing food, but they should be thoroughly examined for disease. They should be taught hygiene, to wash their bodies and to wash their hands. More than all, someone should see that, after they have learned these principles, they *apply* them.

Bread

As a rule the bread was excellent in character. Immense quantities were baked daily. It was usually kept at the bakery twenty-four hours to dry and thus prevent it from becoming mouldy. In many places it was kept in screened buildings and tents, though in some it was left uncovered and was contaminated by flies. Even when screened, the doors of the buildings were frequently left open, a lack of discipline which endangered the army.

It seems to me it would be well to consider the use of whole wheat flour or a mixture containing some rye flour. Health is best conserved by the use of the whole grain, and bread does not become as hard and dry inside if a little rye flour is added.

Milk Supplies

With army medical officers, I spent much time in investigating the milk supply of the various towns where

of cases of typhoid fever were found in a maternity hospital. Upon inquiry, it developed that Mary Mallon had broken her promise and had again taken up her occupation as cook and was found employed in the hospital kitchen. More than fifty cases of typhoid fever from one person—undoubtedly caused because she did not wash her hands.

troops were quartered and as a result of this investigation I am thoroughly convinced that no unpasteurized milk should be permitted to be used. The only safe way is to use condensed or dried milk, or local milk pasteurized when it is possible properly to supervise the process, or such milk boiled.

Flies⁸

The greatest danger of all affecting the food was that from flies. I saw flies in such swarms upon food that it had almost disappeared from view. Standing at the end of a kitchen and counting the flies in a space twelve by twelve inches on the serving table, I counted one hundred and sixty-three. And this was not unusual.

Where screened kitchens and screened mess halls were built, this was largely obviated but it took from four to eight weeks to secure buildings of this character. In the meantime, the lives of all the soldiers were risked, and had it not been for the typhoid inoculation we might again have experienced the difficulties incident to 1898. It is the advance in medicine which has given the protection, rather than the army methods. Perhaps there was no greater number of flies to be found anywhere than at Colonia Dublan. Here the army was without screens four months. Why?

Physical Exercise and Fatigue

In regard to physical exercise and the amount of labor which was required of the men, there was one thing that

(8) *Flies*.—A single female fly lays one hundred and twenty eggs at one time, which eggs becoming maggots, in eight or ten days become flies. They breed in any moist rotting material. They carry disease by carrying bacteria on their legs and feet and in the intestinal discharges, and alighting on food they infect it, thus producing diarrhoea and other diseases. In addition flies on food in mess kit plates make the food unappetizing.

was not well appreciated. The effect of the extreme heat was to bring most of the blood in the body to the surface during exercise and in this way much trouble was caused, particularly when the exercise was severe. Wherever I visited I found much diarrhoea, not all of which was reported. One of the causes was fly infection, but I am convinced that in some places, while flies were numerous, the trouble was due rather to anaemic conditions of the internal organs and loss of water producing scybala. And this is indicated by the fact that many cases were habitually better in the morning after the cool night, getting worse again during the middle of the day. In other words, there was a lack of resistance internally because of a lack of blood supply, and over-exercise greatly increased the trouble. It was evident by the amount of exercise which was permitted and encouraged that many staff and line officers were entirely ignorant of the physiology of the body. They believed that the work of digging latrines and ditches, and going on long hikes constituted a hardening process, while in reality the reverse is the case.

There has been an entire misconception on the part of some of the line officers (both of the regular army and of the national guard) as to the nature of fatigue.⁹

(9) *Fatigue*.—What does fatigue mean to an army? How is it acquired? What is the great danger from fatigue? No other questions are of more importance, particularly when we understand that the great danger from fatigue is lowered resistance to disease. In the living body there is constant change. These changes mean the expenditure of energy which has been stored in the body, principally in the muscles, from materials carried to the various portions of the body by the blood stream. These materials are from food which has been digested and assimilated. Energy is produced by chemical combustion, and the oxygen necessary for this is carried also to the tissues by the blood stream. Muscular energy depends largely upon three things: 1. The amount of fuel stored and the ability of the system to bring it into use; 2. The ability of the system to fur-

There is also a prevalent belief that privation hardens. It does not.

In this connection there is another thought to which I desire to allude. Some time ago I wrote a paper calling attention to the great increase in the number of deaths from heart disease and Bright's disease. While watching a number of soldiers on a hike on a hot humid day, I could see from the open mouth, the character of the breathing and pulse in the neck that the heart beat was

nish oxygen to burn fuel; and 3, the ability of the system to carry off waste or other toxic substances. Conversely, fatigue is due primarily to the failure of the system to perform properly one or more of these functions.

First: Relative to the amount of fuel stored, proper exercises increase the size of a muscle and give greater capacity for storage. Interference with this storage may arise from lack of sufficient food, from improper food, from indigestion or lack of assimilation. If fuel is lacking, energy must also be lacking. Food must be regulated according to the demands of the body.

Second: Fatigue is caused by anything that interferes with the carrying of oxygen to the tissues. There is a great difference in people as to the number of red corpuscles in the blood and therefore in its oxygen carrying power; not so great a difference, however, in an army with healthy men as with the public generally. Anaemia may be produced as a sequel of disease, particularly malarial or infectious disease, or it may be due to insufficient variety of food, though the most frequent and probable cause is focal infection.

Anything that interferes with the general circulation of the blood, such as dilatation of the heart, tight clothing or obesity causes fatigue. In obese persons the increase of the vessels and the distance for the blood to travel make the heart pump harder.

The third great cause of fatigue is poisoning by accumulated waste in the muscles which, unless eliminated, act as poisons. Other poisons besides those generated in the muscles cause fatigue. Thus indol and mercaptan have been proven to induce fatigue. Indol is found in the large intestine as the result of bacterial putrefaction. It is eliminated in part from the bowels, but is in part absorbed in the blood and subsequently eliminated in the urine in the form of indican. As indol is produced by the fermentation of certain kinds of albuminous foods, diet is again an important factor. It is evident therefore that the products of waste in the intestinal canal should be rapidly excreted.

laborious, and I am sure if the hearts of the men had been examined after such a journey there would have been many evidences of dilatation and that albumen would have been found in the urine.

However, I saw the men of one organization as they came into camp at the end of one of these marches when there was but little evidence of such exhaustion. The day was hot but the air was briskly in motion. The road furnished no protection from the sun and the colonel had wisely begun the march in the cool of the day before the sun was up. Only seven men fell out and in each case the weakness was due to physical disability. This was the result of good judgment on the part of the commanding officer.

Clothing

Investigations have been made at various times into the character of clothes worn by both officers and men. I am sure that more investigation is needed, not only as to the character of materials to be worn in hot and cold climates but also in regard to the actual making of the clothes. For instance, the tight collar interferes with the circulation; a roll collar, it seems to me, would be better. The wearing of leather leggings and of boots, by men in offices, and particularly the wearing of spurs by physicians in hospitals and by men who do clerical work, seem to me quite unnecessary.

Medical Service and Sanitary Inspection

Medical supplies, such as drugs, antitoxins, vaccines, etc., were not lacking, though I would add other drugs to the list, for instance, castor oil. The work of the sanitary inspectors was especially good. At most places

they obtained the co-operation of the local health authorities, but this co-operation was of a limited scope. The contrast between the grounds occupied by the military and the grounds adjoining was very marked, the one clean, the other covered with refuse and papers. One of the most important duties of the sanitary officers was the inspection of food. It seemed to me that there is need of some medical officer or trained dietitian constantly to supervise the mess sergeants and the cooking of the food. Much might be done in the way of securing better cooks. It would undoubtedly be necessary to pay more wages and have more supervision by medical men.

So far as I could see, the time of the medical men seemed fully occupied. On several occasions I saw men who were ill transported in cars without an accompanying physician. On one occasion there were eighteen or twenty, some quite seriously ill, who were fifteen hours on a train without a physician to accompany them. I think it is necessary, and that it would be better for general care in case of illness, if the number of medical officers were increased, and I would suggest that the number be raised to at least eight per one thousand men. Even this would not be enough in time of war.

Some of the best trained minds in the country are to be found in the medical department of the army. I was glad of an opportunity to meet so many on the border. And I think it may be truthfully said that the medical department was the best prepared branch of the service. Some of the doctors of the national guard, however, were specialists and did not understand army practice. The physicians with the troops ought to be general practitioners, and ought to familiarize themselves with the types of disease most often encountered in army operations and under varying climates. Specialists are and should be attached to base hospitals.

Base Hospitals

Much credit should be given to the Medical Department for the establishment of the large base hospitals at the various places where there was a large collection of troops. They had been well thought out and were excellent for the purpose for which they were designed. Except at McAllen, the construction was promptly begun. Some of the hospitals were too far away from certain bodies of troops and supplies were somewhat slow in being furnished. On the whole, the base hospital work was excellent, and the care given by physicians and Red Cross nurses was also of a high character, but the rules of "stand at attention" upon the visit of a surgeon should be abrogated.

Need of Attention to the Slightest Illness

One medical officer, speaking of the number of cases of illness, stated that many report ill in camp who would not think of going to a physician if at home. Probably this is true, but one of the difficulties in the ordinary practice of medicine is that often the patient applies to the doctor too late. In many a case of cancer, appendicitis and other diseases, the patient is lost for that very reason, the operation being performed too late. It is a great advantage to know the initial symptoms and ward off serious disease by methods of prophylaxis. This should be the main work of the army physician, and applying early to the doctor should be encouraged. The physician should remember that the laity are easily frightened, especially when away from home, and frequently lack confidence in a strange physician.

The medical officers of the militia regarded many soldiers so applying as malingerers. The idea seemed to be to endeavor constantly to reduce the sick report

for fear of criticism. And the medical men in the regular army seemed to have the idea that the soldier's sole object was to get on the sick list, in order to be eligible for a pension in the future, and that they, the doctors, were especially employed to prevent him from getting it. The doctors perhaps forgot that the man has a Congressman at home who will probably take care of his case!

We should not wait for a man to report ill.

Existing orders require that every man shall be examined bi-monthly, and that a report be made of what is found. Especially is loss of weight to be noted. There should be rigid adherence to this rule. There is frequent inspection of the soldier's equipment, and it is necessary to inspect each soldier's gun. It is just as necessary to inspect frequently his cleanliness, his teeth and his general condition to see if he is physically capable of using the gun. "An ounce of prevention is worth a pound of cure."

A captain of a company would be much exercised if he saw dirt upon a gun, but to see flies in a kitchen and a dirty cook impresses him but little. It is unnecessary to have either, but of the two it seems to me preferable to have a dirty gun, a clear eye and a good shoulder than a clean gun and a man unable to use it.

What is the use of a well equipped and highly trained army—in a hospital?

Health Education of Enlisted Men

It is not sufficient to have the sanitary rules and regulations merely posted or read to the rank and file. A printed copy should be placed in each man's hand, with instructions to read it carefully and to comply with its directions. Various circulars explaining the reasons for such regulations should also be distributed; for example, a circular on washing hands, its importance and its re-

lation to disease, a circular on flies, how they carry disease and methods that should be taken to abate the nuisance, a circular on the brushing of teeth and its importance, another upon venereal disease and its disastrous effect upon the body, and others upon various topics relating to health and sanitation.

Paper Work and Ditch Digging

It was quite apparent that too much paper work was required. The number of reports and the details to be covered were entirely too numerous, and voluminous, and many of them unnecessary. In the medical department alone there are more than 100 forms to be filled out. The methods are cumbersome and slow. There is too much red tape. Much of the time of the highest officers is taken up filling out reports of a nature that could be prepared by a clerk. This is not economy. If such reports are necessary, clerks should be hired, better business methods introduced, and the time of the trained officer given to more important work.

Some of the other work required of the soldiers seemed to me as uneconomical. When men are constantly detailed for such menial purposes as digging latrines and ditches, they cannot drill much or get the necessary target practice or learn much of war. It seemed to me a waste of time and material. It is not economy to use a first class fighting man for such purposes, any more than it is to use officers for constantly making reports. I cannot see why there should not be always a service corps for such purposes, men who need not be physically perfect.

Accommodations for Officers' Families

I found on the border that many officers of the regular army had been for a long time at posts to which it was

not possible to bring their families, partly because their pay and the price of proper accommodations would not permit it. It seems to me this is a matter that should be corrected. If we are to maintain army posts at distant places, proper housing accommodations should be immediately provided for officers' wives. Anyone who has ever read Dr. John Lord's lectures on the lives of the great men of the world must have been struck by the fact brought out so forcibly that a woman has been the determining factor in every great man's career. Men deteriorate when left to themselves and to the exclusive society of other men.

Preference in promotion should be given to married men, especially if they have children. Such a man realizes more than others his responsibility in connection with other people's sons.

Y. M. C. A.

*Most of the Young Men's Christian Association buildings were still under construction during my trip on the border. Some had been finished, and were being used to excellent purpose. On several occasions I noticed every available space in the building filled with young men writing home, a duty as imperative as many others.

The Chaplain

The neglect of religious service in the army is a great drawback upon its efficiency, which depends far more

*Since my return, I have learned through the headquarters of the Y. M. C. A. that 42 buildings have been erected, in addition to some tent outfits, and that the statistics given by the 315 different secretaries employed show a wonderful work has been done to make life in the army more tolerable by the number of entertainments given and by the use of the reading rooms. The attendance at the religious meetings has been surprisingly large.

than is usually recognized upon the inspiration and strength afforded by religious faith. Such faith is almost invaluable, as the strongest support of morality and therefore of military discipline. Sunday should be a day of rest with brief services, preferably in the morning, at which attendance should be required.

The present work of the chaplain in the army consists largely in sorting the mail and looking after the recreation of the soldier—getting up moving picture shows, boxing matches and similar forms of entertainment. Today he has little real rank. He should be given a higher rank and be paid more for his services. In other words, he should be really a chaplain.

Relations Between Officers and Men

The first sergeant of a company is as a rule very close to his men. The officers above, with some exceptions, are generally distant, and many men seemed afraid of them. In my conversation with lieutenants and captains the fact was brought out that they, the officers, thought such an attitude necessary for discipline and obedience. This is a delusion of youth. The greatest obedience and order come from love and respect; when these are lacking, and discipline is based on fear, a most valuable asset is missing. It is the same difference in a family where a parent rules the children with fear instead of with love which alone can produce the highest results. The officer should try to obtain the men's confidence. His relationship to them should be one of counsel and of sympathy. The closer an officer is to his men the greater sacrifices they will make—and the soldier's life is one of sacrifice.

Many of the things I have touched upon are covered by rules and regulations, but they are not always put into practice.

The National Guard

It is a prevalent opinion, in which I concur, that our National Guard will soon be reduced to a minimum. I cannot speak too highly of these men, many of whom risked so much, even the comfort and happiness of those nearest and dearest, for the sake of duty, for love of country, and for pride of ancestry. It was not easy to take the oath of service under the new law. It is not easy to give up one's hopes and ambitions, even for one's country. Leaving out all other considerations, the sacrifices made by those who have served on the border have caused in many cases the permanent loss of business and position, as well as of opportunities which could not wait. Some of these losses are so great that a lifetime may not be able to make up for chances swept away, to say nothing of the immediate hardship caused in many families, without adequate compensation.

It is a sad fact also that some of the boys who went to the border with a fine zeal for patriotic service had their ideals shattered by humiliating experiences in the service, the menial tasks imposed in lieu of training and practice in military matters, and the evidences of failure of the military system to make prompt and efficient provision for the health and ordinary comfort of men who were offering their lives for their country. In some cases the results of this disillusionment and discouragement were far reaching.

The after effect of all this is that the guard is in danger of being completely disrupted. This seems to me a great pity. These are men for the greater part physically perfect, who enlisted from patriotic motives, a high sense of duty to their country, well educated, well drilled, with military training—a strong contrast to the ordinary man who enlists for the money or because he is a failure

at home or has no other work to do. It is a grave error to suppose that uneducated men who have had no advantages in life make the best soldiers. The exact opposite is the truth. Educated young men who have been taught the value of cleanliness, decency and religious worship are by far the finest material that can be secured for military service.

Much criticism was levelled at the national guard during the mobilization, and it has been declared both in the press and in higher quarters to be an inefficient branch of the military service. As matters are constituted at present the charge may be true, but critics are not always careful to discriminate and locate responsibility where it belongs. The blame for whatever went wrong in this experience may rest in part upon the various state systems of military organization and equipment, or in part upon the preoccupation of the regular army with its own problems, or it may be due largely to the fact that the attempt to make an effective machine of two entirely distinct types of military organization was a new experiment to most of the men engaged in it, presenting many difficulties and many chances for misunderstanding.

But it would be extremely unjust to regard the failures of the experiment as a reflection upon the individual membership of the national guard. On the contrary, these men are rightly entitled to more commendation than they have received. The public ought not to forget that the guardsmen entered the service voluntarily, not as a means of earning a living but at a financial sacrifice to themselves and their families, to say nothing of the possibility which every soldier must face when going to the front, that he may never return home alive. Men who choose to remain safely at home are not in the best position to place the blame for the mistakes of inexperience or faulty supervision upon other men who patriotically offer themselves for their country.

The shortcomings of the experiment and the unnecessary hardships it involved, both for the men in the field and for their dependents at home, are certainly not chargeable to the young men of the rank and file. They are to a great extent due to the necessity of immediate use of the national guard for a type of service for which it was not fitted, and the reason why this was necessary is that the public, while always ready to criticise, has been too short-sighted and parsimonious in military matters to demand that Congress provide a regular army sufficient for the national defense.

General Recommendations

What then is the conclusion of the whole matter? If we are to conserve the health of the enlisted man, whether regular or national guard, we must be prepared immediately along certain lines. This preparation should be both general and specific.

By preparation of a general nature I have reference to certain matters bearing upon the health of troops at all times. These may be briefly outlined as follows:

Fundamental Health Essentials

The health of the army depends: (a) upon the personal hygiene of the soldier—what he can and should do for himself to retain his own health; (b) upon the intelligent care given, and the enforcement of sanitary regulations by those above him whose duty it is to look out for his health, not merely the medical men but the line officers too; (c) upon the making of laws of municipalities and states where troops may be located, so that they may be placed in healthful locations as far as possible and may not acquire diseases from their surroundings; and

(d) upon the appropriations made by Congress and the laws governing those appropriations.

(A) What should the soldier do for himself? It must be remembered that the soldier's hours are regulated by orders; his going to bed and his rising, the time of his meals, and his work are fixed by his officers. What he can do for himself is to wash his hands, particularly before meals, brush his teeth, determine the amount of water he shall drink, regulate movements from the bowels, bathe, properly masticate his food, ask for clothes and shoes which fit properly, develop cheerfulness and a correct mental attitude toward his situation.

(B) The care by the War Department and the officers includes the furnishing of sufficient and wholesome water supply for drinking purposes, facilities for bathing, sanitary latrines, a sufficient quantity of wholesome food, properly cooked, a balanced dietary of sufficient variety, and time to eat the food comfortably. It is a part of the officers' and department's work to see that the cooks who prepare the meals and handle food are free from all forms of disease, and furthermore that they are able to cook and to understand and observe the rules of personal hygiene themselves. It is necessary that while the food is being prepared and served it shall not be exposed to contamination from flies, from dust or from dirt.

The proper disposal of garbage, waste paper and all other wastes, particularly manure from horses in the regiments of cavalry, is incumbent upon the department and its officers. It is a part of the responsibility of the officers that camp sites shall be properly selected, free from mosquitoes and otherwise sanitary, and if not possible to avoid mosquitoes, that there shall be provided mosquito bars for the soldiers, also sufficient tentage, and that whenever possible soldiers shall have cots and be cared for comfortably; that they shall not be exposed un-

necessarily to the elements nor to disease from their surroundings; that they shall have sufficient time for their toilets, clothing properly fitted and of the right kind; and that every safeguard known to sanitary science shall be thrown around the soldiers for the protection of their health. In this is included recreation to prevent nostalgia or homesickness, and the recreation should be of such a character as not to invite illness.

(C) It is the duty of the community where troops are located to see that unexamined food and drink shall not be sold to soldiers, and to recognize that troops are not placed in the immediate neighborhood for its especial benefit and profit; and to have local boards of health co-operate with the army for the avoidance of disease of every character.

(D) And lastly, Congress should make sufficient appropriation for the purchase of *all* necessities of life, which today include screens against flies and many other things which were not thought of a few years ago. Laws should be enacted, written in such a way that it will not be necessary for the health of the troops to be endangered by waiting for such supplies, as is now the case. If they are of such a nature that they cannot at any time be furnished within a few hours, such materials should be kept in store awaiting the time when they shall be needed.

Special Steel Cars for Troops

If troops are to be ready for service immediately after reaching their destination, if they are to arrive in as good a condition as when they start, proper facilities must be provided for transportation. Without going further into the question of the various ailments which may be acquired on a journey, it is my opinion that cars

of steel construction especially designed for transportation of troops must be built and kept in readiness—cars which could be thoroughly disinfected, with steel mattresses or canvas, and heavy blankets, toilet and washing equipment, and facilities for feeding the troops. They could be so designed as to accommodate more soldiers than the present type of cars and still not require the men to sleep in direct contact. These cars could also be used for the transportation of the wounded or sick from the front in the case of a great war. In time of peace it is possible the cars could be put to advantageous commercial uses.

It will not do to trust to haphazard methods of moving an army. Not less than one thousand of these cars ought to be built as an initial step. I am fully aware that objection will be made by many business men to such a proposition on the ground that so much capital ought not to be tied up. But if reservation training camps, recommended below, are provided, these cars could be used for transportation to and from such camps. There is often a shortage of railroad cars for commercial purposes, and the heavy added demand in case of military mobilization would cause losses and economic waste, perhaps greater than the interest charges on the entire cost of the special troop cars.

This is a matter to which I have given careful thought and have not made the recommendation lightly. It is true that the cars might never be used, but this is true also of our battleships for which we spend vast sums and it is true of the transports, which are not used for other purposes. It is true, in fact, of the entire equipment of our military and naval service, which is only of practical use in case of war. When we consider the thousands of millions of debt now being incurred by certain foreign countries, partly because they were unprepared when the emergency came, or when we remember the

ease with which, under every administration, small villages can get from Congress large appropriations for public buildings, an expenditure for the purpose I am urging seems trivial compared with the gain in efficiency it would afford.

Reservation Training Camps

The methods of caring for troops must differ somewhat in actual warfare from those in mobilization or in concentration camps. In either case the greater part of the time is spent in camp. Troops near an enemy or on a battle front should be in perfect physical condition. They should not only be well, but their health should be raised to the highest point for resistance to disease or injury from wounds, and to give physical endurance and courage. It is not enough that there be no anaemia; the blood count must be high, the fat and other stored energy in the body must not have been wasted by lack of food or poor food, or by unnecessary labor. Fatigue has lost many a battle and fatigue comes largely from lack of food, lack of sleep, lack of water, overstress and strain.

How then may we keep the physical condition of the soldiers good? In my opinion the only adequate method is to have in readiness large reservations, north, south, east and west, particularly near our borders, and near railroad lines that have sufficient track facilities. These reservations should have their own water supply and pumping stations. The water should be wholesome and free from bacteria or other pollution. It should be carried to every portion of the reservation in sufficient quantity for all purposes. The water supply ought not to depend upon neighboring municipalities. Sewers, with disposal plants, ample bathing and toilet facilities, screened kitchens and mess halls, and barracks for winter quarters as well as tentage for summer should be pro-

vided. Ample hospital facilities with diagnosis laboratories should also be provided, and the number needed on each border should be carefully determined.

Let us say, for example, there are such reservation camps every two hundred and fifty miles on our eastern coast, each containing possibly 20,000 to 50,000 acres. The government already owns much land suitable for the purpose. On such a tract a large number of men could be readily mobilized in a very short time. There should also be depots for tentage, equipment, etc., with railroads running into the grounds, side tracks sufficient for loading a large number of troops at any moment, and sufficient to store cars carrying supplies without blocking the road. If troops were to be concentrated at any one point, they could be transported from several reservations to the reservation nearest to that particular place.

It would be quite unnecessary to maintain these places as army posts. A few companies, frequently changed, could maintain the property and keep it safe from fire or trespass.

On such a reservation there is no reason why anyone in good condition upon arrival should become ill. The general health might be improved, provided the officers in charge understood the fundamental principles of physiology and hygiene in the individual care of the men.

Here the clerk who had been housed too much in a large city would improve in blood count. Here, by proper food and physical exercise, men would become stronger. Here there would be no danger from the sale of polluted drinks and bad food by small booths, and here too could be cut out the petty graft of the shop keeper in the small town where troops are quartered.

I feel sure that young men of the required age could be taken upon such a reservation and into schools of this

character even if they were below the normal* or physically defective. It is probable that many of the defects would prove to be wholly or in great part remediable.

By keeping men busy on these reservations with games of war, study, sufficient physical exercise to induce refreshing sleep, and various amusements of a healthful nature, homesickness would be largely done away with and, above all, filthy prostitutes would be eliminated and venereal diseases abolished. If men are kept busy, not on long exhausting hikes but with exercises, amusement and study, they can manage to be content.

If ever we really need the troops, we shall need every available man, but it will be impossible to obtain enlistments unless young men, and particularly their parents, can be assured that every practicable safeguard of health and morality is afforded. Otherwise universal and all other service will be opposed by parents, relatives and friends. It is utterly useless to talk of compulsory or universal military service until certain problems have been solved, notably that of venereal disease, for example. In the recent mobilization certain places to which the troops were sent encouraged prostitution, in order to get the soldiers' money into circulation. There were many cases of venereal disease in the hospitals. I saw much that was repulsive and disgusting, and I believe that every parent in this land will vote against universal service of the young men from our high schools, colleges or other educational institutions until assured that they can be safeguarded against this peril.

Universal Service

Nevertheless, I am a believer in universal service. The defense of the State is the concern of all, and all must be

*The *normal* is the state customary to a series of individuals in which they perform their functions easily and unconsciously.

utilized. Furthermore, it should not be left to two or three states to furnish the majority of the troops. It would not be so under universal service.

But I would not favor beginning this military training with young boys in the public schools. The period of adolescence is one in which we ought never to inculcate a war spirit. We do not want our children to get militarism imbued in their souls to such an extent that they want to fight. We need an army for defense, not for the purpose of "looking for a scrap." It is time enough to begin when the boys are older and better able to comprehend what it is for. The age of eighteen or nineteen is young enough, and I would not have the training in connection with high school work, and possibly not even in the colleges, where our boys have enough to do already, but I would have them go to the reservation camps above proposed.

Training of Recruits

Especially important is the fact that in these camps all the training would be alike, and it would not be necessary to undo former wrong methods of education in military matters.

Furthermore, the plan has still broader possibilities of usefulness. In connection with the military training on these reservations education might be given in other subjects, especially the study of geography, which is of high importance in war, the care of the body, and simple cookery. The soldier is likely to be thrown upon his own resources at any time in the exigencies of warfare and ought to know how to prepare essential articles of food for himself. He could be taught also the care and operation of motor engines. The army of the future will travel less by rail and more by motor machines of every variety,

from the motorcycle to the huge truck; a fact, incidentally, which emphasizes the importance of construction of good roads by the government in the vicinity of all our borders, leading from these reservation camps. Knowledge of motor engines would also be of advantage to large numbers of men in business and industrial life.

The study of Spanish would be found useful by many of the men, in view of our growing business relations with Central and South American countries.

The studies in hygiene could include first aid and hygiene in connection with industry, and there should be studies also in engineering and other problems connected with civil as well as military life. In such schools the young man would not feel that the year he spent under government supervision had been lost, because with his broader knowledge and his systematic habits derived from the military training he would be sought after in industry, and would therefore have better business opportunities. Why not, then, establish these great schools under the direction of the United States Government?

Education and Training of Officers

It is necessary not only to train recruits. We must have more and better trained officers. We should have more military academies, one preferably near San Francisco and another in the central portion of the country, not far from St. Louis, perhaps still more later on. The method of appointment to these academies should be changed. It should be based upon fitness rather than political friendship. While these academies would not give us a sufficient number of officers in case of war, probably we would have more graduates than were needed to serve continuously in time of peace. Only those that desired to do so after a period of time should be con-

tinued in the service; the others should be allowed to enter business. Of course, having been educated at the expense of the country these men must hold themselves ready in case of need.

Army officers are learning much more of the care of troops now than formerly. There is, I understand, a special course in the army school of the line at Fort Leavenworth, and officers receive instruction of similar character at various other points.

Let us forget for a moment that the soldier is a human being, but regard him as a fighting machine. The officer is given so many machines for which he must account. If one is lost through carelessness, ignorance or neglect, he is accountable. He cannot care for the human machine unless he thoroughly understands the human mechanism and its workings. He must know anatomy, physiology and chemistry—not a mere smattering, but a thorough knowledge. The course in the medical colleges of the country is being advanced to five years, because it now takes that long to make a competent physician. Dentistry has been advanced to four years. It seems to me that in keeping with our increased knowledge one more year should be added to the course at West Point, to afford a better knowledge of the human machine. The older officers are learning in another way. The younger should be taught in the academy.

Better Cooperation Between Departments

There should be a better application of the known principles of physiology, and this applies not so much to the medical department as to the line officers. The regulations of the medical department cover practically every possible situation, but unfortunately in many cases lack of supplies or unbusinesslike methods of distribut-

ing them prevents the prompt and efficient action which would otherwise be taken. The needs of the troops in this respect can be known in advance and necessary materials for the protection of health should be available with a minimum of routine. There should be constant cooperation between the several branches of the service, in the exchange of information and the planning of all operations.

Delay in waiting for a requisition, delay in obtaining the materials asked for, may be fatal. Advertising for bids upon materials that are immediately needed may be fatal. Other business methods should be introduced. An accounting can always be had after the materials are furnished. We must trust our officers.

Holding back needed supplies and causing a repetition of work simply because of some trivial matter (such as using a purple ribbon in typewriting instead of black) show a lack of intelligent supervision. So far as the furnishing of supplies is concerned, one may obtain an idea of the present methods in this country or abroad by reading the chapter on "Olympus" in a book entitled "The First Hundred Thousand" by Ian Hay.

I see no reason why Havard latrines could not be made in quantity, ready to put up with simple fastenings, so that they could be "knocked down" and moved when necessary. A large number could be kept in store-houses on reservations. The same may be said of kitchens and mess halls. The lumber should be sawed, marked, ready to put together, or made into portable buildings.

Decentralization

It is impossible for a Department at a distance always thoroughly to understand or realize a local condition. In respect to certain matters there should be decentrali-

zation of authority. This was partly accomplished during this last mobilization, but not entirely. It was necessary to obtain the consent of the Department in Washington upon matters with which they should not have been concerned. This was largely owing to laws governing expenditure of money. The trouble could be somewhat corrected, I think, if a leaf were taken from the laws governing expenditures in the New York City Department of Health. In Chapter XIX, sections 1177 and 1178, of the Charter, is a provision that has saved much for the City of New York.¹⁰ A similar law, allowing the colonel of a regiment to spend money, upon orders countersigned by the division commander, would in my opinion obviate many difficulties. An accounting can always be had afterwards, and reckless expenditures would mean dismissal. Let us, as I said before, put more faith in our officers. Give them added responsibility. It makes better men.

In consequence of this cumbersome red tape and vexatious delay, national guard organizations spent their own funds to obtain necessary supplies. Certainly it would seem proper that this money, expended in an emergency to safeguard the health and lives of men in the service of the United States, should be refunded by the national government.

Closer Relations Between the Army and the Public

Whatever lack of mutual understanding exists between the army and the public is due as a rule to the officers holding themselves as a class apart. We do not know

(10) The Greater New York Charter—Chapter XIX—Sections 1177-1178. *Extraordinary expenditures*. The department of health may use, in compensation of special inspectors, physi-

them. This is partly due to the fact that they have served at distant posts, and it is partly because some officers habitually act as if they were superior beings, when in fact they are common clay. Fortunately, I saw but little of this while on the border. I was informed that what I took for haughtiness was in reality modesty. I hope so.

I am convinced that if the army and the public could be brought closer together and become better acquainted, much distrust and misunderstanding would be avoided, with results wholly to the good of the service and of the country. My own belief is that the military system ought to provide for more frequent rotation in office, in order that men higher up in the service may not get the idea that they are fixtures for life and beyond the reach of criticism. This, with a more democratic spirit within the army itself, a greater *cameraderie*, would have an im-

icians and nurses, and for supplies and contingencies, such sum, not exceeding in the aggregate eighty thousand dollars, in excess of the annual appropriation, as may be at any time apportioned by the board of estimate and apportionment for the prevention of danger from contagious or infectious diseases found to exist in said city, or for the care of persons exposed to danger from contagious or infectious diseases.

Declaration of imminent peril.—In the presence of great and imminent peril to the public health by reason of impending pestilence, it shall be the duty of the Board of Health, having first taken and filed among its records what it shall regard as sufficient proof to authorize its declaration of such peril, and having duly entered the same in its records, to take such measures, and to do and order, and cause to be done, such acts and make such expenditures (beyond those duly estimated for or provided) for the preservation of the public health (though not herein elsewhere or otherwise authorized) as it may in good faith declare the public safety and health to demand, and the mayor shall in writing approve. But the exercise of this extraordinary power shall also, so far as it involves such excessive expenditures, require the written consent of at least two members of the board of health, and the approval as aforesaid of the mayor. And such peril shall not be deemed to exist when, and for such period of time as the board of health and mayor shall declare.

mense influence in lifting the entire military service out of the ruts of routine to a plane of higher efficiency. It would tend at the same time to enlist a far more loyal and enthusiastic popular support.

Concluding Suggestions

Based upon the knowledge acquired during this investigation it is my opinion that in making up an army for defense there should be, first, an army for use under ordinary circumstances of not less than 250,000 men. These men should be employed to police our borders, to garrison forts, and for the protection of our distant possessions. If they cannot be obtained at the present rate of pay, then we must pay more and make the life more attractive. There must be reasons for suicides in the army. We shall do well to inquire into the causes and set about removing them if we expect a higher rate of enlistment.

Second, we should commence to train those now approaching manhood throughout the United States. The training should take place upon the reservations I have mentioned. When the War Department and its officers have demonstrated their ability to care for and educate these young men properly in military matters, then we may be ready for universal service.

Third, if the national guard be continued, it should receive more training in the field. Men thus trained would be willing to enter the national service in case of actual war. But I believe emphatically that in order to prevent conflict of authority and for many other reasons there should be no officers in the guard of higher rank than that of colonel, the senior colonel to have the rank of commanding officer of the division while in state service. When in war the division commander and staff

should be supplied from the regular army. This in my judgment is a most important matter.

As a final suggestion, permit me to propose that many of our principal officers, so far as they can be spared, should be sent abroad to study and observe the problems relating to war, provided, of course, that permission could be obtained of the countries now in conflict.

In closing I wish to acknowledge the uniform courtesy that I received from the officers at the various places I visited. Those that I met seemed to be hard working men who were trying to give the country the best that was in them.

I thank also the Committee for the opportunity of making this study.

THOMAS DARLINGTON.

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