THE REAL TRIUMPH OF JAPAN

LOUIS L. SEAMAN

L. J. Chance.

125

411C

St. Norbert College
Oct. 14, 1929.

THE REAL TRIUMPH OF JAPAN

THE CONQUEST OF THE SILENT FOE

SLIGHTLY WOUNDED SOLDIERS EN ROUTE TO BASE HOSPITAL

THE REAL TRIUMPH OF JAPAN

THE CONQUEST OF THE SILENT FOE

BY

LOUIS LIVINGSTON SEAMAN, M.D., LL.B.

LATE SURGEON-MAJOR, U. S. V. E.

AUTHOR OF

"FROM TOKIO THROUGH MANCHURIA WITH THE JAPANESE,"
"THE SOCIAL WASTE OF A GREAT CITY," "NATIVE TROOPS
FOR OUR COLONIAL POSSESSIONS," ETC., ETC.

NEW YORK
D. APPLETON AND COMPANY
1908

Published February, 1906

What boots it at one gate to make defense
And at another to let in the foe?
MILTON: *Samson Agonistes.*

To the Medical and Sanitary Officers of the Japanese Army, who have proved that the normal condition of the soldier is health, and that those who die in war should fall on the firing line and not by the wayside from disease; to the heroic dead of that Army, who have gladly given their lives for the honor and integrity of their beloved country; to that vast army of American Dead, whose lives in war have been needlessly sacrificed through preventable diseases, ignorance, and incompetency; and to our Lawmakers, through whom the necessary reforms can come that will prevent the repetition of such sacrifice, these lines are dedicated.

PREFACE

THE American Army is maintained to protect American rights from foreign aggression and to enforce law and order within American boundaries. In this fair land alone the question of peace or war is determined by the will of the people. The American soldier is not, therefore, an automaton, but is a man, away from his home, on the business of his country.

In times of peace the American people will not allow the maintenance of a large standing army, its presence being considered, justly or otherwise, a menace to republican institutions. It is, therefore, more necessary to us than to any other country to have the most perfect and most efficient military system in the world; a system whose elasticity will be sufficiently great to permit of its rapid expansion in the emergency of war, when its great working forces must be drawn from civil life.

England's campaign in South Africa served to bring about radical reforms in the medical department of her Army, but our own country seems to have learned nothing from her unhappy experience. Inefficient as was the Medical Department in 1898, to-day it has fifty-eight per cent. less effective force, while the

wretched system under which it operates remains unchanged.

Lest we forget how this system operated in the wars of our history, notably in that with Spain, where through its glaring faults the sacrifice of life from preventable causes amounted to fourteen times the number legitimately killed in action; and to contrast it with the record of Nippon's army, where four men were killed by battle casualties to one from disease; and with the further hope of bringing about a reorganization of the Medical Department of our Army, so that it may become as efficient as that of Japan's, this volume is written.

To His Imperial Majesty the Emperor of Japan and the Ministers of State and War, Count Katsura and General Tarauchi, through whose extreme courtesies I was given all the privileges of a Military Attaché with passes to the extreme front in Mongolia, I beg to express most appreciative thanks. Also to Generals Murata, Oku, and Ijichi; Barons Kaneko, Takaki, and Saneyoshi; Doctors Kitasato, Ohne, Tanake, and Onishi; Messrs. Kennan and Dinwiddie, to Colonel Macpherson, Military Attaché of Great Britain, Major Matignon, Military Attaché of France, and Captain Hoffmann, of the General Staff of the German Army, and to Count Okuma, Surgeon-General Mori, and Marshal Oyama, for their uniform kindness and assistance.

LOUIS L. SEAMAN.

247 FIFTH AVE., N. Y., *January 10th, 1906.*

CONTENTS

FULL-PAGE ILLUSTRATIONS

FULL-PAGE ILLUSTRATIONS

FULL-PAGE ILLUSTRATIONS

THE REAL TRIUMPH OF JAPAN

CHAPTER I.

THE CONQUEST OF THE SILENT FOE

THE success of Japan in the recent conflict with Russia is due preëminently to three fundamental causes: first, thorough preparation and organization for war, such preparation as was never made before; second, to the simple, non-irritating, and easily digested rations of the Japanese troops; and third, to the brilliant part played by the members of the Medical Profession in the application of practical sanitation and the stamping out of preventable diseases in the army, thereby saving its units for the legitimate purposes of war — the smashing of the enemy in the field.

It must never be forgotten that in every great campaign an army faces two enemies — the armed forces of the opposing foe, with his various machines for human destruction, who is met at intervals in open battle, and the hidden foe, always found lurking in

every camp, the grim spectre, ever present, that gathers its victims while the soldier slumbers in hospital, in barrack, or in bivouac, — the far greater and silent foe, disease.

Of these enemies, the history of warfare for centuries has proven that in prolonged campaigns the first, or open enemy, kills twenty per cent. of the total mortality in the conflict, whilst the second, or silent enemy, kills eighty per cent. In other words, out of every one hundred men who fall in war twenty die from bullets or wounds, while eighty perish from disease, most of which is preventable. This dreadful and unnecessary sacrifice of life, especially in conflicts between the Anglo-Saxon races, is the most ghastly proposition of modern war, and the Japanese have gone a long way toward conquering or eliminating it.

Without minimizing for a moment the splendour of her victories on land or sea — Mukden, Port Arthur, Liaoyang, and the Korean Straits, of which two are among the bloodiest battles in history — I yet unhesitatingly assert that the greatest conquests of Japan have been in the humanities of war, in the stopping of the needless sacrifice of life through preventable disease.

Longmore's Tables, which are accepted as the most reliable statistics of war, and which are based on the records of battles for the past two hundred years, show that there rarely has been a conflict of any great duration in which at least four men have not perished from

disease to every one from bullets. In the Russo-Turkish War eighty thousand died from disease and twenty thousand from wounds. It is asserted on eminent French authority that in six months of the Crimean Campaign the Allied Forces lost fifty thousand from disease and two thousand from bullets. A gentleman who remembers that campaign, an ex-President of the New York Academy of Medicine, told me he had seen whole regiments die away from disease without ever reaching the firing line. In our war with Mexico the proportion of losses was about three from disease to one from bullets, and in our great Civil War nearly the same proportion obtained. In round numbers, of the hundreds of thousands of fatalities in that conflict nearly three-quarters resulted from disease. There are men living who may remember that nearly as many men perished from fevers and intestinal diseases in the trenches beside the Chickahominy as were slaughtered in the terrible battles that ended our great fratricidal conflict.

No lessons seem to have been learned from these frightful experiences, for later statistics show no improvement. In the French Campaign in Madagascar in 1894 fourteen thousand men were sent to the front, of whom twenty-nine were killed in action and seven thousand perished from preventable disease. In the Boer War in South Africa the English losses from disease were simply frightful, greater than even our Civil War record. But the crowning piece of imbe-

cility was reserved for our war with Spain, where, in 1898, fourteen were needlessly sacrificed to ignorance and incompetency for every one who died on the firing line or from battle casualties. That, too, in a war the chief campaign of which lasted only six weeks.

The Japanese themselves, in their war with China in 1894, lost about the same average as we did in our Rebellion — nearly three from disease for one from bullets, with forty-five per cent. of their army suffering from kakki, or beri-beri, rendering them non-effective for the firing line.

All of these statistics were studied with the minutest care and detail by the Japanese. Their authorities recognized that, in order to be victorious over a foe like Russia, this great, silent enemy, that slaughters eighty out of every hundred that fall, must be overcome. And the following startling figures recording losses from February, 1904, to May, 1905, since which time there have been no great battles, show to what a splendid degree they were successful: —

	NUMBER
Killed on field	43,892
Wounded with the colours	145,527
Died of those wounds	9,054
Sick, including wounds. accidents, etc., not received on the firing line	162,556
Died of sickness and disease	7,433
Contagious cases	10,565
Died of contagious diseases	4,557
Total of dead, wounded, and sick	383,584

Note these startling totals: —

Killed and died from wounds	52,946
Died from all diseases	11,992

More than four deaths from bullets to one from disease, as against the record of centuries of four from disease to one from bullets, or eight hundred per cent. better than the average of history!

Only one and two-tenths per cent. of the entire army died of sickness or disease. Only one and one-half per cent. died of gunshot wounds, although twenty-four per cent. were wounded. There were two thousand more men who died of wounds than from preventable diseases. Of a total mortality from *all causes* of 64,938 there were 40,954 more from casualties than from disease.

This record is, I believe, unparalleled and unapproached in the annals of war.

How was this marvellous result attained? Ten years ago, when Japan was robbed of the legitimate fruits of her victory over China by the concerted action of Russia, Germany, and France, on the ground of their maintaining the integrity of Chinese territory, and immediately afterwards saw these grasping vultures deliberately appropriating the territory themselves, she recognized the magnitude of her own danger, and set about to prepare for the inevitable struggle that was to determine whether she was to remain an independent nation or was to become a vassal of

the aggressive Muscovite. Her statesmen reasoned in this way. They said: We are about to engage in a terrible war with an antagonist of great strength and prestige, with enormous resources and a supposedly invincible army. That is our first, or open enemy in the field. We are also to engage with another enemy, the grim spectre that kills eighty out of every hundred who fall in war — this is our second, or hidden foe. Our mortality in the conflict may reach a million men, and it is a sacrifice we are willing to make to preserve our freedom and our institutions. If this terrible slaughter occurs and the average of the wars of the last two hundred years is maintained, two hundred thousand men will fall on the firing line or from wounds and eight hundred thousand will die in hospitals from disease. For every man who dies, there will be at least ten who will be ill, some of whom will be permanently invalided and incapacitated as fighting units. These men will require nursing and hospital care, necessitating enormous expense and impedimenta. We are willing to sacrifice the million men, but the element of disease with its terrible cost and impedimenta must be *eliminated.*

With this point always in view, she sent her students all over the world to study the army systems in other lands. With the knowledge thus garnered she evolved a system of her own, based on the practices in vogue in Germany but greatly modified, and the motto of which might have been " Prevention, not

Treatment." She reasoned that a medical man at the front, like a sentinel on duty, could prevent the entrance of danger, and was thereby worth twenty men stationed in the rear to treat sickness after it had obtained a foothold. She organized her Medical Department on broad, generous lines and gave its representatives the rank and power their great responsibilities merit, recognizing that they had to deal with a foe that kills eighty per cent. of the total mortality. She even had the temerity (strange as it may seem to an English or American army official) to grade her medical men as high as the officers of the line who combat the enemy that kills only twenty per cent., and to accord them equal authority — except, of course, in the emergency of battle, when all authority devolves, as it should, on the officers of the line. In her home land she organized the most splendid system of hospitals that has ever been devised for the treatment of sick and wounded, and, with her army at the front, she put into execution the most elaborate and effective system of sanitation that has ever been practised in war. Upon the declaration of war she was prepared to house, scientifically treat, and tenderly care for twenty-five thousand sick and wounded in Japan alone. Twelve sets of main hospitals, each with from one to five attached branch hospitals, were scattered throughout the empire in the chief towns of the twelve military districts into which the country is divided. In other words, the peace footing organization of the

Hospital Service provided for one main hospital and necessary branches at the headquarters of each Army Division.

The original odd twenty-five thousand beds were rapidly increased in number as the campaign progressed by the erection of substantial though exceedingly plain pine buildings, each running parallel, and so constructed that every one was a unit, housing a hundred patients, but connected in series by covered walks and runways.

Great elasticity was gained by this simple form of architecture, for wards could be tacked on indefinitely within the limitations of the property area. Each ward was practically isolated, yet for administrative purposes the whole was as one building. Surgical, general medical, contagious, and infectious ward-series were wholly isolated from one another by erecting three completely separated series on the same plot of land, each series containing its calculated proportion of unit wards for the specific class of cases for which it was designed.

One and a half years after the commencement of the war, or on the sixth of July, 1905, the twelve great military home hospitals possessed a normal capacity of 58,263 available beds. On this same day, however, only one-half of them were in use, or, to be exact, there were 28,561 patients in hospital. Unofficially, but by good authority, I have been informed that the increase in the number of hospitals and beds was made from

WARDS IN TOYAMA MILITARY HOSPITAL, TOKIO

time to time upon figures deduced from other wars, and the provisions made were thought at first to represent what would be a true relationship of the sick and wounded to the entire force in the field.

The apparent hospital overpreparedness suggests that the Japanese themselves failed to realize what marked successes would attend the enforcement of their new Code of Military Hygiene and Sanitation, as applied for the first time in the field.

That it was not really overpreparedness was demonstrated after the battle of Mukden, when the total extraordinary hospital capacity of some eighty thousand beds, secured by crowding, was taxed almost to its limits by the shattered phalanxes which poured in by thousands from every transport. It is hardly likely that the Military Authorities could have foreseen that the Japanese-Russian War would develop the greatest recorded battles of the world, with unparalleled movements of fighting soldiers and a sacrifice of men by wounds so tremendous that even the spectator on the battle-field fortunately failed to grasp the overwhelming horror.

Whether the Medical Department prepared this immense hospital system for sick or wounded is of little importance. The fact, however, is that when the ghastly cortège from Mukden did arrive in Japan in April there was hospital room for every disabled man of the thousands and thousands, and instant medical attendance and care and nursing ready and waiting.

These admirably managed military hospitals are directed by trained, painstaking specialists in each department, and the most advanced ideas in medicine and surgery are practised in them.

To illustrate one feature, attention might be called to scientific massage, which has been developed to a degree in Japanese military treatment never before attempted. Massage is a very old institution in Japan, and with the recent advancement made in the precise knowledge of the body the skilled masseur has been able to develop and adopt a system of real muscle and nerve stimulation of the utmost importance in military surgery.

A complete text-book has been written by the military officer in charge on the subject of massage, largely on the basis of new knowledge acquired in treating thousands of cases during the last eighteen months in one hospital. About twenty-five patients are treated at a time by skilled masseuses under the eye of several technically trained experts, who examine the cases and explain to the kneaders the result which it is desired to attain. The work is done in drill form, *i. e.*, the masseuse at word of command begins operations, works for five minutes, rests two, then continues five more. Ten minutes is usually the limit for a single treatment, though the same patient may come on for several treatments per day.

The large class of surgical gymnastics at this hospital is exceedingly interesting in that the drills are

mostly in the open and make a spectacular display. Every man with crippled joints, wasted or contracted muscles, or other physical deformities that can be aided by a specialized exercise, is enrolled as a member of the class. Calisthenics of various kind are indulged in by the men under orders, but the class instead of making all the same movements will be making those of particular advantage in each case. Parallel bars, horizontal bars, swinging rings, stair steps in series of varying heights, cranks, horizontal, vertical, and twisting handles, obstacle bars, hurdles, and several other devices are arranged in a pretty little grove, and here the crippled go through the motions by which it is hoped to bring them back to normal physical standards.

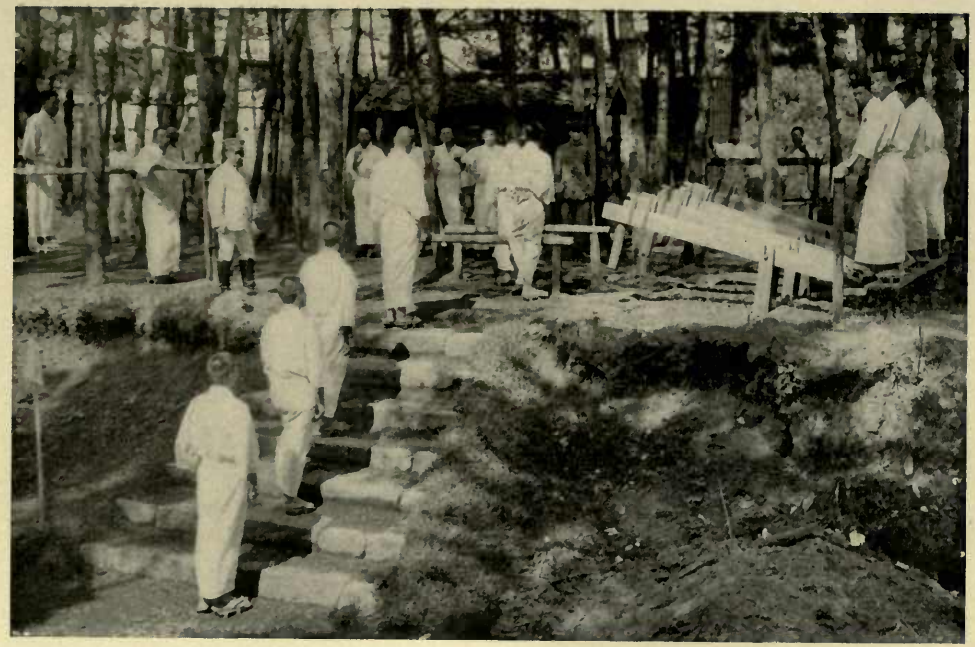
The pharmaceutical side of these military hospitals is an auxiliary machine working in perfect harmony with the whole. Like the field service, it is indisputably responsible for all the medical and surgical supplies, and issues them upon requisition of the doctors and surgeons. Besides this, the Department is responsible for all sterilized milk, washing of bandages and rerolling, disinfection of bedding, and the making of chemical tests of urine.

Every hospital throughout Japan, and every base and field hospital in Manchuria, has its bacteriological laboratory.

Too much cannot be said in enthusiastic commendation of this side of the service. Undoubtedly the pains-

taking research made day by day, even hour by hour, by the corps of trained experts with the microscope, that the dread phantom of disease might be intercepted, has been the means of saving thousands of lives by forestalling possible epidemics, and of saving individual life by prompt determination of troubles. Whenever a man suffers from temperature his blood goes under the microscope. Malaria is malaria and typhoid is typhoid in the Japanese Army, and not "Fever," caused by inappropriate and irritating rations, because every case there is differentiated under the microscope and otherwise. Diseases are not guessed at, as they were in Cuba, the Philippines, and South Africa, where often for a full week the physicians attempted to diagnose cases by sleight of hand and trick of eye. One wishes to dodge the deluge of shame which shocks us at the remembrance that we, a nation proud of our civilization and advanced scientific methods, killed thousands of our men through defective organization and the brutal, if not criminal incompetency of those in executive position, while our friends, the Japanese, just awakening from so-called barbarism, an Oriental, almond-eyed race, which we have hitherto patronized, has shown us that with proper forethought, system, and skill, men need not, in appalling numbers, rot and die horribly in the trenches from disease.

Not content with fine bacteriological laboratories in every hospital, one often finds several of the doctors and surgeons carrying on private researches in their



SURGICAL GYMNASTICS

Toyama Military Hospital, Tokio

own special wards with microscopes and appliances which are their private property, preparing slides, raising cultures, and working ever to find the new elusive bacillus whose discovery is to bring them special recognition and fame. When one considers the meagreness of the salaries which these Japanese scientists receive, and the further fact that most of them are poor men, it is to realize that the sacrificing perseverance exhibited, and the enthusiastic love of scientific work shown, will take these people a long journey farther on the road of unsummed knowledge.

At this juncture the merest reference must suffice to the splendid system of sanitation followed in the field — a specially dangerous field, too, because the water-supplies in the territory where the campaign was conducted had been left infected with the deadly germs of typhoid, dysentery, and cholera by the retreating Russians — and of the water tests and universal use of boiled water for drinking, the physical training of the unit from barrack to battle-field, and the care exercised over his baths, his sleep, and his rations. Suffice it to say that during the campaign extending over a year and a half, with from three hundred thousand to six hundred thousand soldiers undergoing the severest hardships and privations of active service, there were in the Japanese Army thirty-six out of every hundred who never reported at sick call: thirty-six men who never saw the inside of a hospital or were sick in quarters — a record absolutely unparalleled. In

every other recorded campaign it has been found that usually once during a period of every three to five months each soldier in his organization, or an average of that number, has reported to the military medical officer for treatment.

I have just returned from the headquarters of the Second Imperial Army on the Mongolian frontier, commanded by General Oku, where I found the busiest instrument in the campaign was not the Murata rifle, but the monocular microscope. My opportunities for observation were unexcelled, as the Imperial Government in its extreme courtesy accorded me all the privileges of a foreign military attaché; and weeks were spent in the military hospitals of Japan, prior and subsequent to my visit to the front.

The war has taught many lessons and destroyed many ideals in matters military as in matters surgical, where the heretofore accepted idea of the duties of the military surgeon has been shown to be erroneous, where asepsis and antisepsis have relegated the use of the scalpel to comparative obscurity and demonstrated conclusively that preservation of the army by prevention of disease is the surgeon's duty, first, last, and nearly all the time. In surgical technique, or in the after-treatment of the wounded and sick, the Japanese have taught the foreigner comparatively little, but in the field of sanitary science and dietetics they have demonstrated, what has never been done before, that preventable diseases *are* preventable and that the grim

spectre, which lingers in every barrack, tent, and quarter, can be controlled. They have demonstrated that the great incubus of an army in the field, the presence of crowded hospitals and the large and expensive force necessary to equip and conduct them, can, to a large extent, be eliminated. They have preserved their armies for the legitimate purposes for which armies are enlisted — the killing or conquering of an open enemy in the field, instead of having four-fifths of its mortality victims to the silent foe.

It is against this dreadful scourge, this needless sacrifice, that the Japanese have made their hardest fight and won their most signal victories — victories that will redound more to their credit than the expulsion of the Muscovite aggressor.

In the matter of discipline, Captain Tanake, aide-de-camp of Marshal Oyama, told me at Mukden there had been but twelve court martials in the Manchurian Army, most of which were for cruelties to Chinamen. The number of suicides during the year was eighty-six. The majority were men who were refused permission to accompany the colours to Manchuria on account of some physical defect, and the remainder because they preferred death to capture by the enemy. There were no desertions, unless the act of a fanatical pharmacist, who was caught by the screen of the Japanese near Mukden, disguised as a Chinese coolie and concealing on his person a quantity of poison, could be so called. This poor boy imagined himself the de-

liverer of Japan and attempted to gain admission to the presence of Kuropatkin as a servant for the purpose of poisoning him, as he regarded Kuropatkin as the bitterest enemy of his country. He was court-martialed and severely punished. Was there ever an army with such a record?

CHAPTER II.

VISITS TO HOSPITALS

NEXT to witnessing the carnage of the battle-field a visit to a series of military hospitals best reveals the story of war. In the hospitals the horrors are lessened by the ministrations of nurses, alleviating the pain and distress. Far removed from the excitement of battle, and far beyond the rejoicings over a victory, the wards of a hospital, with their daily routine, have their own peculiar story of war. It is a story of lofty sacrifice, and is told in silent suffering, in exaltation rather than exultation, that has its highest triumph, whether ending in recovery or in passing to the Great Beyond, in the conviction of duty faithfully performed. Exceedingly interesting, therefore, was it to visit these centres of interest, the military hospitals, and get their stories in part from Tokio to the firing line. It was at the Shibuya Hospital one afternoon early in May that one could witness the manifestations of the tender regard in which the sick or wounded soldier is held in the land of Nippon. And it was also at that hospital on the same afternoon that I experienced the most delightful surprise of my trip,

delightful because of its unostentatious spirit of solicitude for the sick and wounded by one for whom the American people have a peculiar regard.

In the beautifully wooded enclosure were hundreds of convalescent patients in their long white kimonos seated or standing on the sloping ground of a little natural amphitheatre, in the centre of which were some three hundred school boys and girls entertaining the soldiers with music and outdoor games. This custom is common at the hospitals, but the programme made that afternoon unusually pleasant. The boys marched and went through various military setting-up exercises and other evolutions, with fencing, tugs of war, and various athletic games, while the girls amused the soldiers by songs and calisthenic exercises, marching to music and dancing.

The sole purpose was to lighten the burdens of the afflicted soldiers, and many a man, as he limped back to his ward that afternoon, had a happy light in his eyes and a smile on his face that plainly betrayed his happiness at having been permitted to suffer for his Emperor and for his country.

While inspecting the hospital, we were joined by a party of visitors accompanied by a nurse of most gentle manners who seemed to be especially conversant with the affairs of the hospital and spoke English perfectly. She put herself to serious inconvenience to get information and to arrange that I should see all I desired. Upon my mentioning that I was a physi-

AMUSEMENT HALL AND WARD BUILDINGS OF SHIBUYA MILITARY HOSPITAL, TOKIO

cian from America and about starting for the front, she said: —

"Then I must show you another department, where our First Aid packages are made. I cannot take you into the room, because the rules provide that a special dress must be worn and all antiseptic precautions observed, but you can look through the glass partition."

After she had explained the various processes in making the packages, I expressed a desire to obtain one, and she replied: —

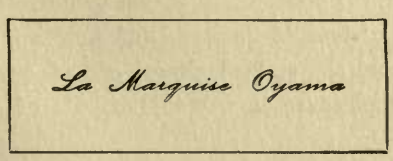
"I will try to get it, but first I must ask permission."

This being granted, she presented me with a package and expressed the hope that I would not find occasion to use it.

An interesting conversation followed on topics of the war and the work of the hospitals. She had been so considerate that, as I turned to leave, I asked her name, so I might send her some books and pamphlets which might interest her. Quietly and with a manner that was almost shy, she replied: —

"I think I have a card with me."

Then she produced her card-case and presented the following: —



She noticed my expression of surprise, and I hastened to explain that I had several letters of introduction to her, but owing to my short stay and her many engagements I had not had the opportunity of presenting them, and also that I had failed to recognize her, not having had the slightest expectation of meeting her in a nurse's dress. To relieve my embarrassment, she replied quickly: —

"It was quite natural you should not recognize me, and indeed I had no intention of revealing my identity until you asked my name. You see every one is helping in our national emergency. I am glad to do the little I can."

The marchioness devoted four afternoons every week to hospital work and, in addition, always tried to be at the station when the train-loads of wounded arrived. She spoke enthusiastically of her life in America, especially at Vassar College and of her earlier days in New Haven. There was one of the greatest women of Japan serving in the ranks, in the common cause of patriotic endeavour, forgetting all save country, and unostentatiously comforting the humblest subject of the Emperor who had served with the colours. Her work was a beautiful manifestation of the lofty spirit of self-sacrifice and devotion shown by Japanese women, and as one of tens of thousands of Americans who feel proud because she seemed almost one of our own people, it is a pleasure to pay this tribute of sincere respect.

A month later I mentioned this incident to Marshal Oyama in his Headquarters in Mukden. He nodded, and a smile illumined his countenance as he replied: —

"Yes, that was my wife. Every one is helping."

While each Divisional Reserve Hospital and its auxiliaries cared mainly for the sick and wounded enrolled in the particular military organization they represented, the hospitals of Southern Japan and coast ports naturally received the suffering, irrespective of commands.

This was particularly true of the Hiroshima hospitals, which constituted the primary Receiving Stations of Japan. Second to this came Osaka. Patients from Receiving Hospitals were transported as rapidly as possible to their respective hospitals nearest in the regions from which they hailed.

Tokio Reserve Hospitals constitute a different group in that, besides all their own home soldier patients, most of the specially interesting and unusual medical and surgical cases from other sections are sent there for treatment by specialists, provided they can be safely transported. This, coupled with the fact that more divisions of soldiers belong to the Tokio military district than to any other, helps make the capital of the Empire the greatest hospital centre.

Let us then hang the principal descriptive narration respecting military hospitals in Japan upon the visits paid the main hospital and the five branches, known as

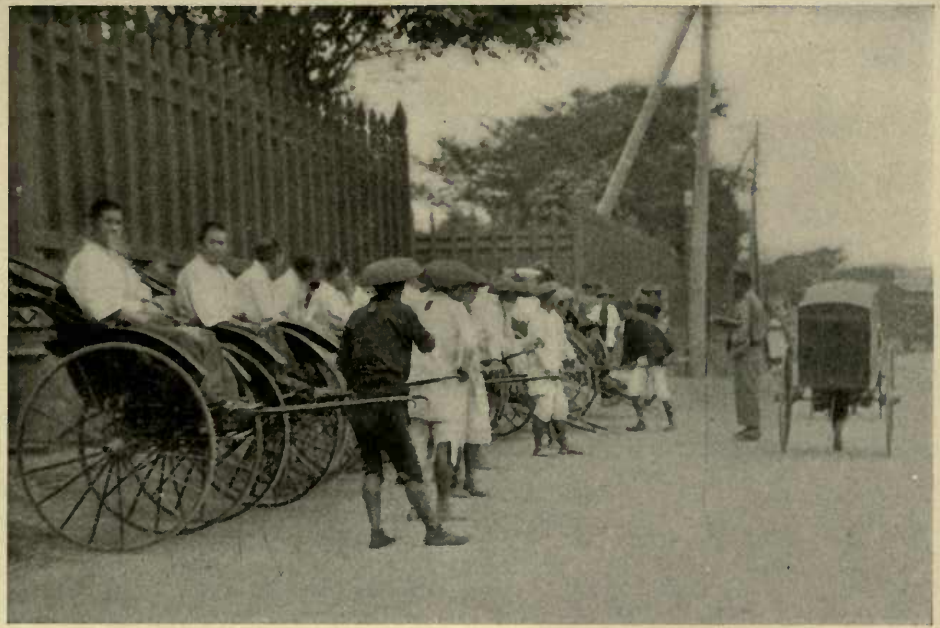
Shibuya, Touama, Hikawa, Hiroo, and Sendagoyo hospitals.

The main hospital at Tokio is situated almost in the heart of the city, just opposite the magnificent Imperial Palace Gardens and quite near the War Department Buildings.

Outside the gateway at nine o'clock every morning stood a long line of rickshaws and their runners, each tiny cart occupied by a convalescent soldier in his white hospital kimono and a white cotton Tam-o'-shanter on his head. Inside the gate, too, and reaching back to the hospital doors on either side of the well-swept roadway were lined up more of the white-gowned patients, all expectant, all cheerful, and most of them laughing and smiling. A quick order by the medical officer in charge, and the shafts of 150 rickshaws were raised to the horizontal by the runners; another word, and they wheeled into line and ambulated away in one long succession.

The main hospital admitted no cases except the more serious ones, and as the patients rapidly convalesced, they were distributed among the branches where less serious cases were taken care of, though a few who were well enough were allowed to go to the mineral springs or other private places, after constant medical attendance was no longer necessary.

The main hospital is a prominent institution during peace times and, together with the Red Cross Hospital, otherwise known as Shibuya, constitutes the es-



CONVALESCENT SOLDIER PATIENTS

About to leave the main hospital for branch hospitals in Tokio

tablishment for taking care of the sick soldier during normal times, and few changes were made on account of the war.

The capacity of the main hospital is about five hundred. The general plan of arrangements of buildings is not at all that seen in the new type of hospitals adopted for war times. Of the fourteen wards only seven are connected by runways, and then the intervening space between each building is at least forty feet, or double that usually allowed in the new edifices. All other wards stand as separate buildings, amid most beautiful shade-trees, surrounded by gardens and cut by winding paths which wander in and out, revealing at every turn fascinating scenic marvels so dear to the heart of every nature-loving Japanese.

The Main Hospital performs the function of the general administrative centre for all the five branch hospitals, so that the office buildings and clerical staff are imposing and important features here. At the branch hospitals one was astonished at the exceedingly small clerical staff kept to battle with the paper work. All trains bearing wounded for Tokio were reported at this hospital; and the number of patients, the character of the trouble, whether the patient could walk alone, needed only some assistance or must be carried on stretcher, the probable time of the arriving train, etc., was all mentioned.

Upon receipt of this information proper preliminary assignments were made to the various hospitals and

rickshaws; and litter-bearers and doctors assembled at the station to see them safely to their final destination — to say nothing of the angels of mercy, the Japanese women of rank, who charmingly greeted each soldier as he passed them on the station platform.

Daily reports of all the branches were received at the Main Hospital, including every division of hospital service as well as that respecting the patients themselves, so that proper transfers of the sick or injured might be made for special treatment, that food supplies, medicines, and general medical and surgical supplies might be purchased and supplied in desired quantities, and that general financial affairs and emoluments of officials and assistants might be met.

At the Main Hospital one found a larger percentage of contagious and infectious diseases than anywhere else in Tokio, there being on July 6th alone fifty-two cases out of a total of 470 patients. The Shibuya branch hospital, on July 6th, out of 1,386 patients had but fifty-one cases of typhoid and dysentery and about a dozen of tuberculosis. Not a case of cholera or bubonic plague had so far been reported in the army. Although smallpox may be said to be almost endemic in the Far East, there had been but 170 cases in a year and a half of warfare.

There were some disappointments in this Main Hospital — and I do not think I was hypercritical. The wooden floors were rough and only fairly clean; the beds were either clumsy, black iron ones, or wooden

bunks heavily made with board floors, for no such thing as a spring existed. The soldiers lay on uneven cotton-wadded futons, or comforts, and the same sort of things was used for covering, and those together with the white-wadded gowns of the patients were not always scrupulously clean. There were no mosquito-nettings anywhere, not even in the kitchens. This was a somewhat depressing beginning, for after one year's war in the Philippines, certain American military surgeons succeeded in developing, against the constant if not always open opposition of the Commanding General, two reserve hospitals which were superior to this main Japanese hospital. These two were the 2d and 3d Reserve Hospitals at Manila. The 2d Reserve, particularly, housed in a magnificent building, displayed beautifully polished floors, where not a speck of dust was visible; the rows upon rows of light wooden folding cots with wire springs and thin hair mattresses, covered with immaculate white sheets, clean blankets and mosquito-nettings, and unsoiled pajamas, was an institution of which to be proud. The kitchens, too, of this establishment were kept scrupulously clean, although not fly-proof.

It is a pleasure to pay tribute to some of our earlier military hospitals and to find they compared favourably with those of Japan, for Heaven knows some of them, during mobilization and after our war began, were frightful distributing agencies of disease and death, and were so conducted administratively as to retard

rather than enhance the chances of the patients' recovery — notably the receiving hospital at Montauk Point. Witness also as bearing testimony to this statement the earlier stages of the 1st Reserve Hospital in Manila, commonly known as the "Otis' Hospital," where the general commanding, not content with the jamming of poor wretches into the hot pestering wards, like sardines, permitted the erection of tents upon the water-logged grounds in the narrow intervening spaces between the buildings, thus completely cutting off all chances of air circulation. The miserable cotton houses were crowded with sufferers until the nurses could hardly squeeze alongside the cots, and even had difficulty in passing through the narrow aisles without jostling the beds of pain.

This digression is deliberately slighting the thread of my description, but I reserve the right, and crave the reader's indulgence, to make comparisons throughout of our own unhappy army hospital and medical history with that of the Japanese in the earnest hope that by reiteration of fact in manifold form the President, the Cabinet, the Army, the Congress, and the People of the United States will take heed of what the Yellow Man of the Orient has done, and will realize the positive criminality in ever again going to war unprepared to combat preventable disease.

Upon the question of flies it may be said that Japan seems peculiarly free from this common pest, and the few which invade houses spend their days buzzingly

suspended almost constantly in one spot. While I saw flies upon the food they were comparatively harmless, as I found the latrines were absolutely free from them, and the contents of the carefully covered buckets freely poisoned with disinfectants. While the food was served in kitchens not always scrupulously clean, it was taken from boiling cauldrons and placed in sterilized covered lacquered boxes with rice, and on sterilized earthenware plates with other viands.

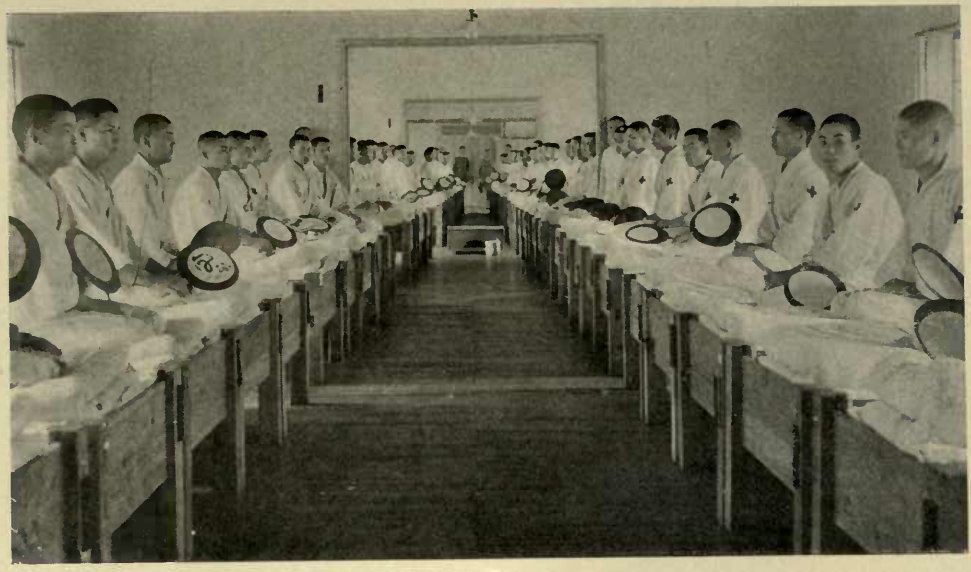
Mosquitoes do not appear in Tokio in any numbers until the middle of July. At some of the hospitals netting was being added to cover the patients' cots. In some of the branch hospitals attempts had been made to isolate the anopheles or malaria-bearing mosquito, but without success. The extremely low percentage of recognized malaria, amounting to only 1,257 cases in the entire army in eighteen months, would indicate the practical absence of the malaria-inoculating mosquito in the area of hostilities in Manchuria or in Japan. That malaria is not confused with other diseases can be positively stated, as the diagnosis is always made by the aid of the microscope.

One who has had hospital training is immediately impressed by the fact that nurses are not in constant attendance upon patients as in our own hospitals. The nurses stay in an anteroom and only attend patients upon call or when the time has arrived for ministering to the patient's needs. There was no crowding of patients in the wards, and during all my visits no

recollection comes of having seen a nurse fan a sick man. However, every man has his fan, a donation from persons, guilds, and associations, and upon a number of visits I have been offered these mementoes by the soldiers, the fans bearing upon their surfaces patriotic utterances and verses.

As we walked through the long wards, with nurses and attendants and patients all smilingly bowing, except a few poor fellows lying prone, the doctors discussed the new medical war records Japan was making, and modestly ascribed them in large part, as many others had before and have since, to the greater training the soldier of that war had received in hygiene and sanitation. That was no doubt correct, and true also is it that the Japanese soldier has been the best in the world to obey orders. The American Army can never hope to emulate the Japanese until the time shall have arrived when, through reorganization of its Medical Department, the surgeon shall have executive instead of merely advisory privileges in matters of hygiene and sanitation in barrack and field; and until the line officer shall display the same courtesy and respect to the medical expert as does his Japanese brother-in-arms.

Throughout the Main Hospital girls are used as nurses: an uncommon feature, taking the hospitals as a whole throughout Japan. In Tokio girls appeared elsewhere only in Shibuya Hospital and in the operating-rooms of some of the other branches.



WARD IN TOYAMA MILITARY HOSPITAL, TOKIO

Showing patients in wooden cots

In the operating-room stands a very modern, adjustable, glass-topped operating-table. The staff is very proud of it. It is, indirectly, the donation of a coterie of Philadelphia and New York surgeons and physicians. An engraved plate bearing the names of the donors was upon the table — a galaxy of well-known benefactors — but the only name which is recalled at the moment is that of Dr. Weir Mitchell, of Philadelphia. The Japanese surgeons exhibited considerable feeling in their expression of appreciation for the sentiment and sympathy of the American medical fraternity as exemplified in the gift.

By all odds the largest and most interesting military hospital in Tokio is known as the Toyama branch. It lies five miles out in a northwesterly direction from the Ginza or main business street, so well-known to foreigners, in the suburbs anciently given over to the parks of the daimios and feudal gods. In fact, the hospital buildings lie in an immense artificial wilderness, originally created by the Feudal Lord Tokugawa Owari, one of the Shogun's relatives. In all these are two hundred thousand tsubo (1 tsubo = 36 square feet) of charmingly diversified land, cut by streams, dotted with tiny lakes, rich in sunny meadow-lands, and caressing in shady bowers, so beautiful in all that it stirs the numbed senses of the emaciated and crippled soldier toward recovery, rivalling in beneficial effect the best efforts of the doctor and surgeon.

Seventy thousand tsubo of this park are known as

the Fifty-three Relays, because it is a miniature topographic map of the old fifty-three relay stations on the great highway between the southern island of Kyushu and Tokio. The winding footpath carries one, stage by stage, for a two-mile walk over the prominent features of seven hundred miles of landscape. The vertical perspective, of course, is very much exaggerated, and the artificial mountains are well-nigh impassable in their craggy abruptness.

In the building of this bit of landscape it is said millions of yen were expended on expert gardeners and labourers, and years were consumed before its completion. How the spirits of the builders, the patriotic shades of the dead which every Japanese believes ever present, must rejoice in the happiness and pleasure which thousands of the maimed heroes have derived from this nature's fairy-land!

The quarantine and sanitary regulations of Toyama were exceedingly strict. No one could enter its gates until after examination by a medical officer, constantly on duty at the entrance. When one passed muster and had also the necessary credentials, a small card was handed him which stated that for that day and date he was free from disease. That card had to be returned on leaving and its loss might delay one until he was vouched for by the chief officer of the hospital. One was not allowed to pass freely from the infectious wards to the surgical wards, and in several visits made to the hospital the contagious ward was always visited

last, and I was not permitted to return to the main office, though invited to wash my hands in antiseptic solution. The Assistant Chief assured me that all possible precaution was observed to prevent the transference of disease in the hospital or its introduction from the outside.

There were fifty-one wards in this hospital, divided into three main groups of buildings. The surgical series had twenty wards, two of which were entirely devoted to the extremely severe and critical cases, another ward was specialized for eye wounds, another for wounds of the mouth and another for injuries to the ear, eye, and nose in different combinations. Fifteen wards were devoted to medical cases from the front. The serious and infectious and contagious cases, however, passed to the third series of wards, surrounded by a high palisade. The two infectious wards were again separated from the others. Six wards of the last series were reserved for home patients or cases not from the front.

Each ward had its own officers, reception and dressing rooms. There was one large general operating-room for the entire hospital, with its connected bandage and instrument preparing-room, and several smaller operating-rooms for specialized troubles.

Only in some of the medical wards did cots appear; throughout the rest of the hospital the men had their bedding direct on the floor. In this connection the surgeons stated that, from a sanitary point of view,

beds were better for patients, but I was much impressed with the still greater cleanliness of those wards in which beds did not appear.

In these latter wards no one was allowed to enter with shoes on, but had to put on the sandals kept ready at the doorways. The floors were wiped up carefully each morning with damp rags and often washed with antiseptics.

It would be difficult to devise a cheaper successful hospital than this one, with no furniture except the wadded cotton mattresses and wadded cotton overcovering. A shelf under the window-ledge running the length of the room gave the patients all the place they needed for personal effects and books.

The buildings were large, light, and airy, with plenty of window-glass on each side and big ventilators at intervals near the roof. Each ward building, divided in the middle by the passageway or hall, had on either side of the hall two waiting-rooms for nurses and doctors, and a tea or hot-water room, where night or day one might secure a cup of clear, unsweetened Japanese tea, or simply a cup of plain hot water, of which every Japanese is so fond.

The wards for very serious cases were divided into separate rooms, two beds in each, and in the serious medical wards hand-basins filled with disinfecting solution stood along the hallway in which doctors and nurses were expected to wash after contact with patients. It is not inappropriate to call attention to the fact that

all phthisical patients were expected to pull a little cheese-cloth bag over their mouths as soon as the physician entered. Wherever there is suggested a necessity for the prevention of the spread of disease we find our yellow friends advancing some specific device or regulation for that purpose.

All night-soil, garbage, and waste throughout the buildings and grounds was carefully burned each day in a crematory. The latrines were covered boxes kept carefully treated with disinfectants. Mosquito-nettings were used to cover the beds after July 1st, and flies were killed off by the liberal use of klaosene (a coal-tar product) on the floors and places where they were likely to gather.

The staff of this greatest of Tokio hospitals was composed as follows: —

2 Surgeon Majors
7 Surgeon Captains
2 Surgeon Lieutenants
10 Surgeon 2d Lieutenants
1 Apothecary Captain
1 Apothecary Lieutenant
13 Apothecary 2d Lieutenants
1 Paymaster Captain
28 Contract Surgeons
4 Contract Apothecaries
553 Men Nurses
36 Temporary Men Nurses
15 Accountants
123 General Employees
4 Cleaners of Medical Instruments
13 Cooks
42 Waiters

ASSISTANTS FROM IMPERIAL UNIVERSITY

9 Professors — Surgeons and Physicians
8 Assistant Professors — Surgeons and Physicians
12 Others

ASSISTANTS FROM JAPANESE RED CROSS SOCIETY

4 Surgeons and Physicians
2 Apothecaries
2 Clerks
4 Chief Nurses (women) } in operating room and bandage
39 Nurses (women) } preparing rooms

To understand the use and distribution of this staff, let us take the list of patients for one day in this hospital. On July 7th there was a total of 2,789 patients, which meant one nurse for every four or five patients, not including the women nurses assigned exclusively to the operating-room. There were fifty-three surgeons and physicians, including the Red Cross doctors, who were always on duty, and excluding the twenty-nine consulting medical men of the Imperial University, who did not belong to the army organization and were not under its orders directly but who devoted a great deal of their time to this humane work. This gave each medical officer the supervision of more than fifty patients.

The wards were so divided that every two were in charge of a chief steward, sergeants in rank but divided into three grades. These men, with the assistance of some of the nurses, kept all the necessary daily records, and in this connection it should be stated that a patient travelled with the history of his case accompanying him. For example, when wounded or sick he was entered at the Field Hospital, where the history of his case began, in duplicate; after which he was sent back

toward Japan. The authority in charge of a party of sick or wounded was armed with the papers of every case and was required to submit them at the next hospital or station together with his patient. These original papers were never separated from a man farther than his particular ward, though duplicates were made out and sent immediately to the main office for file. In complicated and prolonged cases these papers became somewhat voluminous, particularly if the patient was transferred several times to different hospitals so that new specialists might have an opportunity to use their skill where others had failed. I saw histories filled with blood-stained drawings, with sheets crumpled and worn amid the cleaner later story. Only when the man died, or was finally discharged from hospital, was he separated from these papers, which were then forwarded to the Main Army Medical Record Office.

Everywhere one walked in this great hospital, through ward after ward, the reception was a smiling, bowing one, beginning at the doorways where the nurses and stewards of each unit were lined up to bow and salute, and continuing down the long lines of floor-laid mattresses or close-set wooden beds. No man ever lay down who could sit up, and many a poor fellow with splintered legs or, minus them entirely, with his healing stumps thrust under wire arches which supported the bed-clothes, pushed himself painfully upwards to a semi-reclining position that he might make a pitiful

attempt at a salutation or courtesy. One can never forget the memory of these mangled sons of Japan, line upon line, paying tribute with a bow and a smile. It was a sight to make a lump rise in one's throat and the tears to start involuntarily at the sense of real honour conferred.

In the surgical wards and medical wards patients who could walk were allowed almost perfect freedom; that is, they might roam about the ward or wander through the grounds at will, of course always subject to the advice and orders of doctors or nurses. This freedom doubtless did much to relieve the horrors of hospital confinement and hasten recovery for the poor fellow who hobbled feebly along the charming garden paths or bathed in the filtered sunlight under spreading trees.

That the best judgment was not always exercised, was evidenced in one case which came to notice. Suddenly, from the brink of a small hill on a sanded path, our little visiting party caught view of a white-gowned soldier ahead who, inch by inch and by the aid of crutches, propelled himself forward. He had but one leg and the end of that only a stump that was wound in many white bandages. Pain was depicted in his face and beads of perspiration poured from his forehead, but deep in his eyes was that light of joy which comes to men only in rare moments of life. The Surgeon Major pretended not to see the glory of victory in that crippled soldier's face, but instantly stopped the man and, in a voice of kindly authority, asked him

IN THE PARK OF THE TOYAMA MILITARY HOSPITAL, TOKIO

why he was in the grounds against orders. The reply came with as much of a genuflexion as was possible to a man leaning heavily on crutches: —

"Oh, honourable benefactor, I am trying my leg. I have lain on the futons prostrate for over six months and I was tired, illustrious sir — so tired! I beg pardon humbly for desiring to see if my miserable leg would obey my behest. You see, oh, honourable one, that I can walk nicely," and, smiling in pride, he straightened his back manfully to the limit of his crutches. But, nevertheless, the nurse took him home pick-a-back by the surgeon's orders, and as the soldier regretfully placed his arms around the nurse's neck I saw that his hands were totally devoid of fingers. I marvelled at the happiness through pain seen on that man's face, and the Surgeon Major, with averted head, coughed to clear his throat, and said, extenuatingly: "Oh, they are such foolish children!" A victim of the Mukden battle-field; shot also through the head; apparently dead for many hours; and the thermometer below zero, — that was the rest of the story.

The diet of the hospitals was uniform throughout and may as well be discussed here as elsewhere.

The food was divided into three classes: liquid, light, and ordinary. Liquid diet consisted of hot rice water flavoured with a little soy, the flavoury sauce of Japan. To this liquid diet stimulants were often added in the shape of saké (Japanese rice liquor) or wines, occasionally including champagne. Also asso-

ciated with the rice water, always a favourite drink, were sterilized milk and raw eggs. Beef extracts, meat broths, malted milks, partially predigested preparations, seldom made their appearance in any of the hospitals, though the hundreds of German-trained Japanese physicians were perfectly familiar with them and on rare occasions tried them on special cases.

The light diet, or second-grade food, consisted of rice soup and a portion of soft, watery rice, with certain associated foods known as "tender" foods. Cooked eggs was the only one the writer knows by an English name; the others were various vegetables known in Japanese as jankaka, nipshime, chawanushi and temazodofu (I do not vouch for the spelling). The light diet was modified by giving different amounts of soft rice, from one-third to the full ration of rice allowed to regular diet patients. Regular diet was well-cooked rice with associated foods.

Three different amounts of rice were issued, depending on condition of patient. The associated food was fresh, raw, and cooked fish, dried fish, dried melon (kwan pyo), wild grass (zemmai), pickled radish (dia kon). I could not find that beef in any form was ever issued to patients, though in the lunches for officers I saw small squares of beef in the egg dishes. Chicken was often fed to injured officers and sometimes to the men. Hot water the patient could always have, and usually tea of the weak Japanese variety, if he preferred.

When looking at the astonishingly low mortality in these hospitals, one is constrained to give diet a large share of the credit, for, as before said, in medical and surgical treatment and in physical comforts and easements for the patients, the Japanese doctors and surgeons teach us nothing. Toyama branch had 15,759 patients for the three months of April, May, and June, 1905, — the month of April included the immense number of wounded from Mukden battle-fields, — and lost only forty-one by death, or a quarter of one per cent. Those death percentages seem almost incredible, but I obtained them from original records.

The hospitals which had mainly simple cases showed almost as low percentages, whilst those dealing with serious cases naturally showed much higher rates.

At Toyama three features were highly specialized: operations on badly united fractures and malformed jaw-bones and teeth; surgical gymnastics, and massage. The other branches had also some surgical gymnastics and massage, but it was not developed to the same degree of excellence.

Captain Okaya was the great specialist in the hospital on the subject of gunshot wounds of the jaw, and as the field is practically a new one as developed by modern surgery he had to invent many of the mechanical devices for the accomplishment of results. The precise number of cases of this nature which passed through his operating-room were not divulged, possibly for the reason that the doctor hoped to write an ex-

haustive brochure on the subject after the war. But the admission was made that cases where the teeth and jaw were involved would exceed five hundred.

Of the many cases presented for examination none was more interesting than that of one man who had had every vestige of upper jaw-bone shot away, leaving the entire nasal area exposed in the roof of his mouth. After considerable experimenting the surgeons succeeded in supplying him with an upper set of teeth by backing the plate with two large rubber projections which reached into the nasal cavities. With the plate in place, the man talked quite naturally; with it out, he made extraordinarily curious sounds. He was masticating successfully with his new teeth after a month's practice.

All fractures of the lower jaw-bone which have united in false positions so that the teeth do not superimpose are either refractured — the patient being under an anæsthetic — and held in position with previously prepared wooden splints until healed, or are forced into position slowly by the painful process of wedging out. The capacity of the Japanese soldier to stand pain was constantly evidenced in this department. With mouths filled with wooden splints and a surgeon driving in a wooden wedge a fraction of an inch at a time to force a bone into position, only expressions of pain, or moans — not cries — were drawn from the victims, though the torture of the ordeal was

evidenced by the perspiration which poured down their faces.

As soon as a man was entered for the Dental Surgery Department wax moulds were made of his mouth and plaster casts made from them. From this exhibit the character of the operation needed was determined. At every stage of the work new casts were made and photographs of the patient's mouth taken, so that when a man was discharged he left behind a complete pictorial and sculpture history to accompany the written record. If bone, teeth, or foreign materials, as bullets, steel fragments, casings, or cloth were removed, they also were carefully preserved as marked exhibits.

Scientific massage was employed here very extensively, and proved of the utmost importance in military surgery. Atrophy of the nerves of arms and legs from gunshot wounds and a concomitant wasting of these members was quite common in this war, and it is claimed for massage that, when the injury to the nerve had not been too extensive, vigour was restored to nerve and regeneration of the muscle took place.

To amuse and interest a soldier, to keep him robust and healthy in barrack and field, or if sick to have him speedily convalescent in hospital, are looked upon as important factors by line officers and medical officers alike. The Tokio hospitals had amusement-halls where the convalescents could gather and indulge in games; there were reception-rooms where one might see his friends from the outside whenever they called, and the

parks about the hospitals could be freely used by everyone who could walk, and, when deemed best, the debilitated were carried out in the air and greenness and sunshine.

The Toyama Hospital had had an amusement-hall donated it by Baron Iwasaki, the head of the Mĭtsu-Bishi close family corporation, and the richest man in Japan. It is a beautiful hall, one story in height, with a veranda around its entire four sides. The floors are Japanese tatami, or matting, so the men enter in stockinged feet and sit upon the floor itself. All sorts of Japanese games of cards, dice, blocks, buttons, are played. A library of several thousand periodicals and volumes is open to the soldiers, and they may take the books to quarters, if they so prefer. Alongside the hall is a canteen, where cakes, candies, cigarettes, and aerated drinks are sold at what seem ridiculously small prices to us. Tea is served free upon demand. No supervision is kept upon the canteen, for the medical men know that any man under diet orders among the hundreds who visit the amusement-hall daily can be trusted not to indulge in anything forbidden. It may be said that the Japanese cigarette is lacking in stimulating nicotine, the aerated drinks are made from sterilized water and charged with gas on the premises, and the cakes and candies are not overstocked with saccharine matter.

When a patient dies in the hospital, he is removed to the morgue immediately and the body properly pre-

pared for incineration. Usually connected therewith is a small shrine, and if the dead soldier was a Shintoist or Buddhist, he is given the burial service of his religion. If he was a Christian — and there are a few such — he is equally entitled to Christian burial service. Relatives and those interested may be present at this ceremony if they desire, provided the case is not infectious or contagious. After cremation, however, the ashes belong to the family to dispose of as they wish, and it is then usually that the burial services and ceremonies are held at the temple and shrines with which the dead man was associated.

The water-supply of all the hospitals is derived from the city mains. In answer to questions regarding the purity of this supply, I met no doctor who seemed to know exactly what conditions obtained on the supply watersheds, but they assured me that city officials constantly made tests and microscopic examinations of the water, and that each hospital checked against these returns by making its own investigations. It was claimed that no disease-producing organisms had so far been discovered in the supply.

Distilled water was made in limited quantities in all the branches, but was used only for certain cases and for compounding. New wells were to be found in several branch hospital grounds, but the surgeons claimed the water was never used for drinking purposes but only for sprinkling the grounds and washing floors and clothes.

The other branch hospitals lost in interest after a visit to Toyama. The Shibuya was considered the finest. Coupled with it in the expressions of praise was another, whose patrons were most distinguished noblemen. Here also the sick and injured officers were gathered, living in the really handsome wards of the permanent Red Cross Society Building.

The hospital had 2,421 wooden beds, but it could accommodate forty-three hundred patients, when necessary, though, of course, nearly two thousand were obliged to sleep on the floor when it was filled above normal. The published capacity of this hospital was only twenty-nine hundred, while the number forty-three hundred was insisted upon by my surgeon captain guide. If it was possible to expand the receiving-room of all other hospitals in Japan so much above the published official maximum, then indeed it must be admitted that the Japanese had prepared for numbers unprecedented.

The specialism which came prominently to the fore in this institution was that of the eye, ear, nose, and throat, for Doctor Hori, the chief, was an eminent specialist in this direction. Over sixty of the most interesting cases of this nature were found in one group at the time of my visit, and as the troubles were all the result of gunshot wounds they presented many curious combinations and phases of injury and disease. Several of the cases were brain injuries with resultant paralyses of functions of the eye, ear, and throat.

Speaking of brain injuries recalls most interesting cases in this hospital where nervous and motor disorders had arisen from wounds of the head and spine, the most interesting case being that of a soldier shot through the neck who had sustained complete loss of sensation on the left side without loss of motion, while on the right side the motor nerves were paralyzed and the sensory normal.

Some twenty odd Red Cross Society doctors worked in this hospital, and in times of peace are in sole charge, but on a war footing they are under the direction and supervision of the Regular Army Medical Corps. A number of the medical men were practising physicians in civil life.

The Shibuya Branch Hospital had the finest amusement-hall of all. It is in a two-storied frame structure, like a Moorish temple in architecture. This was also presented to the Army by Baron Iwasaki. It is semi-foreign in furnishing, having benches about the wall and a few chairs and hard floors. A billiard-table, library, and games afford the fun. Fifty or more Japanese floral exhibitions were to be found on the large rostrum, donations from gracious individuals who renewed them as occasion demanded.

This same public benefactor contributed immense numbers of fans to the hospitals as well as the army in the field, and gave quantities of cigarettes, caps, mittens, and general presents.

Another of Japan's great commercial houses, Mitsui

& Co., also did much to relieve distress and suffering among the invalided soldiers. At Shibuya a thirty-five thousand yen operating-room, now in process of erection, is a gift from this house.

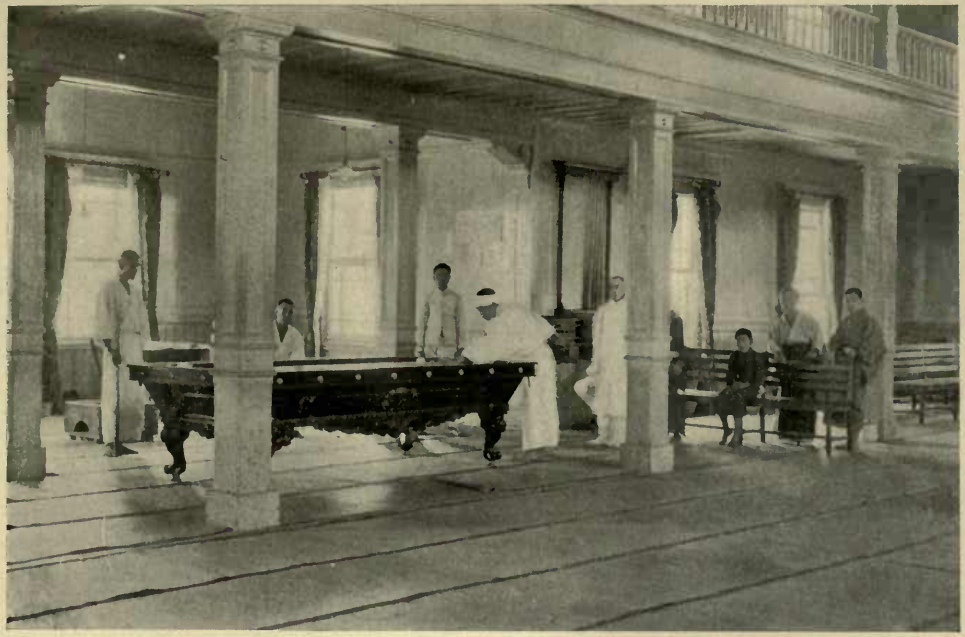
The park of Shibuya is not very extensive, but some portions of the gardens are very beautiful, and there is sufficient shade in the groves for all those who care to take advantage of it.

The Hiroo branch is smaller than the Shibuya, as its normal capacity is but 1,902, an extraordinary accommodation for 2,324 patients. About the middle of July, 1905, there were but 760 cases in its twenty-three wards, of which 469 were surgical.

The buildings were all absolutely new, as the hospital was established only after war began. The wards were exceedingly clean, and the entire staff had a businesslike stir about them. One was made to remove the shoes before entering the building. There were no infectious or contagious diseases here, and when a case developed, it was sent to another branch.

Flower exhibitions appeared in every ward of the hospital, which were kept fresh by the donors. Books and papers seemed more in evidence here than elsewhere among the patients.

An interesting department was the dental room, where Doctor Shimmaya, a graduate of a well-known American Dental Institute, was engaged in furnishing soldiers with new teeth and plates. Every man in the Japanese Army who loses a tooth in active service is



INTERIOR OF AMUSEMENT HALL, SHIBUYA HOSPITAL

Presented by Baron Iwasaki

entitled to have it replaced at the expense of her Majesty, the Empress of Japan. The soldiers are said to feel very highly honoured at being possessors of these gifts, and their owners are the envy of their fellows. Her Majesty also paid the bills for all the artificial legs, arms, and eyes supplied the Tokio divisions, and no inconsiderable number of poor fellows needed her generosity. The wounded Russians received a percentage of this bounty of teeth, eyes, and legs.

The Sendagaya Branch Hospital is the smallest of all and in some ways intensely interesting. It was recently opened by the Voluntary German Red Cross Association, Professor Henley and Doctor Aittig being the chief technical lights assisted by a few foreign nurses. All the necessary medical and surgical supplies were sent from Germany. In May the hospital was turned over to the Japanese War Department and is now operated as a full military branch institution under the direction of army surgeons. Some of the German surgeons have been retained and are in charge of one of the two sections into which the hospital is divided. The Japanese furnish all supplies and necessary nurses, and the medical personnel is a mixed one of Japanese Red Cross and military doctors.

There are to-day inside the beautiful, but rather restricted grounds some twenty-two wards with a regular capacity for 1,555 patients, and extraordinary space for 1,886. On the occasion of my visit, however, there were but 226 cases in the wards.

The buildings are mainly new ones, built after the general type. There is one German Army *papier maché* transportable hospital, combined with an operating-room of the same character. It has been demonstrated by actual use of this building that it is not to be compared in comfort or advantages to the Japanese building, constructed directly from light pine. It is hot and smells horribly of oil and paint as it stands in the sunshine. The German paper house can be erected more quickly, but where an army carries with it a corps of civilian carpenters, as the Japanese do, skilled in preparing the thin, light, wooden shells, the difference in expedition offsets the delays in transportation.

The Japanese reduced the high temperature of the interior of this paper device by adding a second, overhanging roof of shingles with a four-foot air space between it and the original covering.

A large proportion of the cases were critical surgical ones, though some of the most rebellious, and novel medical ones found their way here. One ward under German supervision exhibited such a concentrated mass of terrible suffering that one shudders at the memory. In spite of the exquisite agony many of the men must have felt with such mangled frames, not a groan was to be heard. The same ward in a white man's country would have been filled with the cries of the tortured. One is constrained to believe that this lack of emotion is not one solely due to trained sup-

pression. It is certain that the Japanese does not suffer consciously as does his Occidental brother. On the operating-table he will look at you and your clothes with interest, while the surgeon performs minor operations for which anæsthetics would be used at home.

The German surgeons are specialists in nerve grafting, aneurisms, bone grafting, skin grafting, and feature making. According to the Japanese, wonderful results have been accomplished in this work. The most frightful cases of paralysis, atrophies, and fractures, resulting from gunshot wounds, seemed to have been gathered here, and while the scientific spirit delighted, the sympathetic heart was wrung by the sight of dread war's human wreckage.

I have only indirectly alluded to the process of distribution of the sick and wounded soldiers among the various hospitals. There was a philanthropic side to this work which must not be overlooked, in which Japanese noblemen and women worked incessantly to add as much as possible to the comfort of the soldier heroes who suffered and bled in the country's cause.

Not only did delegations of sympathetic friends meet the train-loads of soldiers which rumbled into the Shimbashi station daily, but a Reception Committee awaited them at various resting-places, where refreshments were served and wounds re-dressed by the skilled Red Cross nurses, and where small presents were made to every man. Short speeches, too, were usually indulged in, generally made by that distinguished man

Baron Sengai, the Mayor of Tokio, whose family boasts of a direct lineage older than the Emperor's. The Mayor thanked the soldiers for what they had done for the Emperor, the country, the city and their families, and dwelt on the honour of serving the cause, finishing with expressions of sympathy and hope for prompt recovery.

An interesting story is told in connection with Marchioness Nabeshima and her voluntary work of mercy as a Red Cross nurse. It is stated that this talented woman was always present at one of the rest stations when soldiers arrived, and ministered to their wants with the same earnestness as the ordinary staff of nurses. There was nothing to distinguish her from the others, in her white, nurse's garb. A badly wounded, but haughty soldier, proud of his Samurai blood, was being attended by this titled gentlewoman and having his wounds re-dressed. He addressed her again and again in the terms used by the lordly to the lowly, the language of the master to the servant. A brother soldier, recognizing the lady, attempted to make him understand the situation by indirect utterances, but the pain-ridden man was heedless, until his friend blurted out: —

"Do you not know you are talking to the noble consort of your former feudal lord?"

As the terrible enormity of his conduct struck home, the man grew pale, gasped and fainted completely away. In the old Samurai days he would have paid

the penalty of the offence by committing harikari, but the Marchioness graciously soothed him with gentle words, recalling his loyalty and patriotism for the New Japan, as inspired by the Emperor, and left him happy in his humility.

This is the spirit of chivalry — the new awakening of patriotic ardour that thrilled and inspired the children of Nippon to the deeds of heroism and bravery and self-sacrifice that characterized the titanic struggle.

CHAPTER III.

HOSPITALS ON THE LINE OF COMMUNICATION

IN the southern suburb of the thriving city of Osaka, at the eastern end of the Inland Sea, and occupying the grounds of the recent International Exposition, was the first military hospital of importance *en route* to the front from Tokio. Seventy-five connected, one-storied pavilions, each about a hundred feet long, arranged in parallel lines on either side of a central aisle, provided room for twenty thousand patients, although at the time of my visit only three hundred patients were being cared for in the pleasantly decorated wards. Carbolized wet foot-mats at the entrances were intended to prevent the introduction of dust and germs. The buildings, though somewhat crude, were well-ventilated and in excellent sanitary condition. The dominant note was one of cheerfulness.

A series of ten coloured charts and diagrams, displayed on the walls, showed at a glance the records of the hospital work accomplished: the relative frequency of each disease, the infectious diseases being recorded separately; the percentages of deaths from wounds

and other causes; the records of admissions and discharges, etc. Those charts were arranged in circles, and the size of the segments allotted to each item, together with their different colours, permitted an instantaneous survey of every phase of hospital work in both its actual and relative significance. The authorities were unwilling to part with a copy of those ingenious charts, lest their publication might convey military information to the enemy, who at that time had not yet received the staggering blow of the great naval defeat. The following statistics, however, were furnished.

From June 1st, 1904, to January 1st, 1905, only seventy-six deaths occurred from the following causes: anæmia, 1; pneumonia, 1; bronchitis, 1; intestinal catarrh, 1; tumor, 1; accidental injuries, 2; bullet wounds, 8; shell wounds, 5; fracture, 1; beri-beri, 55. They were distributed over the various months as follows: —

685	patients,	no	deaths,	in June
510	"	"	"	in July
3,770	"	13	"	in August
8,680	"	56	"	in September [1]
2,300	"	2	"	in October
1,900	"	4	"	in November
1,085	"	1	"	in December

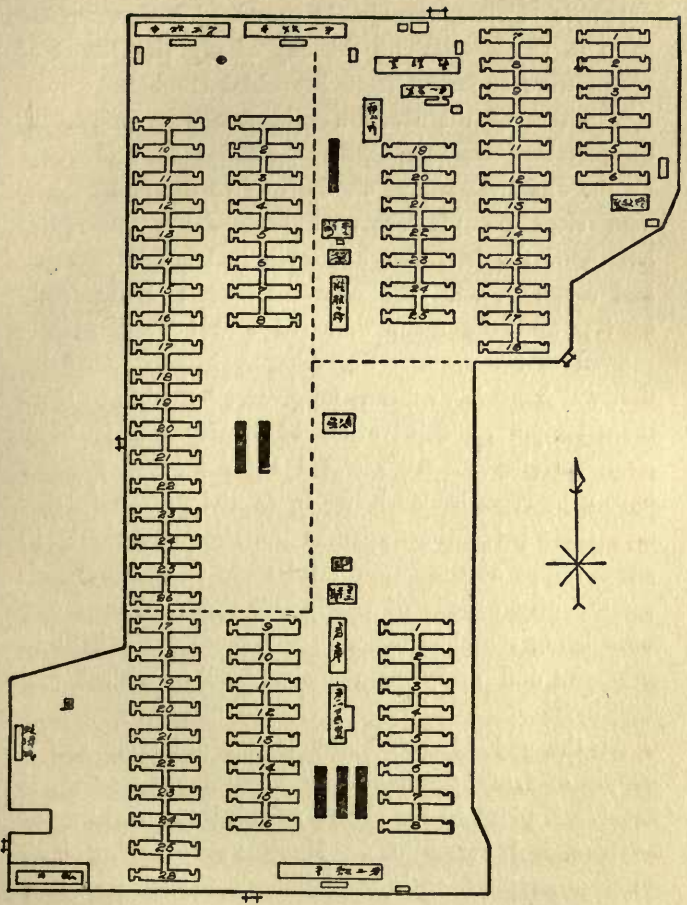
The further record up to June, 1905, was as follows: —

[1] This was in the month following the battle of Liaoyang.

780	patients,	2	deaths,	in January
1,880	"	2	"	in February
3,900	"	5	"	in March
870	"	5	"	in April
357	"	2	"	up to May 22d

or a total of ninety-two deaths in a year in an average number of 2,250 patients in the hospital, or about 4.1 per cent., calculated upon a shifting base, with patients left over from month to month. One certainly left the hospital with increased respect because of the wonderfully favourable results obtained through the methods of management and treatment.

There were five more military hospitals at Osaka, but the above described was the only one occupied at the time of my visit. At Hamadera, however, ten miles below Osaka, beautifully situated on the Inland Sea, was the hospital for the largest camp of Russian prisoners in Japan, and which naturally aroused especial interest. Of the sixty-six thousand Russian prisoners, at that time in Japan, twenty-eight thousand were quartered in the camp, and there was considerable sickness among them, apart from wounds received in battle. In that vast stockade several hospital buildings were erected, long structures connected by passageways, the beds placed on either side, similar to the arrangement in the quarters occupied by the Japanese sick and wounded. Nothing was lacking for their comfort. They were treated as well as the Japanese sick, and they repeatedly expressed themselves in grateful terms



PLAN OF MAIN OSAKA RESERVE HOSPITAL.

for the treatment accorded them, a fact of which the Japanese officials were justly proud. There were 650 cases in the hospital on the day of my visit, most of whom were suffering from bronchial troubles.

The rest of the Russian prisoners were housed in comfortable, sanitary barracks, similar to those used by the Japanese troops on the way to the front. The men slept on platforms running down the entire length of the barracks, and each had ample covering and room. Their food was wholesome; I ate freely of it; and the men, well fed and housed, plainly showed that they were quite happy in the knowledge that war henceforth meant no greater hardship to them than temporary deprivation of liberty. Indeed, so many privileges were granted them that they could hardly be regarded as being in captivity. To further save their pride the Japanese sentries were rarely in sight except at the gates. Not more than ten guards accompanied a body of nearly two thousand men who were being marched down to the shore for a bath in the sea, and every man looked well-nourished and healthy.

At the end of each building was a latrine and a supply of fresh, flowing water where every man could bathe. A plaza in the centre afforded opportunity for lectures and recreations. Many were playing ball. Various supplies, such as stationery, thread, and needles, even dainties, could be procured, and religious services were held at a Greek church facing the plaza.

In one of the compounds of the prison Japanese instructors were actually teaching ignorant Russian peasant soldiers how to read their own language.

Next in importance along the line is the great group of reserve hospitals in Hiroshima. They are beautifully situated beside a shallow, rippling river, lofty mountains in the near distance encircling the city. Away to the south the sacred island Miajima, always an inspiration to a Japanese, is in sight, the island where no one is permitted to be born or to die, where the deer eat out of one's hand and where the famous Torii is built far out into the water. Here stands the old temple on whose pillars thousands of soldiers before starting for the front, and hundreds of tourists, have nailed wooden shovels bearing expressions of good will to Japan and wishes for her success in war.

The grounds surrounding the hospital suggested the highest development of botanical gardening, where trees and shrubs and flowers grow in profusion. To these beautiful surroundings the sick and wounded were brought home when invalided. Most of the available statistics are presented in another chapter, but for purposes of comparison it may here be stated that there were: —

4,398	patients,	16	deaths,	in June, 1904
4,802	"	32	"	in July, 1904
12,812	"	186	"	in August, 1904
20,918	"	345	"	in September, 1904 (the highest record in the hospital)
15,894	"	295	"	in October, 1904

18,603	patients,	312	deaths,	in November, 1904
15,046	"	218	"	in December, 1904
7,493	"	121	"	in January, 1905
15,309	"	94	"	in February, 1905
15,340	"	90	"	in March, 1905
12,336	"	107	"	in April, 1905
5,927	"	73	"	in May, 1905

This is a total of 1,889 deaths out of an average, by months, of 12,400 patients, a death-rate of about 1.5 per cent.

At this hospital the army surgeons made the most extensive use of the X-ray apparatus, fully a thousand skiagraphs having been made and more than six thousand wounded examined by means of it. Here also most of the operations for traumatic aneurisms were performed — practically a new field for army surgeons. Appendicitis, which the chief surgeon characterized as an "American disease," was almost unknown, and there had been but one operation for hernia. This contrasts strikingly with the American record, especially in the tropics, where these operations were very frequent.

At the Hiroshima Hospital they introduced a system of rendering serviceable old materials which are usually discarded in other hospitals. Old bandages and cotton were thoroughly sterilized by boiling. The cotton was then put through machines that literally shredded it, after which it was ready to be made up in packages for use again. By this means much money was saved.

Crossing the sea to Manchuria, still further on the way to the front, one came to the three great hospitals

at Dalney — a main one and two branches — where the sick and wounded rested before being taken back to Japan. The main hospital had a capacity for twenty-nine hundred patients; one of the branches accommodated twenty-one hundred, and the other one thousand patients, making a total of about six thousand. That was far short of the capacity of the Hiroshima Hospital, which cared for more than three times the number. But at Dalney, where was situated the last base hospital near the seat of war, ships were always lying in the harbour ready to take convalescent patients away.

The main hospital was opened on June 24, 1904, by a Red Cross detachment while the cannons were roaring not more than five miles away; it was situated close to the railway and formed part of the Russian city, which was looted and burned by the predatory Chinese as the Russians fled after the battle of Nanshan Hill.

The main hospital consisted of sixty buildings, mostly former dwellings, occupying both sides of the street. A Greek cathedral at the extreme west was utilized as a hospital for Japanese officers. The Russians' hospitals consisted of a group of substantial stone buildings far to the south of the railway station. These buildings were splendidly situated and truly representative of the solid structures which the Russians scattered throughout Manchuria, and which, incidentally, were monuments of the insincerity of their oft-repeated pledges to evacuate the region and restore it

to China. The other branch hospital was composed of a group of buildings situated to the east, with a large administrative building in the centre.

The severe fighting at Liaoyang, Port Arthur, and Mukden was responsible for more than 220,000 patients who poured into the Dalney hospitals. Of these only 3,150 died, indicating a death-rate of a little more than 1.4 per cent.

Under Japanese care and by their love for gardens, the bare, desolate Dalney Hospital grounds were promptly transformed into a park of flowers and trees, in which a monument to those that died at the hospital and a shrine, where daily services were read over the dead by an eminent Buddhist priest from Japan, were not forgotten. The dead were cremated at Nan-shan Hill, a few miles away. As indicative of Japanese reverence for their lost soldiers, the crude altar of the shrine exhibited an admonition to treat the dead with respect and to pray for them.

The Russians having retreated beyond the Sha-ho, the great hospital at Liaoyang, in the north, was opened on November 17, 1904; up to the latter part of June that hospital had cared for 92,916 Japanese patients, of whom 51,745 were wounded and 41,171 sick, a large part having come from the engagements about Mukden. Besides those there were more than thirty-five hundred Russian sick prisoners. As usual, the Russians had built the railroad station a considerable distance from the town — for real estate specu-

lative purposes — surrounding it with permanent stone structures — 148 of them, which, it may be assumed, they had no intention of presenting to the Chinese. Each structure was isolated, but the Japanese, with their inborn genius for adaptability, selected fifty in parallel lines, cut large openings in the adjoining ends and connected them by wooden corridors, thus creating two excellent hospitals with long rows of wards.

As the Japanese in the course of the campaign captured large supplies from the Russians, they formed the habit of giving vent to the serio-comic expression "Thanks, Kuropatkin!"; and as they found those 148 buildings at Liaoyang, and adapted them to hospital service, they again had occasion to exclaim, "Thanks, Kuropatkin!"

The patients, lying on mattresses on the floor, were protected from flies and mosquitoes by immense nets suspended from the ceiling and practically covering the entire rooms. A large amount of ice was found stored in Mukden, which proved of immense value, thanks to Kuropatkin!

The hospitals were situated almost in the shadow of one of the most beautiful Brahmin pagodas in China; it was octagonal in shape and stood on a knoll with numerous trees at its base, where birds were singing joyously. Here the Chinese would seat themselves in groups to listen to the gaily plumed songsters. This pagoda was constructed by the Koreans and is said to be eighteen hundred years old.

The military hospital at Mukden, visited next on the journey north, was one formerly used by the Russians and to which they had sent their wounded from the battle-fields to the south. It was adjacent to the railroad station, which is three miles from the walled city, and was a fine stone structure with a capacity for about six thousand patients. After the great battle of Mukden the Japanese had to crowd it with seven thousand wounded, and also to utilize several other buildings for similar service. Large quantities of medicines and instruments were captured at Mukden, most all of which were of excellent quality. Those Russian hospitals were spacious buildings, accommodating four rows of cots. In commodious rooms, in the central section of each of the buildings, the sick or wounded Japanese officers were quartered.

Further to the north was the hospital at Tie-ling, which I visited early in June, after it had been in operation less than a month. It consisted of several houses in adjoining Chinese compounds and was complete in its appointments in spite of its newness. The medical officers justly prided themselves on their water-testing outfit, their fumigating plant and their portable ovens for the disinfection of clothing. There had been only 329 admissions to this hospital and no deaths. At the time of my visit it contained ninety-one patients, thirteen of whom had beri-beri, then the most prevalent disease in the army.

Still another variety of hospital visited was a divi-

KITCHEN, MAIN MILITARY HOSPITAL, TOKIO

sion hospital on the battle-field at Papo-Tong, about twenty-five miles northwest of Tie-ling and a few miles directly behind Oku's front. It was well equipped, with X-ray apparatus, microscope, and water-testing outfit, and the surgeon-in-charge, Major Taniguchi, made his patients all the more comfortable by his deadly warfare on flies. It consisted of several Chinese mudhouses, and, as in all Chinese houses used for hospitals, the patients slept on the kongs, or brick beds, occupying each side of the main room. The houses were dreadfully dirty, of course, but Japanese principles and methods of cleanliness soon held sway and rendered them fairly habitable.

That field hospital was provided with a portable X-ray machine, as was the case with the division hospital of each Japanese army. Although the apparatus had been packed, preparatory for removal further north, Major Taniguchi had it unpacked and adjusted in order to test its faultless method of operation, and the experiments were successful in every detail.

In the field X-ray machines had only a limited use, owing to the Japanese rule not to perform any avoidable operations there. It might have been thought that the mere presence of such an apparatus at the front would be a temptation to perform operations, but in view of the high standard of discipline prevailing in the Japanese Medical Corps no temptation was strong enough to endanger the breaking of rules. Occasionally, however, it proved valuable, and the fact that it

was included as a regular item in the medical outfit shows to what length the army surgeons had made preparations for the war.

There were about fifty patients in that division hospital, one of whom had smallpox. Major Taniguchi expressed surprise at the slight number of smallpox cases, for the valley of the Liao River in Manchuria is a veritable culture-ground for this disease, hundreds of cases existing among the Chinese which they cunningly conceal.

The visit to all those hospitals revealed a uniform condition of perfection, humanly speaking, in the theoretical and scientific arrangement of all the details and their practical execution in regard to everything that could in any way render the unfortunate lot of the inmates a lighter and happier one. Everywhere attempts were made to cheer the patients, if in no other way than by the display of a few miniature flags. Convalescent patients would busy themselves with making ornaments, queer toys out of old bandages and bits of cotton, the only available material at hand. There were men on horseback, birds in dwarfed trees, weird-looking animals and artificial flowers. One of the patients who took delight in that innocent distraction was a young soldier who, when lying on the ground at Mukden, with his hands and feet frostbitten, was bayoneted three times by a retreating Russian. Both his legs and the greater portion of his hands had been amputated, mere stumps remaining,

and it was a wonder he survived. However, he was happily looking at the toys and said he was glad to have served his Emperor. Truly, the military hospitals as well as the battle-fields reveal the hell of war!

CHAPTER IV.

TO AND FROM THE FRONT

UNBOUNDED hospitality characterized the treatment accorded by Japan to the foreigners who were permitted to accompany her armies to the front. Nor was that hospitality confined exclusively to the military attachés. It was most courteously extended to the writer as a private citizen, whose sole object in visiting the actual scene of warfare was to observe every possible phase of the medical system in operation in the field. Similar civilities have never, heretofore, been granted to an unofficial visitor, but the Minister of War, without any solicitation or even expectation on my part of so extraordinary a favour, classed me as an attaché with all the privileges pertaining to that position.

To appreciate adequately that courtesy it should be borne in mind that the attachés were the guests of the Emperor; for, the Japanese Diet having failed to appropriate funds for the maintenance of visitors, he met the situation by personally assuming that expense. Every man thus honoured was, of course, additionally bound to observe absolute secrecy with regard to any

military information that might come, by accident or otherwise, into his possession. The hospitality of the Emperor included transportation by land and sea, food and shelter and a mount and its care, with free use of the mails to and from Japan — subject, of course, to the censorship. The visitor had as comfortable quarters and as good food as the highest generals, and, in the exigencies of travel and observation, he was provided with the best animal available when the horse was essential, or he travelled on the best steamships and railroad-trains at hand in other circumstances. All that was required in return for these courtesies was that he should subject himself to military rules, and conform to the ordinary laws of civility binding upon a guest.

Mention of some of the scenes on the way to the front, in the line of preparation for continued war, will enable the reader to realize how thoroughly in keeping with all other provision was that made for the medical phase of the conflict.

Ordered to report at Ujina, the port of Hiroshima, to sail on "a certain date," on "a certain steamship" to "a certain place," I found myself on the six-thousand-ton transport *Inaba Maru,* Captain Bainbridge commanding, and was soon steaming through the beautiful Inland Sea.

From the moment of passing the Straits of Shimonoseki it was evident that some unusual event was anticipated. Captain Bainbridge, with whom I passed

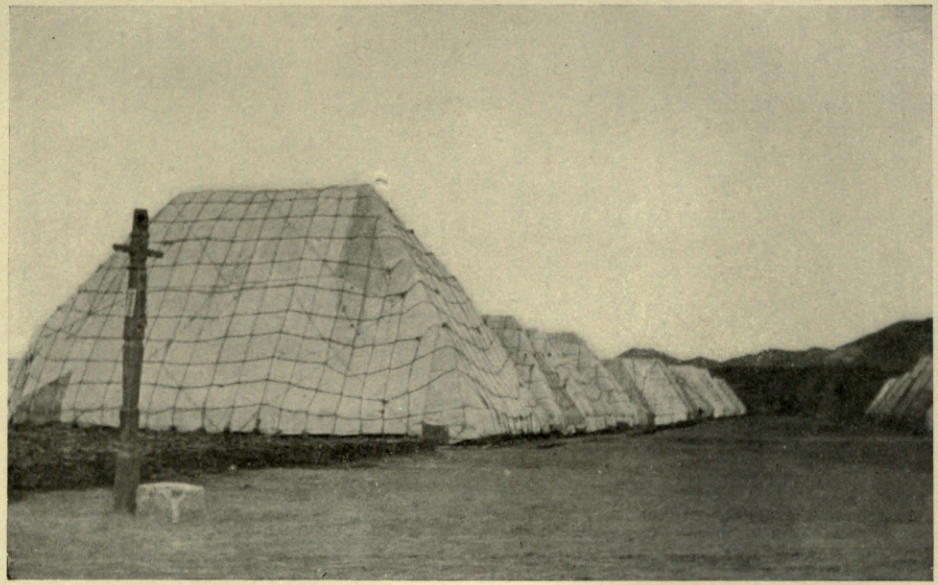
much of the time on the bridge, was obviously concerned over the signals he received as we passed into the Japan Sea. Interest was heightened shortly afterward by the appearance of four Japanese torpedo-boats, rushing northward at full speed. In but a few hours we neared the extreme southern end of Tsushima, where the signals read: "Proceed with the utmost care!"

Soon afterward a big Japanese cruiser appeared and escorted us out of the zone of danger — for at that moment Rojestvensky and the Baltic fleet was entering the Straits, and Admiral Togo, with the combined fleet of Japan, was on his way from the north to meet him. The *Inaba* had been the last transport to cross the Straits before the great naval battle began. A few hours later the policy of Russian aggression in the Orient had passed into history, and the Russo-Japanese War was practically a memory. It was a terrible disappointment not to linger and witness the epoch-making spectacle.

While threading our way the next day past the mines that literally choked the entrance of the harbour at Dalney, our pilot-boat signaled: "Glad you escaped the enemy!"

The approach to Dalney furnished the first revelation of the vastness of the preparations made by the Japanese for continuing the war. At a distance of four miles the hills seemed to be dotted with tents.

"Many men in camp there?" I asked Captain Bainbridge.



ARMY SUPPLIES AT DALNEY

These piles, about 50 feet high and 60×80 at the base, covered many acres of ground

"Those are not tents," he answered. "They're supplies."

Sure enough, on approaching closer we could see that what I had thought were tents were enormous pyramids of military stores, covering an area fully a mile square. Later examination disclosed the fact that each pyramid was eighty feet long by sixty feet broad, and that they were nearly fifty feet in height. Food, chiefly bags of rice and barley, ammunition, hay, wood and other supplies were piled in compact form and covered with canvas battened down with ropes. Making street after street, like enormous tents, those pyramids stood in vast array. The sight was imposing. I was informed authoritatively that sufficient food was under cover in Dalney to provide the entire army of Nippon more than a year; and my informant added: "These are only a part of the stores that have been sent to Manchuria, as a great deal has been forwarded to Mukden, Liaoyang, and the front."

It was easy to believe that a year's supplies for all those thousands of men lay under that sea of canvas; and, after that spectacle, one was not to be surprised at anything in the way of preparation Japan had made to care for her troops in case of disaster to Togo's fleet.

The activity on shore at Dalney was tremendous. The magnificent stone piers — which the Japanese had only saved from destruction at the time of the Russian evacuation by surreptitiously cutting the wires connected with the mines — were covered with railroad tracks on

which hundreds of cars were being continually shifted. Twenty transports and four hospital ships were anchored in the harbour, held under orders until the result of the great sea-fight should be made known. More than five thousand Chinese coolies were handling the cargoes from the shipping, and three thousand more were engaged in the town under military supervision. Dirty and sinister-looking were these coolies, strong of limb and long of wind, and their forbidding appearance made one feel as if he had fallen among a colossal band of brigands, cutthroats and Hung-hutses. Many of them were living in the old Chinese city in Dalney, though several thousand had been compelled to make their habitation far out on the hills to the south, because their uncleanliness was a menace to public health.

A Russian drosky — captured at Port Arthur — awaited us at the pier; and, accompanied by a young officer of the Etappen service, we were driven through the old Chinese settlement to what had once been the splendid Russian city of Dalney. Here was a spectacle of the ruin of war! Hundreds of handsome brick dwellings, that in an American city would have cost from $10,000 to $50,000 each, were wrecks of fire and pillage. The heavy brick walls that faced the well-paved streets and enclosed spacious gardens were alone undamaged. The roofs of the houses had fallen in, the windows had been smashed and the door-frames stolen. The interiors had been stripped of everything that possessed the slightest value. Only the massive stoves,

larger than most furnaces in American houses, remained, and that only because they could not have been removed without the aid of derricks. The Chinese coolies, freed from the slightest restraint after the evacuation, had turned Hung-hutses and devastated the city before the arrival of the Japanese and the establishment of martial law had brought order out of chaos and transformed the thieving bands into disciplined workmen.

Millions of rubles had been expended by the Russians in public edifices, theatres, churches, parks, boulevards, barracks and palatial private residences in Dalney, the terminus of the great Trans-Siberian Railway, destined, as they believed, to become the Paris of the Orient. Still better proof was that of the insincerity of the Russian promise voluntarily to evacuate Manchuria.

The best that the limited equipment of the railroad could provide for us was a third-class carriage, in which the journey of twenty-six hours to Mukden was taken, the average of speed being about twelve miles an hour. The Russians had left little more of the railway than the road-bed and the rails. The locomotives had been destroyed, and it had been necessary to bring others from Japan. The track gauge had to be narrowed to conform with the Japanese railroads, thus forming, incidentally, a measure of defence in the event of an attempted invasion of the territory, for the Russian rolling stock could not then be made available on it.

The Russians had also destroyed, or wrecked, every bridge between Dalney and Kai-yuen, one hundred miles north of Mukden, the usual method having been to dynamite one or two spans of each structure. Some of those bridges were hundreds of feet long, for Manchuria is a land of many streams and of violent freshets in the rainy season, and it was necessary to build those viaducts high and strong. Few better examples of bridge construction are to be found than existed along the road from Harbin to Port Arthur. The reconstruction of those bridges was a gigantic task, but the Japanese attacked it with characteristic energy and enthusiasm; and by midsummer after the Russian retreat the wrecked sections were replaced with ironwork brought from Japan.

Everywhere the most modern engineering systems were in operation, an instance coming under my observation as we landed at Dalney. There a shipment of freight-cars was being unloaded from a transport. From one hatchway a crane lifted the trucks of half a dozen cars at a time, the wheels fitting the tracks on the pier; while a few feet beyond, a second crane swung out from another hatchway with the bodies of the cars. The trucks were run under these bodies as they descended; expert mechanicians rapidly adjusted bolts and screws; and in less than half an hour after their removal in sections from the vessel's hold the cars were alongside a terminal building being loaded with material, and were *en route* for the front the

same day. That was the spirit and system displayed in the work of railroad reconstruction; and, at the time of my visit, twelve trains daily were running each way between Dalney and Mukden.

Passing northward one was impressed by the destruction of all the railroad stations and adjoining structures. Like the other Russian buildings in Manchuria, those stations — fine edifices of granite — had been built for permanent use. No trans-Continental line in America has an equipment comparable in this respect to the Trans-Siberian Railroad, and one could not repress a smile as he thought of the official Russian promises of evacuation.

But sights other than wrecked bridges and buildings soon occupied our attention. On all sides thousands upon thousands of natives were peaceably cultivating the fertile ground, where less than a year before the opposing armies of Russia and Japan had met in mortal combat. Similar conditions existed along the road to within a few miles of the city of Mukden. At each of the battle-fields were visible traces of trenches, with the sand-bag shelters and earthworks for the protection of the artillery and pitfalls fast disappearing under the growing crops. Nature was gently obliterating all evidences of the most terrible form of human violence at Teh-lissu, Tai-schi-chao, Hai-cheng, Liaoyang, Sha-ho and the others of those sinister spots. Near the railway as one approaches Liaoyang is Chusan-po Hill, where the gallant Thirty-Fourth Infantry

was annihilated to a man, and, a few miles beyond, across the Sha River, could be seen Putiloff Hill, the scene of equal gallantry, where both armies displayed a courage unsurpassed by the heroes of Port Arthur.

At almost every station were vast stores of supplies similar to those at Dalney, and everywhere they were gradually being pushed to the north, slowly and systematically.

Not until crossing the Sha River did I realize what this movement meant. Lumbering Chinese carts, with stocky little horses between the shafts and four or five donkeys or mules harnessed in front (the only practical method of conveying freight in that country of alluvial soil and heavy rains), began to appear by the hundreds. They moved in long trains, each cart heavily loaded with army supplies. Soon the numbers multiplied into thousands, going north to Mukden, and equal numbers returning to the Sha for more supplies. Those carts indicated that the railroad had reached the limit of its transportation facilities, and that the prompt forwarding of supplies necessitated the use of that primitive method of conveyance. War proved a blessing to the local peasantry, who were making five times more money carrying stores than by their normal occupation.

Nor were the military authorities content to depend alone upon the railroad and carts in pushing forward the army supplies. They demonstrated great ingenuity in devising another method of transportation. The

country about Mukden is flat. Upon the ground the Japanese had laid a portable railway. Hundreds of hand-cars on that miniature road were loaded with army stores, and propelled by soldiers in squads of half a dozen. The prevailing winds at the season of my visit were from the south, and the Japanese utilized them. They raised large canvas sails on the cars, and let the wind blow the craft and its cargo along. There was a veritable fleet of prairie schooners, the like of which was never seen before! I rubbed my eyes to make certain they were realities and not phantom ships gliding by the hundreds over the land. Let no one hereafter classify the prairie schooner with the horse-marine! The prairie schooner is an actuality, and the Japanese have shown the world how to utilize it in time of war.

At Mukden I was driven to a yamen in the heart of the city, where were displayed two large Japanese flags and where two sentries stood on guard. That was the Manchurian Headquarters of the Imperial Japanese Army, and it furnished another example of the unostentatious method of the Japanese in making war. There was the headquarters of one of the greatest armies of the world, and not a dozen soldiers were in sight. There were no horsemen galloping madly about, no gaudily uniformed subalterns darting to and fro, no rushing orderlies; simply two sentries on guard and three or four others within the compound. And yet inside the yamen were Marshal Oyama with

his two brilliant assistants, Generals Kodama and Fukushima, and other officers of high rank, engaged in directing the movements of the five great armies in the field, comprising a total of nearly six hundred thousand men.

Captain S. Tanaka, General Fukushima's aide-de-camp, extended a most hospitable welcome, escorting me to a neighbouring yamen that had formerly been occupied by the Russian staff under Kuropatkin — and which the Japanese officer playfully termed the "Hotel Yamenski."

Not to have seen Tanaka would have been to miss one of the pleasures of visiting the front. I had known him a year before in Tokio, when he commanded the Ah Cheng Cadets, as the army of war correspondents encamped at the Imperial Hotel were playfully designated, and later, with General Fukushima, to their surprise, in Newchwang, having reached that city before their arrival, and as the Russians were evacuating it. Tanaka spoke English perfectly, although before he went to Manchuria he had never been outside of Japan. He is the officer to whom was entrusted the difficult diplomatic duty of acting as go-between, when ninety war correspondents at the outbreak of hostilities were clamouring at the War Department in Tokio for permission to go to the front, and of persuading them to accept his reiterated promise that they should start "in a few days," days that lengthened into weeks and months, and almost drove some of

them to desperate measures. The young captain is one of the most subtle and clever officers in the Japanese army, though many of the foreign correspondents regard him as the specimen arch-deceiver of his country. Tanaka appeals at once, however, to the American idea of good-fellowship. He is an admirer of Mark Twain, and more familiar with the works of that humourist than most Americans. Thackeray and Hawthorne are also among his favourite authors, and he is an eager student of history. Another of his claims to recognition by a New Yorker in a distant land is that he is a master of American slang, and can say "How!" when he raises his glass, with as much facility as any American frontiersman. Tanaka paid a high tribute to Kuropatkin as a soldier, but rolled in his chair with pure delight as he recalled what he declared the Russian general's most frequent bulletin to St. Petersburg: "We are advancing to the north in perfect order," and tears actually started in his eyes as he gleefully repeated the phrase over and over again. He pointed to the great Russian boots that fairly engulfed his stubby legs, and assured me that thousands upon thousands of Japanese soldiers were wearing others like them, "thanks to Kuropatkin." It was due to the same involuntary benefactor, by the way, that Tanaka was enabled many times in an evening, with bumpers of vodka, to remind his guests to "drink square," and the humour of the situation was irresistible when he told of the capture of a car-load of

music-boxes, the repertoires of which consisted solely of Russian triumphal songs.

Another phase of Tanaka's character was revealed when, at dinner, he informed us of the destruction of his regiment at Chu-san-po, below Liaoyang, not a man in the action escaping. He, the only officer detached from his regiment, and a few privates who were doing stretcher duty at the time, were the sole survivors from nearly three thousand men. Referring modestly to the bravery of his fellows and his regret that he had not been with them, he added: —

"I am the only officer left, and it was my duty to have died with them. We drink to my comrades, who died for the Emperor."

As, in silence, we toasted the memory of those gallant men more than a suspicion of moisture was in Tanaka's eyes, and his throat swelled as he reverently bowed his head.

An incident is recalled relating to another officer, whose regiment was annihilated during the fighting before Mukden. That officer was assigned to escort the foreign attachés over the field and to explain certain features of the battle. He repeatedly apologized to us for being alive, seeming to regard his continued existence as a reflection on his valour. When, a few days afterward, he received orders to go to the front upon a dangerous mission, his sole comment was: "I am happy, for now I, too, can die."

That was the spirit which pervaded the Army of

Nippon, proving that the rules of conduct drawn up by his Imperial Majesty, and known as "the virtues of the Emperor," held the inspiration ascribed to them by the various generals and admirals in their reports of victories. Those seven virtues or rules, which were issued as a general order and could be repeated by every soldier or sailor in the service, were as follows: —

1. Be sincere and loyal — shun untruthfulness.
2. Respect superiors and be true to comrades — shun lawlessness and insolence.
3. Obey the command of superiors irrespective of its purport — never resist or disregard it.
4. Value courage and be diligent in the performance of duty — shun cowardice.
5. Be not boastful of brute force; neither quarrel with nor insult others, thereby engendering hatred.
6. Cultivate virtue and practise frugality — shun extravagance and effeminacy.
7. Cherish honour and reputation — shun greed and vulgarity.

Tanaka was not the only one at Manchurian Headquarters with a sense of the ridiculous. He told us that Marshal Oyama had roared with laughter when informed of the discussion in the United States, started by some after-dinner wag at the last St. Patrick's Day celebration, as to whether or not Oyama and Oku were of Irish descent and entitled to spell their names with the apostrophe. The Marshal thought that the Ohara family, which is numerous in Japan, ought to be accorded the same privilege as himself and Oku.

Before calling on Marshal Oyama I visited General

Fukushima, whom I had known in Peking during the Boxer campaign in China. He was the hero of a famous ride from Berlin across Siberia to Vladivostok, for a wager, an explorer of reputation and an accomplished linguist. Most cordial was his greeting; but, when discussing the possibility of further hostilities in the near future, he said, with a twinkle in his eye: "These are military secrets," adding: "The time of the next battle rests with General Linevitch. If you can get a message to him that will induce him to wait our arrival you can fix the date."

A mere glance at Marshal Oyama gives the impression that he is an unusual man. A few minutes' conversation brings the conviction that he is a great man. He is heavy in body, slow in movement, deliberate in speech. His face is oval and the head almost round. His eyes are small and deep-set, with an expression of extraordinary keenness and power. His dress was plain khaki, with nickel buttons, and a single decoration on his coat below the chest. There was no lace or braid or brass about him, three white, silk-embroidered stars at the cuffs being his only insignia of rank. At his sleeve one could see the cuffs of his gray flannel shirt. He was as merry as a boy, absolutely without pomp and as unassuming as a private in the army. I was presented to him in the council-chamber of the general headquarters of the staff. He bowed low, shaking hands most cordially. Although slow of speech, it was evident that his mind was wonderfully quick, for he

invariably grasped the meaning of Tanaka's translations of conversations long before the sentences were concluded.

The Marshal expressed his gratification always at meeting Americans since it gave him the opportunity to acknowledge Japan's appreciation of America's friendship. Japan, he said, had no truer friend than America and was indebted to her, not only for opening her ports to the world, but for countless other benefits that had resulted in national progress. He seemed much interested in my meeting with the Marchioness Oyama in a hospital at Tokio, an incident previously related, and he spoke of my efforts to get to the front the previous summer, when the Japanese took possession of Newchwang. I suggested jocosely that Captain Tanaka had probably blocked my efforts, and the Marshal chuckled, as he declared: "Oh, Tanaka is a very bad man."

On remarking that it was hoped in America that he and Marchioness Oyama would visit us again when the war was over, assuring him of the heartiest of welcomes, he smiled and observed that he was an old man with but one more long journey to make.

"To St. Petersburg?" I inquired.

He laughed, and referred to a longer journey, for which he would be prepared by a physician and such consolation as religion might afford.

He had much to say about the health of the army, and gave full credit to the sanitary department for

its prevention of epidemic diseases. He also spoke of the status of the Medical Department, observing that the orders of a medical officer were, as a matter of course, always implicitly obeyed when not interfering with strategic movements.

I had presented him with a copy of an American newspaper containing a detailed account of the battle of Mukden; and, while Captain Tanaka was translating his remarks, the Marshal kept running his eye over the map and tracing the various positions of his troops. Later he had Tanaka translate the entire article, and sent me his thanks with the message that the report was accurate and fair in its conclusions. I was also presented with a Russian rifle and bugle, captured at Mukden, both of which mementoes are highly prized.

On leaving the council-chamber, one of the strangest sights ever witnessed at the headquarters of an army presented itself. Directly in front of Marshal Oyama's personal office was a croquet-ground, and there at play, like happy children, were Generals Kodama and Fukushima, and two other members of the general staff, Generals Matsukawa and Ochi. Kodama and Matsukawa were matched against Fukushima and Ochi, and the combat was vigorous. They had named one of the posts Harbin and the other Kirin, and fought for positions as eagerly as though on a battle-field. Every true shot at long range was greeted with shouts of applause, while if a general went wide of

his mark the others called him a Russian. When a ball rolled too far its owner would dance before it, making crosses on the ground with his mallet and beseeching it to stop, while the others screamed with laughter. I left the hilarious quartette with Kodama at Kirin, but Fukushima far from Harbin.

There was something more significant than a mere exhibition of innocent fun in the spectacle of those four grim masters of war playing a schoolgirl's game. No onlooker at their frolic would have imagined that a great war was in progress, and that with them rested the fate of the nation. So completely had they mastered the coming moves on the chess-board of international strife that they were safe in stopping to indulge in that gentlest of amusements. Oyama was then ready to strike his next great blow, and only awaited the order to unleash the dogs of war.

The Japanese military men were not the only interesting foreigners in Mukden. Dr. Dugald Chrystie, the missionary physician, and the Rev. Dr. John Ross, also a missionary, who, with their families, had passed through the siege and battle, were there. In their long residence in Mukden they had seen several wars and uprisings; and, during the Boxer outbreak, had been compelled to flee for their lives. Doctor Chrystie, the representative of the International Red Cross Society and of the Shanghai Refuge Society, was doing a splendid work in addition to his medical service. He had cared for over ten thousand of the forty thousand

refugees, who, homeless and starving as the result of Russian cruelty, had swarmed into Mukden after the battle. Doctor Ross believed the Russian Government had sent money to pay for all Chinese supplies seized and property destroyed in Manchuria, but he added the money was "lost" on the way and never reached its destination. Doctor Chrystie maintains a hospital in Mukden and is accomplishing a great humanitarian work. His surgical success was little short of marvellous, considering the difficulties with which he had to contend. He treated both Japanese and Russians in his hospital. It was a great relief to the missionaries when the Japanese occupied Mukden, for, as Doctor Chrystie said, "They at once inaugurated sanitary measures and began to clean the town."

Both Doctor Chrystie and Doctor Ross had entertained many Russian officers during the Manchurian campaign, and both declared that the officers freely stated they had no heart in the war. Some of the Russians were fine types of men, the missionaries said, but the majority would have brought disgrace upon the arms of any nation. Those were the ones who, with their harlots and drunken soldiers, constituted the noisy mob that crowded the streets of Mukden the day before the disastrous defeat, the same officers who thronged the drinking-places in Liaoyang during the battle there, while their men were fighting and dying in the fray.

Doctor Ross, who has written much on Manchurian

history, did not hesitate to ascribe the Russo-Japanese war to the alliance between Russia and France. That alliance gave Russia the opportunity to steal Manchuria. That Russia had no intention of leaving the territory voluntarily was patent to all residents of whatever nationality. A Russian officer once said to him that truth-telling was an indiscretion of the English-speaking peoples that his countrymen did not propose to imitate.

There was much of interest to be seen in Mukden, for the siege had done little damage inside of the city walls. Indeed, less than a dozen persons were killed in the city; nearly all of those were Chinese, satisfying their curiosity in ascertaining the contents of unexploded shells. Many amputations and other interesting operations resulted as a consequence.

The great Imperial Palace in the centre of Mukden, which has not been occupied since the seat of the Manchu dynasty was moved to Peking, is the most important of the ancient buildings. Rich were the jewels and embroideries contained in a storehouse among these crumbling edifices, still brilliant in their colouring and imposing in their architecture. The Russians took advantage of the Boxer uprising to loot much treasure and jade from Mukden. The Japanese, however, on occupying the city, had protected what remained. The strictest conventionalities of international courtesy were observed by them and no visitor was allowed to enter the palace without a pass from the

Chinese authorities. Some of the pearls in the palace collection were remarkably fine, as were the richly embroidered costumes, centuries old, of famous emperors of the past. Although the remaining treasures and jades of Mukden palace were kept in old wooden chests stowed away with apparently no regard for classification, the mandarins in charge knew precisely where each article belonged and guarded the collection with zealous care. The intrinsic value of the jade ornaments, jewels and embroideries was great — no amount of money could purchase them.

Another wonderful attraction is the ancient Imperial Library, adjoining the palace. It is in a dilapidated condition and was one of the three great libraries of antiquity left in China; one of the others, the Hinan in Peking, having been burned by the Boxers in 1900. There were in this library forty thousand volumes of one work alone, a classical encyclopædia containing the history, philosophy and ancient literature of China, including of course the complete writings of Confucius. The books were of uniform size, each about fifteen inches long and eight inches wide, and each set of eight volumes was kept in a cedar box with a sliding cover. The paper was of rice, and one-half of the books were bound in yellow silk, the other half in green. All the script was done by hand, and it was as beautiful and regular as copperplate. The contents of those libraries — the others having been situated respectively in Peking, Nanking, and a town far

in the interior to the northwest — were exactly alike. They represented the scholarship of antiquity and mythological tradition, a scholarship that was ancient before the dawn of civilization in Europe.

Two other notable sights were to be found in Mukden. They were the famous Imperial Tombs of the Manchus, one seven miles to the east and the other four miles to the north. The east tomb was the mausoleum of the founder of the Manchu dynasty, Nor-Ha-Chu, and the one to the north contained the ashes of his son, Tia-Tsung. Since the sepulture of these two rulers the Manchu emperors have been buried near Peking. The approaches to the tombs of Mukden are not so magnificent as those of the famous Ming tombs near Peking, although they are lined by splendid monuments. They are surrounded by stately forest trees in which hundreds of singing birds find their homes and sing their songs amid scenes of exquisite beauty. No more restful, soothing, gentle spots could be found in all the world than those surrounding these tombs. The half-dozen temples in each enclosure are gorgeous in their displays of brilliant colour and delicate lacquer-work. Greens, reds, blues and yellows are blended in dazzling combinations, enhanced by bewildering and intricate designs. Grotesque animals line the approaches, and imposing monuments recount the virtues of the dead. Behind the main temple of each tomb is a colossal mound, occupying nearly an acre, in which the remains of the Emperor is depos-

ited to mingle finally with nature. No stone marks the exact burial-spot, and a massive sealed gate guards the entrance to the mound. The walls surrounding the north tomb were slightly injured in the recent battle, a party of Russian soldiers having taken refuge there and held out against great odds until captured. The Japanese hold these burial-places in great respect and keep them constantly under guard. The Chinese complained that the Russians had desecrated the tombs by quartering soldiers there regardless of protests or the religious objections of the natives.

Railroad transport northward having been interrupted by a flood and the destruction of a bridge, further advance to the front, a distance of nearly a hundred miles, was made in the saddle. It was a memorable ride, along the line of the Russian rout. Over an area twenty miles long by seven wide the panic-stricken soldiers of the Tzar had scattered their belongings until the ground was fairly littered with impedimenta. Here and there were evidences of where the terror-stricken men had halted and tried to throw up earthworks from the frozen ground as a temporary shield from their relentless pursuers. Villages, devastated by fire and with walls pierced by bullets or shattered by shells, indicated where shelter had been sought. Wrecked gun-carriages, old felt boots by the thousands, tattered bits of uniforms and broken rifles lay scattered broadcast. I noticed a Russian Bible on the ground, and a sheet of note-paper partly written over that might

UTILIZATION OF PRIVATE HOUSES FOR HOSPITALS AT LIAOYANG

Showing connecting sections

have been a soldier's farewell letter home. Everything calculated to retard the terrified flight to the north had been thrown to the winds. On every side were bones of dead animals, and more than once the gruesome spectacle of gaunt dogs tearing open graves was witnessed. Although thousands of peasants were peaceably cultivating the fields and the signs of the rout were fast disappearing, evidences still remained to indicate the terrible panic of the Russians and their disastrous flight from the greatest battle and most crushing defeat recorded in history. The ride over the scene of that mad retreat was worth the journey to Manchuria.

The storm that had caused the washout on the railway had also temporarily paralyzed the telegraph lines, and the officials along the route had not been apprised of our coming; nevertheless shelter, food and blankets and guides were invariably provided with the promptness and hospitality that characterized the Japanese official. On the third day in the saddle, after a trying experience in a Manchurian dust-storm, the famous entrenched pass at Tie-ling was reached. The Russians had failed to give battle here, largely by reason of fright, although military experts say that the strength of the pass had been greatly overrated and that the Japanese might easily have taken it by a flank movement, even if the Russians had attempted its defence. Nevertheless the fortress was a wonderful piece of engineering, and I could not but feel that if a fight had

occurred there the harrowing experiences of the Japanese at Port Arthur would have been repeated.

At Tie-ling many acres of army stores were piled as at Dalney, and the movements of the thousands of Chinese carts were bewildering. There it was the same story of hospitality, only much intensified. At least once every half-hour during my stay an orderly appeared at quarters to ask: "What will you have to drink?"

A final ride of twenty-five miles brought us to the headquarters of the Second Army, situated in the village of Chei-un-po, to reach which point we forded rivers and streams and journeyed over fields and around hills, passing more thousands of the Chinese carts pouring northward, and occasionally detachments of soldiers on their way to the front. The reception committee of officers that awaited our arrival provided a house and many comforts, even sending bulletins of the latest news telegraphed from Tokio. General Oku was living unostentatiously in a little neighbouring Chinese house. His greeting was somewhat formal, but cordial. When, in the course of conversation, reference was made to the remarkable statistics of the health of his army up to the first of January, 1905, which had more than confirmed the predictions made by the author in America the previous year, the general said he was more than pleased to confirm his testimony, and that the figures given were absolutely accurate.

Settled down for a stay at the front, it was difficult to realize that an army of nearly six hundred thousand men was stretched across the country in battle array with its front only a few miles away. There was no pomp or show about headquarters. On all sides the peasantry was engaged in tilling the fields as if there were no invading hosts within thousands of miles. All was peace and quiet, with not the slightest sign of unusual disturbance. Occasionally, however, a soldier might be seen in a village street, and always in the distance at least one scout could be observed. It was necessary to ride into the country to find any indications of war. Great strings of telephone wires, stretched on slender bamboo poles, ran from village to village in every direction. They were the trumpets of modern warfare to summon the soldiers to action. On every so-called road were more miles and miles of carts, pushing their way to the north like long processions of ants. Many of them differed slightly from the other thousands encountered before in that they had four wheels and were drawn by a single horse led by a Japanese soldier. The army had used the Chinese carts to advance its supplies from grand terminal to grand terminal, but were using their own vehicles to transport the ammunition and food to the firing line. Military secrets are more or less exposed on the battlefield, and the Japanese intended, as far as possible, that only their own people should become cognizant of them. Occasionally the booming of heavy artillery was

heard, as the Japanese fired on the Russian cavalry which ventured within range, and sometimes the sharp rattle of the infantry could be distinguished on the skirmish-line. The official interpreters would explain on those occasions that the soldiers were "testing the guns," as blandly as if they really expected it to be believed that so important a matter had been left to be determined at the front. On close inspection, in riding from village to village, the Japanese soldiers could be discovered, quartered in large numbers, practically hidden from sight, for so quiet were they that one had to hunt to find their whereabouts. The men remained in the compounds assigned, and were rarely seen on the streets; they were never boisterous or noisy; they were silently and patiently waiting the message by one of the many telephone lines that should call them into action at a specific point — for each man knew exactly where he was to report and what was expected of him. The "first line" consisted of little more than trenches patrolled by sentries, while hidden away in towns and villages directly behind lay the vast army, practically an invisible host, ready to spring at an instant's notice. Not a tent was visible; naught was to be seen but the labourer toiling in the field. Only the interminable procession of carts carrying ammunition and the daily supplies to the men, the network of telephone wires, and here and there a scout, suggested the presence of soldiery. Did ever

before a mighty, victorious army at the front present such a spectacle!

And then came the news of peace negotiations, and soon afterward permission to return to Japan — which followed a visit to Port Arthur, as related elsewhere, and a ride across country into the lines of Nodzu's army, to Kai-yuen, the northernmost terminal of the railroad, where myriads more of Chinese carts seemed to cover the earth.

The transport, *Tango Maru,* nearly eight thousand tons burden, one of the finest ever built in Japan, waited at Dalney, and after a brief stay in Mukden I soon found myself again on the hospitable shores of Nippon. In Tokio only an occasional flag or banner even hinted that the country was not at peace with all mankind. As in all the other cities of Japan, there seemed no scarcity of men available for war; children laughed at their play; theatres and tea-houses were thronged with prosperous, happy people; and only such a spectacle as the enshrinement of thirty thousand dead at Shogonsha suggested aught of the sorrow of those whose sons and husbands and lovers had passed to the great beyond.

A celebration occurred in Dalney, on May 29th, that is vividly recalled — the first anniversary of the occupation of the city by the Japanese. Public exercises were held in the Park, with speeches, wrestling, games, fireworks and refreshments. The people apparently rejoiced but mildly over Togo's great victory, seeming

to regard it as the natural outcome of the battle. During the approach of the Baltic fleet they were silent as to the momentous possibilities of the hour, and, though deeply apprehensive, they talked of trifling matters. The annual wrestling tournament in Tokio seemed a far more absorbing topic of conversation. The news of victory brought a quiet delight, but little demonstration, or outward expression of enthusiasm. The Japanese had come to anticipate nothing but victories. Nevertheless, the sense of national relief at the outcome was profound.

The second celebration was on June 24th, the first anniversary of the opening of the great military hospital at Dalney. The 3,150 soldiers who died there during the year were enshrined. During the service the Buddhist bishop read an address to the spirits of the departed, informing them of the progress and conduct of the war. That was followed by a theatrical performance given by the soldiers, and in conclusion was an exhibition of wrestling by professionals, employed by the government for the sole purpose of amusing the soldiers, and a performance by professional actors, sent by the "Consolation Society" with the same intent.

In Tokio another well-remembered celebration occurred in July, marking the departure of "the Taft party" from the Japanese capital. Not since the visit of General Grant had officials and people shown such flattering attention to foreign guests. The climax was

reached at the Shinbashi railway station on the night of their departure. Never before had Japan witnessed such a scene. At nine o'clock tens of thousands of Japanese, almost every one bearing a gaily coloured lantern, packed the streets and plaza before the station. Myriads more lanterns were strung from the housetops and across the neighbouring streets. Only a narrow lane was left for the carriages of the departing guests to reach the platform; the remainder of the space being packed to its outermost boundaries by a madly cheering throng, whose joyful "banzais" would have drowned the din of battle. As Secretary Taft arrived the people surged back and forth in mighty, struggling waves, and the sound of their greeting was like the roll of thunder. When, however, a few moments later, the daughter of the President of the United States appeared, accompanied by Minister Griscom and his charming wife, it seemed as though the people would go mad with frenzy.

At last the Japanese had broken their reserve in time of war, and it was most flattering to Americans to know that it was done in honour of Americans. I had seen Marshal Oyama and his staff leave for the front amid great cheering; I had seen Baron Komura depart for the United States on his mission of peace with the good wishes of the entire nation, but no such enthusiasm marked their departure as was accorded the Taft party. It was comparable, perhaps, to what might occur if the victorious candidate for the presi-

dency in our own country were to drive through a Broadway crowd on election night while watching the returns.

That crowning demonstration revealed as nothing else the deep friendship the people of Japan have for the United States. It recalled the wording of Article One in the first foreign treaty ever ratified by Japan, and which was signed by Commodore Perry, at Kanagawa, March 31, 1854, which reads: —

"There shall be a perfect and universal peace and a sincere and cordial amity between the United States of America, on the one part, and the Empire of Japan, on the other, and between their peoples respectively, without exception of persons or places."

CHAPTER V.

FIGURES AND COMPARISONS

THE examinations of a few of the statistics of the war will disclose in a limited degree what warfare against preventable disease has meant to Japan, not only in the saving of life, but as a military asset. Careful study of data specially prepared for the author by the War Department reveals remarkable results. To appreciate their full significance it is well to emphasize certain points even at the expense of reiteration.

Longmore's tables, to quote them again, show that for nearly two hundred years the ratio of *killed* to *wounded* in battle has been about 1 to 4. Occasionally, for several decades at a time, the ratio has been as high as 1 to 5, and at other times it has dropped just below 1 to 4. In our Civil War the ratio was 1 to 4.8, computed from fifty-six battles. In the Spanish-American War it was 1 to 4.6. In the Boer War it was 1 to 3.9. A new ratio was established in the Russo-Japanese War, according to the figures given me by the War Department. That proportion is 1 killed to 3.31 wounded.

Indeed, in some of the large battles the figure has been much lower, 1 to 2.58 at the battle of the Sha-ho and 1 to 2.77 at Port Arthur, where the contest was characterized by much desperate fighting at close range and with frequent terrible hand-to-hand encounters. Much of the fighting was done in winter on ground so solidly frozen that it was impossible to throw up entrenchments for temporary protection, thus causing an increase of mortality. This partial table compiled from the War Department records shows the relation of the killed to wounded in the following battles: —

BATTLES	KILLED	WOUNDED	RATIO 1 TO
Yalu	231	850	3.67
Nanshan	745	3,458	4.64
Telissu	217	946	4.36
Liaoyang	3,182	15,410	4.84
Sha-ho	4,384	11,340	2.58
Mukden	9,690	31,535	3.25
Port Arthur	4,539	12,578	2.77

The mean ratio for all these engagements is 1 killed to 3.31 wounded. It was formerly thought that longer range and smaller calibre of the modern infantry arm would materially increase the ratio between killed and wounded, but such has not been the experience. The increased mortality in the Japanese war was due, as has been said, chiefly to the fierceness of the encounters in close quarters and the extensive use of artillery. The deadly effect of the long-range, rapid-

firing guns has been largely counteracted by the open order formations on the firing line, and therefore the ratio of killed to wounded has varied but slightly.

It should be remembered that the sick have numbered in the past three to ten times as many as the wounded, and that the mortality from disease has been four times the mortality from casualties. In other words, four men usually die from sickness to one from bullets in war. In the Spanish war the ratio was fourteen deaths from disease to one from bullets, a ratio not entirely representative because but one real engagement was fought, but it is a ratio that tells the woful story of defective organization. In the Boer War eight times the number of wounded were invalided home on account of disease (these figures from the Prize Essay of 1904 of the Association of Military Surgeons by Lieutenant-Colonel William Hill-Climo, being 63,644 invalided home by disease to 8,221 returned on account of wounds). The deaths from disease in that war were seven times more than the deaths from wounds. Eight-tenths of this mortality was due to infectious disease, mostly typhoid fever. To appreciate the significance of this fact it should be recalled that in the two years of the Boer War there were no less than twenty-four thousand cases of dysentery and thirty-one thousand cases of enteric or typhoid fever among the British troops.

In 1894, in the war with China, the sick in the Japa-

nese army numbered eight times as many as the wounded. In the Peninsular War the British lost more than four men from disease to one from bullets. Summing up these facts, it may be said that in war it is the rule that four times as many are wounded as are killed; that from three to ten times as many soldiers are victims of disease as are wounded, and that four times as many die from disease as from casualties of war.

Consider, now, the record of the Japanese army in the war with Russia. The figures I give were taken by army officials from the army records up to the first of May, 1905. To question their accuracy would be a reflection on the honour of these gentlemen, and an insult to the nation. Very little information regarding the war has been made public by the Japanese authorities, but that little has always proven true. It will be noticed that there is an absence of totals in the tables, which is to be accounted for by the fact that the Japanese authorities were inflexible in their determination to keep such figures a military secret, the object being to prevent the enemy from estimating, more or less correctly, the number of men sent into the field. No military secret has been better guarded, and that is the more remarkable because it is impossible to hide the movements of men being transported. Many Japanese have approximate ideas of the numbers sent with the colours, but none will reveal them. The

army authorities therefore give percentages only, and no totals.

One important total, however, the officials did give in the first table of general statistics, which was kindly prepared for me by the direction of the Minister of War, a total which bears a most significant relation to the deductions that are to follow. That total was that there had been killed in battle from the beginning of the war up to the end of April, 1905, exactly 43,892 men. In view of the percentages given later that figure is of prime importance.

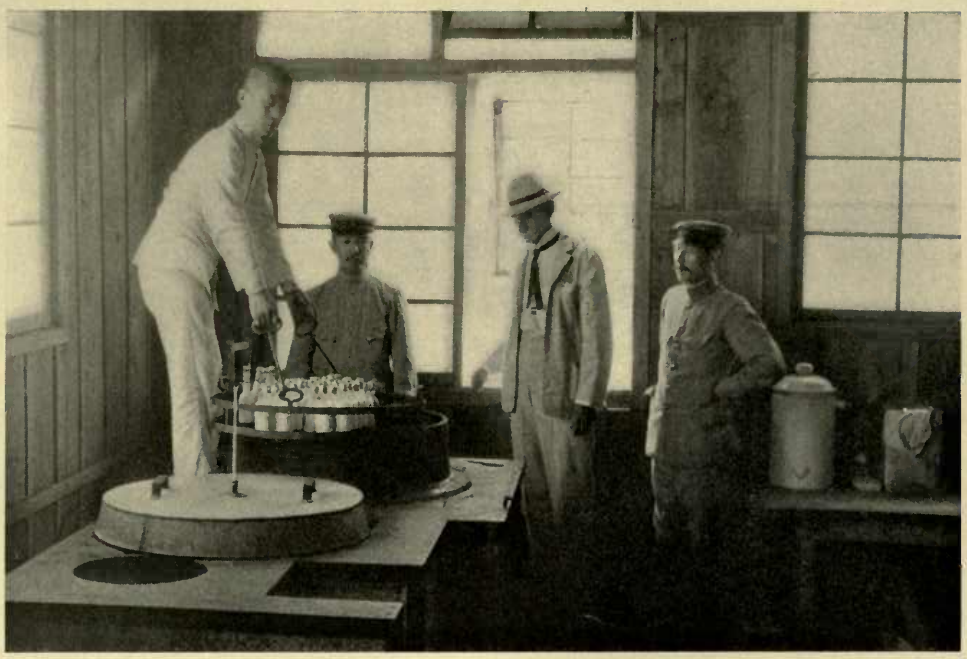
The first table that follows shows that *the numbers of the sick and wounded in the army were almost exactly equal, the percentage being* 49.99 *for the wounded, and* 50.01 *for the sick.* That is one startling fact in comparison with the usual ratio of from 1 to 3, to 1 to 10, or even higher, of the wounded to the sick in other wars. No such record has ever been made before.

Another salient item is that while the ratio of killed to wounded in the war is somewhat lower than usual, being 1 to 3.31 instead of 1 to 4, *the ratio of the killed in action to those dying from disease is unprecedented.* The tables show that while 8.83 per cent. of the entire army died of wounds received in action, on the field and in the hospitals, *only 2 per cent. died of disease. In other words nearly four and one-half men died from bullets to one from sickness — almost exactly reversing the figures in former wars.* An exception

to past figures was the case of the German army in the Franco-Prussian war, when the Germans lost only one-half the number of men from disease as were lost from battle casualties. The Japanese have reduced that record 200 per cent. more. Besides it must be remembered that the Franco-Prussian war was of short duration compared with the war with Russia and that the Germans were nearer their base, with easy access to their reserve hospitals. It is a compliment to the Germans, whose military methods the Japanese have adopted, that the latter have been able to improve so vastly upon the records of their mentors, especially when it is recalled that hostilities were conducted in a land hundreds of miles away, across a sea and with transportation facilities that to an ordinary army would be almost hopeless.

The still more astonishing fact is presented that instead of the majority of the cases of disease being infectious, as in the Boer War, only 3.51 per cent. of the total sick in the Japanese army was due to infectious diseases. It is true that a high percentage of those infectious cases were fatal, treatment of typhoid in the field being attended with unusually bad results. However, infectious diseases were a comparatively insignificant factor, whereas they have heretofore been the chief causes of disease in all fighting armies.

Now comes another surprising fact. Exactly 24.3 per cent. of the sick and wounded, or about half of the total sick, in the army were cases of beri-beri, or



MILK STERILIZER AT MILITARY HOSPITAL

kakki, as it is known by the Japanese — an illness which is preventable and which has been wiped out of the Japanese navy. Even with that tremendous handicap the number of sick and wounded was practically equal up to the end of April. Had beri-beri been prevented, as it might have been, the number of cases of sickness would have been only about three-quarters the number of the wounded, which, in view of the records of all previous wars, would have been almost incredible.

Here is the first table prepared for me at the War Office: —

TABLE I.

PERCENTAGES OF THE TOTAL NUMBER OF PATIENTS		RESULTS			
		Cured	Died	Discharged for Disability	Remaining under Treatment
Wounds received in action	45.53	38.55	6.20	3.60	51.65
Other wounds and injuries	4.46	62.23	1.51	2.33	33.93
Contagious and infectious diseases	3.61	16.71	39.59		43.70
Other diseases	46.40	50.25	4.85	1.19	43.71
Total	100%	44.25	6.57	2.29	46.89

Total number killed in action for the entire army, up to the end of April, 1905, 43,892.

This table tells its own story. Here is another table compiled in a different way and given to me a few days later by officers of the War Department: —

TABLE II.

Killed in action	7.32%
Died of wounds received in action	1.51%
Wounded in action	24.27%
Other wounded (accidents, etc.) and sick	27.11%
Died from disease (not including infectious and contagious diseases)	1.24%
Contagious diseases	1.93%
Died of infectious and contagious diseases	0.76%
Number never wounded or sick during war	35.86%
Total	100%

Considering these two tables in connection with each other, an important fact is revealed. We know that the killed in action numbered 43,892 and that this sum represented 7.32 per cent. of the army in the field. By a simple calculation we find that the number of men at the front must have been 599,617, or six hundred thousand in round numbers, a figure believed to be correct. Those who died of disease, exclusive of infectious and contagious diseases, amounted to 1.24 per cent. of the entire army in the field, and those who died of contagious diseases amounted to 0.76. Therefore the entire deaths from all diseases amounted to exactly two per cent. of the army in the field, a rate of twenty per thousand of strength. On a basis of an army of six hundred thousand this would mean that only twelve thousand men died of disease.

We are now ready to consider another table of percentages furnished at a still later date by the War

Office, which shows the details regarding various diseases that affected the troops.

TABLE III.

PERCENTAGES OF PATIENTS IN ENTIRE ARMY CORPS AT A CERTAIN DATE		Cured	Died	Discharged for Disability	Remaining Sick
Malaria	0.37	62.18	3.58	0.25	33.99
Beri-beri	24.30	48.39	5.88	0.12	45.61
Frost-bite	0.75	37.44	0.88	0.29	61.39
Dysentery	1.95	26.11	25.63		48.26
Typhoid	1.61	4.83	57.43		37.74
Smallpox	0.05	32.92	9.32		57.76
Wounds received in action	45.53	38.55	6.20	3.60	51.65
All other wounds and injuries	3.71	67.22	1.64	2.74	28.40
All other diseases	21.73	52.13	3.71	2.39	41.77
Total	100%	44.25	6.57	2.29	46.89

Developing the subject further, let us see what would have been the condition in the Japanese army had the usual ratios between the sick and wounded obtained. For such purposes let us place the wounded at 145,000. Suppose the sick had numbered eight times the wounded, as was the case in the Japanese army in the war with China. The sick in this war would have numbered 1,160,000, or about twice the total army in the field. Suppose the sick had numbered only three times the wounded. That would have meant 435,000 men, or nearly three-fourths of the entire army. Suppose the sick had been only twice the wounded, it would

have meant 290,000 men, or about three of the five Manchurian armies. The low percentage of sickness kept the ranks free from dead gaps, and allowed seasoned troops to be retained on the firing line instead of having to replace them with raw recruits.

To appreciate the great advance made by Japan in ten years in her war on preventable disease one should also compare the totals of such disease with those in the war with China in 1894, when her army was about one-third the size of the late Manchurian force. In the war with China, according to the war records, she had 12,052 cases of dysentery against 6,624 estimated in the war with Russia — twice the number of cases of dysentery — and 7,667 cases of cholera, with a mortality of sixty-one per cent., as against no recorded cases ten years later.

Malarial diseases formed another subject for striking comparison between the campaigns. In the war with China 41,734 cases occurred. In the war with Russia (according to the table of percentage) the number is estimated at 1,257. A visit to the various armies sustains the conclusions reached by a study of the tables presented. Statistics furnished me personally by Major-General Mori, chief medical officer of General Oku's army, show that the total number of cases of illness in that army from October, 1904, to April, 1905, inclusive, averaged fifteen hundred a month, the figures being: October, 1,946; November, 1,721; December, 883; January, 1,356; February,

2,300; March, 1,444; April, 1,241. If Oku's army was seventy-five thousand strong, and it certainly was not less than that, for the Japanese always keep the ranks full, this represents a rate of sick cases of only two per cent. If the army was one hundred thousand strong, an estimate made by many observers, the percentage drops to 1.5. Now the sickness from beriberi alone was forty per cent. of the entire illness in that army, the cases running from 618 in October to 383 in March, with maximum of 851 in February. The largest number of cases of typhoid fever in any month was, according to General Mori, sixty-six, which dwindled to only two in February, and the total number of cases of that disease for the seven months was only 187.

To those who remember the needless deaths and afflictions of thousands of American homes, the records of Chickamauga, Tampa, Miami, Camp Alger, Cuba, Porto Rico, and Montauk, a comparison with these made by Oku's army certainly has a melancholy interest. A similar story is that of dysentery. There were forty-eight cases of that dreadful disease in Oku's army in October. The next month there were only five. After that there was one case in February and one in April and no more, a total of fifty-five cases in seven months. This is the record handed me in person by General Mori, who gave me his word that it was absolutely correct, and permission to keep his personal memorandum as a voucher. This memo-

randum by General Mori receives confirmation from another set of statistics kept by another officer and given to me in confidence not to be disclosed till the war was over. These figures cover the vital statistics of Oku's army from the beginning of the war to the end of February, 1905, and include the summer months of 1904, which are not covered by General Mori. The figures show that during the first year of the campaign that army, which did the severest fighting of the war and had had fully sixty thousand wounded (for it fought all the way from Nanshan to Mukden), had only two hundred cases of typhoid fever and 343 cases of dysentery, while the cases of beri-beri numbered 7,277 — a striking confirmation of the fact that the proportion of infectious diseases was comparatively insignificant and that the overwhelming disease of the army was beri-beri. Indeed the diminution in that disease from 851 cases in February, when the ration was changed, to 383 cases in April, the month that beri-beri is usually most prevalent, apparently demonstrates the fact that it could have been greatly reduced, if not entirely controlled, by proper dietary.

Other figures regarding the sickness in that army, made independently and given to me in confidence, make a similar showing. According to these figures, given me by Major Takai at Tie-ling, there were in Oku's army from the beginning of the war until the end of December, 1904, 6,152 cases of beri-beri, 232

of dysentery, and thirty-three of typhoid fever. These figures, it will be seen, substantially agree.

Other statistics regarding Oku's army, covering a different period, came direct from the War Department in Tokio, and show that of 20,642 cases of illness, trifling as well as otherwise, 18,500 recovered in the field, and 2,142 were invalided home or died. Of those 340 were cases of dysentery and 133 were cases of typhoid fever. Those astonishing figures, made public in January last, more than sustained the author's statements made before the committee on military affairs at the Congress of last February. In a personal interview in June last with General Oku at his headquarters in Manchuria, and in the presence of Surgeon-General Mori, General Oku said he was glad to be able to vouch personally for the figures given at that time. The record made in Oku's army is supplemented in a striking way by that made in the field by the First Army under Kuroki. Following are the number of cases of sickness in Kuroki's army during the first six months of its campaign: — March, 3,829 cases of various types, 3 cases of dysentery, 3 of typhoid fever, 22 of beri-beri; April, 3,545 cases of various types, 20 of dysentery, 1 of typhoid fever, and 56 of beri-beri; May, 3,154 of various types, 16 of dysentery, 9 of typhoid fever, 54 of beri-beri; June, 4,824 of various types, 31 of dysentery, 9 of typhoid fever, and 128 of beri-beri; July, 5,565 of various types, 29 of dysentery, 4 of typhoid fever, and 251 of beri-beri;

August, 6,006 of various types, 10 of dysentery, 9 of typhoid fever, and 737 of beri-beri.

These figures show how beri-beri gradually crept up into the hundreds in six months. It increased to thousands in the next few months, also in Oku's army, but I was informed at the War Department that Kuroki had proportionally less than any other commander. Kuroki's operations, it will be remembered, were carried on chiefly in the mountains. The comparative freedom in the first six months of the war of his troops from dysentery and typhoid fever, undoubtedly the best record of all the armies, shows not only the result of extreme care by his medical officers, but the influence of a rugged country, uninfected by previous occupation of an army.

The statistics of the home hospitals also corroborate those given out by the authorities for the entire army, as well as those secured at the front. To the great reserve hospital at Hiroshima the majority of the sick and wounded from Manchuria were first brought. From there, as soon as their condition warranted, they were distributed to other reserve hospitals in Japan. Of the patients brought back to Hiroshima, forty-two per cent. were wounded and fifty-eight per cent. were sick (Tanake and Onishi). These were the figures secured from the records of that institution up to June, 1905, a period of more than a year. Infectious and contagious diseases constituted only 1.2 per cent. of the total admissions, and only a little over one-

DISPENSARY, HIROO MILITARY HOSPITAL, TOKIO

half of one per cent. of the sick. These figures confirm the statement that the sick and wounded were about equal. Of course, at the base hospitals close to the front there were times, especially after a great battle, when the wounded were far in excess of the sick. At Liaoyang, where many of the wounded from the battle of Mukden were sent, it being the second great hospital to the rear, fifty-one thousand wounded to forty-one thousand sick were admitted. Many of the wounded at Mukden were taken from the cars at Liaoyang for a short rest, while a large number of sick were sent direct to Dalney. It was said that the sick were slightly in excess of the wounded, and that the cases of beri-beri were between one-sixth and one-seventh of the entire 220,000 cases which passed through the Dalney hospitals, the wounded almost equaling the number of the sick. At the great reserve hospital in Osaka, which in one emergency cared for twenty thousand patients, the deaths to June, 1905, numbered only seventy-six. The hospital was almost constantly full. The small number of deaths compares favourably with the number of deaths from wounds in Oku's army, as given out by some of the officials, who placed the figures at the astonishing number of sixty-eight. The deaths of both sick and wounded in the Hiroshima hospital were less than one per cent. of the admissions. In the Dalney hospital the number of deaths was 1.5 per cent., 3,150 out of 220,000.

Confirmatory also of the comparatively small amount

of typhoid fever in the army, was the statement of one of the officers connected with the hospital at Hiroshima, viz.: — that up to the end of April they had received only 1,200 cases of typhoid fever from the front. The difference between these figures and the total of more than five thousand which occurred in the army is explained by the fact that many of these cases were treated in the field, where the mortality was high. In the Hiroshima hospital the mortality from typhoid was 12.1 per cent. The mortality for dysentery at Hiroshima was 10.7 per cent., while that for the entire army for this disease was twenty-five per cent.

It will be interesting to note something of the character of the wounds treated. In Kuroki's army, from the battle of the Yalu to and including the battle at Liaoyang, there were 7,967 men wounded. Of these 6,753 were small arms bullet wounds, 1,073 from shells and hand grenades, and 141 from bayonets. The bayonet wounds were all received at the battle of Liaoyang, where the Russians first used hand grenades.

A different ratio of bayonet wounds is presented by the records of one division of Nogi's army in the siege of Port Arthur. These figures were given to me by the chief surgeon of this division, who made four tables, each recording one of the assaults on the chain of mountain fortresses. The total number of wounded under that surgeon's care was 2,500, and of those, 1,478 were wounded by small arms missiles, 790 by shells and hand grenades, and 235 by bayonets and

swords. Compare the latter number, 235, with the number of bayonet wounds, 141, in Kuroki's entire army of three divisions in four great battles, and one sees how desperate the fighting must have been and at what close quarters.

Both tables show that the days of hand-to-hand fighting are not over, and that the time to discard the bayonet in warfare has not yet arrived. The largest number of bayonet wounds at Port Arthur were received in the last grand assault. The figures are: first assault, 74 bayonet wounds; second, 20; third, 20; fourth, 121. This may be compared also, as indicating the character of fighting, with the record of the same division in the fight, in the open, at Kin-chau, where 576 were wounded by bullets, twenty-seven by shells, and only twelve by bayonets. Of the actions in which that division was engaged at Port Arthur, the first grand assault took place to the north of the city between two villages called Takasaki and Udaisan. The second took place also on the plain near Sin-shi-yen, near the village where Stoessel capitulated. The third assault was at 203 Metre Hill, and the fourth was between 203 Metre Hill and Sun-shu-shan Fortress.

The statistics of the sick and wounded in the navy in the war are also most remarkable. There were lost through battle casualties 2,000 men, of whom 1,445 were drowned, 500 on the battle-ship *Hatsuse Maru* alone. Only 563 men were killed by projectiles. The wounded numbered 1,665. Of those 647 were suffi-

ciently severe to require their transfer to the naval hospitals. The total number treated at Sasebo was 2,936, 2,289 of whom were medical cases, or about ten per cent. of the entire floating force, which was about 25,000 men. The total number of deaths from disease was 199. A remarkable fact was the complete elimination of beri-beri from the navy. Only two cases developed, and both were doing shore duty and had not seen sea service. The health of the men was better during the war than during the five previous years of peace. In those five years 5.17 per cent. of the force suffered from disease. Since the commencement of hostilities the admission rate for all causes for the entire force was but 5.4 per cent. The men remaining continuously aboard ship for many months, resulted in a diminution of disease.

With this presentation of statistics is it any wonder that forty-five per cent. of the sick and wounded in the army were actually returned to duty in the field, and that over thirty-five per cent. of the army never missed a day's duty during the entire campaign? It is a marvellous record unparalleled in history. A noted military authority recently made this statement: "The number of deaths from disease should be no greater than the number killed in action." This sentiment was advanced as an ideal in war. The Japanese have reduced the deaths from disease to about one-fourth the number killed in battle. What a comment on the sanitary methods of the past in other armies!

CHAPTER VI.

PREPARATIONS FOR CARE OF WOUNDED AND SICK

LONG before the opening of hostilities thorough preparations had been made in the hospital service as in every other department of Nippon's army. First of all preparation was made for the prevention of disease, for it was recognized that every soldier saved to the ranks from hospital was a double gain as it meant the greater fighting power and the diminution of army impedimenta.

To prevent disease the army medical systems of the world were studied and a new one evolved, of which Japan may well be proud, as it has stood the practical test of efficiency. Surgical and medical equipments for both field and hospital were provided, adequate for all emergencies. It was recognized that, if the silent foe was to be overcome and a large percentage of the wounded was to be returned to the colours, it was as necessary to have a Medical Department well equipped with men and supplies as it was for the army to have ammunition and guns.

The war with China had taught her that her army medical system was sadly deficient. Following her cus-

tom, Japan sent her students abroad to learn the equipments as well as the methods of other nations. Well do I remember in Peking, in 1899, the visit of Doctor Tanake and his assistants to the American Headquarters and hospitals, where every detail was noted, with what care the hospital stores and kits were examined and photographed, how the instruments were inspected, and how intelligently the attendants were questioned by the Japanese visitors.

Colonel Hirayama, now at the head of the Pharmacy Department of the army, was sent abroad, where his researches occupied several years. On his return he recommended the adoption of a modification of the Austrian system of supplying medicines and instruments to the army in the field and to military hospitals. Those modifications consisted largely in the creation of a department of pharmacy for the army, which should be responsible for all medical supplies in the hospitals, in the field, and elsewhere, and thus relieve the medical officers of the army of that burdensome task, with its necessary red tape of paper work and correspondence — the bane of many armies, especially of the American. Under the Japanese, the medical officers attend to matters medical and surgical, and do not qualify as clerks. All the work of caring for supplies devolves on the Pharmacy Department, and, to bestow proper importance upon it, commissioned rank is given to its officers. The head of the service holds the rank of colonel, with a lieutenant-colonel, four

majors and other minor officers as assistants. His office is in Tokio. About five hundred officers are in this branch of the army service. A captain is in charge of each of the numerous supply stations along the line to the front. Every sanitary corps has its own pharmacist, and every field (division) and base hospital likewise. This officer has charge of all drugs, instruments and supplies, and is responsible for all records. In addition to other duties, he assists in laboratory work of hospitals, such as making bacteriological, microscopical and chemical examinations, as well as examinations of water.

A water-testing outfit goes with every sanitary detachment, and every foraging and scouting detachment is accompanied by a medical officer who makes the examination of the water to be used by the troops. Wells are usually placarded with a sign describing the character of the water, whether fit for drinking, or otherwise, for the guidance of the advancing troops. The outfit is carried in a leather-bound canvas case about a foot long, eight inches high and six inches wide, containing sixteen bottles of various chemicals, test tubes, litmus and filter paper, and other necessary materials. Every army division carries no less than seven of them in its advance sanitary equipment, so that more than a hundred were actually in service at the extreme front. In addition, every field hospital has one, which means nearly, if not quite, a hundred more. They were found with every sanitary detachment, at

every base and reserve hospital, at all the barracks and camps at the front, and at all the supply depots: all the troops received the benefit of that service. It is no exaggeration to say that that little testing apparatus was one of the most efficacious and important factors for the preservation of the soldiers' health in the field.

Much thought was bestowed upon the preparation of all other medical supplies for the field; those were packed in bamboo and wicker containers, making light and durable packages for transportation. All necessary supplies, instruments, drugs, etc., were on hand in charge of that department long before the commencement of hostilities. To the great credit of its officers it may be said that never once during the war was there any lack of medical supplies or any serious shortage of stock in the depots or in the field.

A visit to the warehouses adjoining the War Office in Tokio was a revelation. There were chests for base hospitals, for field hospitals, for sanitary detachments, for regiments; the contents of each had been fully considered. A catalogue was kept of every instrument, drug and appliance on hand, and the entire administration operated in such a systematic manner that any desired object could be instantly located and hurried to the place where it was needed. So perfectly did that machinery work that when I expressed a desire to purchase one of the water-testing outfits it was delivered at my hotel before I arrived there. In the great storehouses one saw improved litters, every variety of sur-

gical instrument needed in the field, vast quantities of drugs, dressings, operating tables, furniture, etc. The system was carried to such a point of perfection in details that miniature hospital tents were set up for the purpose of illustrating their equipment in the field. There were even stretchers on runners for sliding the patients over the snow. Ambulances, saddle bags, clever devices for packing, every detail seemed to be so perfect in that system as to challenge one's admiration.

Particularly well equipped was the service in microscopes. A superb weapon it made against the Russians, for, by its vigilant employment, war was made upon bacteria, depriving the enemy of the vast help they would otherwise have derived from the devastating and silent foe, disease. Japan recognized that microscopes were as important as 11-inch guns, and she sent them to the front, and they found their way into every place where an extended stay was made, and wherever bacteria were likely to be found. In the war with China tests for poisoned wells were frequently made, but in the conflict with Russia the need for such precaution was eliminated, that method of warfare being prohibited by the Geneva Convention. There was always danger, however, that individual Chinamen, nourishing real or fancied grievances, might resort to poison as a means of revenge.

No one can calculate the benefits of the chemical and microscopical examinations made by the Japanese, who, by temperament and natural proclivity, are peculiarly adapted to such investigations, because no people

possess greater patience, endurance, and determination to get at the very bottom of things. They are extremely fond of details and minutiæ, and little things appeal especially to their fancy.

Having settled all the details of the system and the character and amount of medical supplies needed, Japan procured them in advance, and as each regiment left for the front, twelve medical chests — four for each battalion — were ready to leave with it. Japan would as soon send soldiers to the front without these chests as without rifles. Special transports were set apart for the medical supplies, or special places were reserved for them in certain transports.

The splendidly systematized equipment of the Pharmaceutical Department was an instructive example from which Occidental nations might well profit.

Shortage of ammunition in the emergencies of battle sometimes occurred, and men occasionally went hungry, but never was there any deficiency of medical supplies and instruments in the field. This statement is founded upon the writer's personal observation, and is supported not only by the testimony of every surgeon the writer met, but by every medical attaché whom he consulted.

The supreme test of an army's medical organization comes, of course, in time of battle. The severer the clash of arms, the greater is the strain made upon the medical organization. In no great battle in history has the medical organization of an army proven ade-

quate to the demands made upon it; but the best record ever made in that direction, embodying as it did an approach to perfection, was that of the Japanese in the war with Russia.

"Don't let the wounded interfere with the strategy of battle" was a rule as inflexibly obeyed by the Japanese as by any other nation. Nor did their system differ much from that theoretically practised in other armies; but it was noteworthy how effectively that system was executed.

Every army's plan for caring for the wounded in battle provides for a collecting station, a short distance in the rear of the firing line, to which the wounded are conveyed at once; a dressing station a little further in the rear, where the wounds are examined and cared for hastily; a field hospital, still further in the rear and usually out of the zone of fire, where temporary hospital treatment is given to the injured, and a base hospital still further in the rear, where the wounded are taken care of preparatory to being removed to reserve hospitals at home. The field hospital moves on with the army and is a part of its organization. All care of the wounded, of course, presupposes the existence of a corps of surgeons, supplies of medical and surgical necessities, the presence of nurses, and facilities for transporting patients.

Provision for clearing the field of the wounded, however, is only a small part of the preliminary work. The Japanese recognized that the wounded soldier and his

immediate companions must share a great part of the responsibility of saving lives without interfering with the strategy of battle. To that end, and especially just before giving battle, every officer impressed that hard and fast rule upon the minds of his men: "If you are hit, don't wash or touch your wound in any way. The wound permitting, apply the first aid dressing yourself; otherwise get assistance. If you are able, walk to the collecting station; otherwise wait as patiently as possible for the litter-bearers to fetch you."

The organization of the Medical Corps of the Japanese Army has at its head a lieutenant-general who is a member of the General Staff. With each army in the field is a surgeon-general with the rank of major-general. Colonels are detailed as brigade surgeons, and in charge of the leading base and reserve hospitals. With each infantry regiment there are six surgeons, the senior of whom is a major or lieutenant-colonel: these are assisted in their duties by three chief attendants and twelve ordinary attendants, one of whom has the equivalent rank of a sergeant-major, and the others are privates. In addition every company has four men bearers, who are especially instructed in applying dressings. The attendants and the specially instructed men carry knapsacks containing dressing material for wounds. Each battalion has a pack-horse which carries two bags, containing medical instruments and dressings, and four litters. In addition to this force eight privates are detailed from the ranks of

X-RAY APPARATUS USED AT THE FRONT

each battalion to act as litter-bearers for the four litters carried by the pack-horse. It is the duty of these men to carry such of the wounded as are unable to walk to the collecting station in the rear, where they are taken charge of by a new corps, called the Sanitary Corps. Each division has one of these sanitary detachments. It consists of nine surgeons and sixty privates, called attendants, who are really nurses. The sanitary detachment of each division also has, as part of it, two bearer companies, consisting of about two hundred men each, for whose work from ninety to one hundred litters are provided. The medicines and instruments used by the corps are carried on pack-animals. The Sanitary Corps operates on the battle-field, and takes the wounded from the collecting stations to the dressing stations, where ambulances or other conveyances are in readiness to transport them to the field hospital. The latter usually has as its chief surgeon a major, who has eight assistant surgeons and about sixty enlisted attendants. This hospital has its operating-table and a full equipment of surgical instruments; this is the nearest point to the firing line at which an operating-table is used.

In their surgical work the Japanese surgeons were extremely conservative. Amputations were comparatively rare, both in the army and navy. As might be supposed, wounds inflicted by artillery were more prone to infection than those inflicted by small arms. Perforating rifle wounds of the chest frequently healed

under the first aid dressing, without suppuration or other complications, and many cases of perforating rifle wounds of the abdomen and brain recovered without operation. Plaster of Paris bandages were used extensively. Splintering of bones appeared to occur relatively more often in the navy than in the army; conservatism in such cases was generally followed by good results. Traumatic aneurisms were frequently met with. Naturally the removal of bullets, pieces of shell and foreign bodies constituted the bulk of the operative surgery.

The kitchens in the field hospital were entirely separate from those of the army, so that when admitted to the field hospital the soldier for the first time got special food and, in grave cases, delicacies. The field hospitals were usually in buildings, sometimes in tents; each hospital was supposed to accommodate two hundred patients for a few hours at least; from there they were removed to a temporary field hospital, if they remained on the field: a hospital comparable to a division hospital when the troops are in camp. Further in the rear were the large etappen hospitals, entirely out of the range of fire, where the wounded might be kept in comparative comfort until removed to base hospitals, where they remained until returned to duty or were further transferred across the sea to the reserve hospitals in Japan.

The surgeons in the army, like the civil physicians in Japan, are of three classes: (1) those who have

graduated from universities at home or abroad; (2) those who have graduated from medical schools of a lower grade than universities; (3) those who have a license to practise medicine after examinations, having served as students, often in physicians' offices. The university graduates compose the smaller number, and the specially licensed practitioners the larger. In the Second and Third Armies at the battle of Mukden no less than fourteen surgeons were killed or wounded on the field. The services of civil surgeons were often required, and from that source Japan obtained a sufficient supply of physicians for the sanitary detachments and field hospitals, but occasionally, in the emergencies of battle, there was not enough of what is called the under-personnel, or attendants and nurses. For this under-personnel the men volunteer and receive special training. When their numbers become depleted it is not always possible to secure efficient substitutes. The attendants are required to spend one year in the ranks in ordinary military training, and the rest of their service with the army is devoted to hospital work. They begin with limited responsibilities and gradually become trained in nursing, and may attain the rank of sergeant-major. On the other hand it was comparatively easy to keep the ranks of the surgeons filled, about five thousand of the forty-five thousand physicians in Japan having seen army service, or one to every one hundred of the troops — an unusually large ratio. In this connection it is note-

worthy that, although some of the most eminent medical men were called on to help in army hospitals at home, they invariably served as assistants to the men in charge, who frequently had been their former pupils in the university, but they never transcended the limits of discipline and willingly served under their inferiors in professional ability.

Even during the battle of Mukden, which lasted sixteen days, and in that at Liaoyang, every hospital in operation was well supplied with medical and surgical necessities. Every soldier had a first aid package and knew how to use it. No operations were permitted on the field, except in cases of emergency or where death was imminent from hemorrhage, reliance being placed upon the efficiency of the aseptic first aid dressing. The first aid packet of the Japanese Army differs in no essential from that of other armies. It consists of two compresses of sublimated gauze, a sterilized safety-pin, all enclosed in paraffined paper, and a triangular bandage, which are secured in a closely sewn khaki-coloured cotton. There was not a foreign surgeon with the Japanese armies and not an attaché who was not a complete convert to the practicability of the first aid package idea on the field of battle. So proficient were the soldiers in adjusting the contents of these bandages that in many cases no further treatment was necessary, and the bandages were not even disturbed by the surgeons.

Captain Hoffmann of the General Staff of the Ger-

man Army, and its Military Attaché, with whom I had the pleasure of returning from the front, was enthusiastic over the first aid treatment. He narrated an instance of seeing a man with a severe penetrating wound of the chest. The man shouted the usual "Banzai," and fell. The surgeons ran to him, applied the first aid bandage, and restored him sufficiently to enable him to walk to the rear. That afternoon Captain Hoffmann saw him again ten miles in the rear. He had walked the entire distance without assistance, not even going to a hospital for treatment. The captain followed up the case and was astounded to learn that he received no further medical treatment, but that he recovered and returned to his command.

Thus, having perfected a system of supplying medical stores and surgical equipment to her armies, having trained her soldiers to help themselves in every possible emergency, having instilled into them the respect for the medical officer, having made ready her transports and hospitals, and with the ranks of her medical and surgical corps full, and thoroughly trained, Japan awaited the shock of battle.

CHAPTER VII.

CARE OF THE WOUNDED AND SICK

TO appreciate the thoroughness of detail in caring for the wounded, the reader should familiarize himself with the arrangements made just before a great battle — Mukden for example.

An examination of the field was made from the hospital standpoint. There were, in round numbers, a hundred field hospitals in use, if the ratio of from five to six to a division obtained, which was generally the case. More than a hundred sites had previously been selected, the locations of which were made known to the officers, who in turn informed the men in the ranks. Immediately in the rear of each battalion a site for a dressing station was selected, which such of the wounded as were able to walk could readily reach. At Mukden collecting stations were largely eliminated or made to coincide with the dressing stations. Medical chests were made ready, operating-tables for the field hospitals prepared, instruments sterilized, stretchers and ambulances inspected. Chinese carts and coolies were engaged to help in the transportation of the wounded. Every soldier made sure that his first aid

LITTER CARRIERS

Bearing a man, seriously wounded in the leg, from the zone of fire

package was ready for instant use, and every soldier had a bath.

The battle began.

Almost immediately the wounded came pouring into the dressing stations. Theoretically the company bearers were to carry their wounded to the collecting or dressing stations; theoretically the sanitary bearers there were to take them further to the rear or to the field hospitals; but in a great battle like that at Mukden, lasting sixteen days, the theoretical details went to pieces, although the general idea of the system held good. Every man was helping almost indiscriminately in the endeavour to clear the field of the wounded, including those left behind by the retreating enemy. Surgeons from the collecting or dressing stations ran forward to the first line, while the sanitary and company bearers invaded each other's field of work in their eagerness to remove the wounded to the rear. Surgeons and stretcher-bearers were wounded or killed, and many of the wounded lay for hours where they fell, because there was no one to help them.

With the thermometer far below zero most of the time the ground was so frozen that it was impossible to throw up entrenchments or even to scrape together a little earth for purposes of protection. But the rushes against the enemy went on. And here it may be mentioned that the Japanese often made rushes to the astounding length of three hundred yards (as against one hundred yards in other armies), after which they

flung themselves on the ground at the word of command to assail the enemy with rifle fire. Knowing the condition of the ground, the soldiers, during those running onslaughts, carried bags of dirt or stones, or bits of blankets or lumber — anything they could find — to serve as a shield after they prostrated themselves. One man was seen carrying a dress-suit case (filled with thawed-out earth), to hide behind when the rush ended.

It has been noticed in all great battles, but more markedly so at Mukden, that soldiers hit during a rush will continue running until, at the end of the rush, they fall down with the others at the word of command; and it is only when they are unable to rise with the others for another rush that the fact of their having been wounded becomes apparent. Of course, many men fell the instant they were hit, but the fact that some could run for many yards before they felt the full effect of the shock was especially interesting to the foreign attachés, who were observing the results of improved rifle fire on the battle-field.

At times the fire was so hot and at such close range that it meant certain death to try to reach the wounded. Whenever there was a gigantic assault involving a wide stretch of territory they had to remain where they were until darkness set in and a search could be made for them.

Some of the field hospitals became so overcrowded that those able to walk had to be sent to other hos-

pitals, and the same necessity might repeat itself there.

Whenever a wounded soldier was admitted to a field hospital his name and description was recorded and a tag pinned to his clothing: a red tag for a severe wound and a white tag for one that was not so serious. From the field stations the patients were taken either to a temporary field hospital, or to an etappen hospital — the first on the line of communication to the rear.

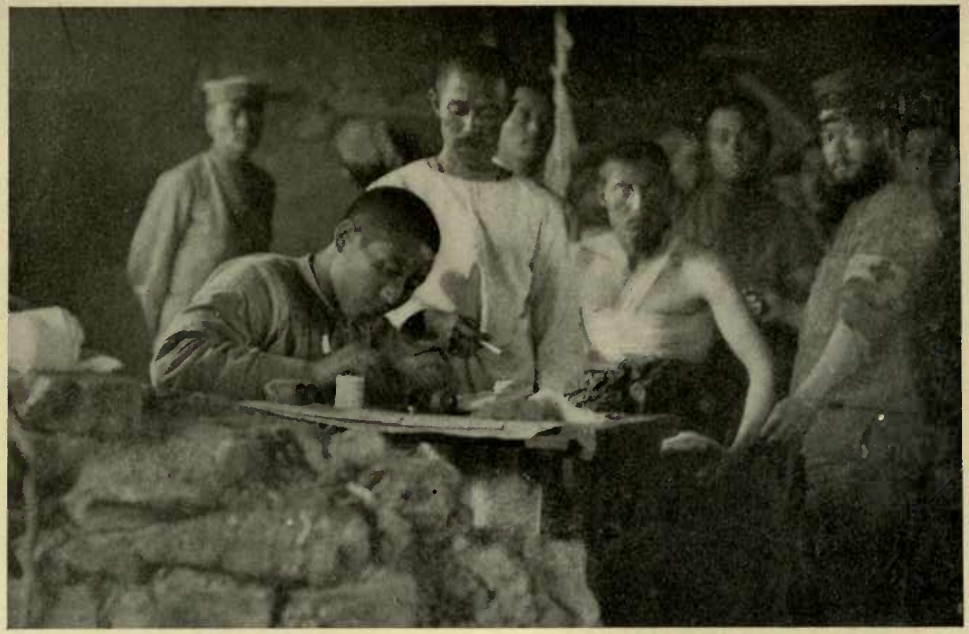
Surgeons were definitely instructed never to attempt difficult operations, those for example that would probably terminate fatally.

At the dressing stations no operations were performed except for severe hemorrhage or wounds of the trachea. Even in the field hospitals operations were remarkably few. Major Taniguchi, surgeon of the Fifth Division of General Oku's army, who was regarded as one of the best surgeons in the field, told me that he had performed only five amputations during the entire sixteen days of fighting around Mukden — three legs and two arms. All of those patients recovered. Major Matignon, the French military attaché, who during the great battle went over the field and from hospital to hospital observing the Japanese method of caring for the wounded, told me that he observed only one operation — for a wound of the bladder — and that he was astonished at the alacrity with which the field hospitals were evacuated and the wounded cared for.

Most of the field hospitals were at times under artillery fire, but the hoisting of the hospital flag was purposely omitted for fear of attracting the attention of the enemy's gunners, who would probably be unable to distinguish the fluttering bunting as a hospital emblem. Major Matignon indeed stated having seen two train-loads of wounded fired upon by the Russians, but he was unable to say whether it was through intention or by accident.

After the fearful battle of Mukden was ended, the Japanese were terribly handicapped by the enemy leaving his dead and wounded on the field as he retreated, while the Russians thereby gained the advantage of being free from that tremendous impedimenta. Sixty thousand prisoners, many of whom were wounded and sick, were captured by the Japanese, relieving the strain on the Russian hospitals to an enormous extent. Similar conditions prevailed in Port Arthur, where seventeen thousand sick and wounded were captured. This fact should be borne well in mind, for should at a later date invidious comparisons be made regarding the low death-rate of the Russian wounded, it is Japan to whom the credit belongs. For it was under Japanese care that such a large percentage of them recovered. As prisoners of Japan they were placed amid healthy surroundings, where they had the advantage of good, nourishing diet, and the best medical care that circumstances could allow.

Inside the field hospitals everything was active up to



RE-DRESSING ROOM OF A FIELD HOSPITAL

Taking the history of the case of a Russian prisoner

the very moment when the order came for the hospital to be moved forward. Then the wounded were either moved to a neighbouring building or left where they were, the station then being called a temporary field hospital. The hospital force was divided, one portion remaining behind with the wounded, and the other hastily packing up and dashing after the column that was pursuing the enemy.

The branch of the service taking charge of those left behind was distinct from that on the field.

There began the railroad hospital service. From the last field hospital to the etappen hospital the patients were carried in detachments, each accompanied by a surgeon. Sometimes the distance to the hospital at the first railroad station was many miles, over which the more seriously wounded were carried on litters, four men — Chinese coolies — to a litter; the less seriously wounded were transported in carts. Long trains of wounded were common sights after a great battle, and the processions of them lasted for days. After a rest at the railroad terminus the wounded were sent by rail and by easy stages to Yentai, Liaoyang, and other cities, while others were sent through to the great base hospital in Dalney, a distance of about 250 miles, where they remained until strong enough to bear the sea voyage to Japan.

At every etappen station along the line there were rest rooms with surgical attendance, where men unable to travel more than a few miles would rest; so that

just after a great battle but few trains arrived at Dalney with their full complement of wounded.

The train service, though more or less crude for want of rolling stock — all of which had to be brought from Japan — was prompt. At the battle of Mukden only nine trains a day were being sent to the station nearest the battle-ground. They arrived and departed at regular intervals and ran at a speed of about ten miles an hour. They consisted of freight-cars exclusively and transported wounded on the down trip and freight on the return trip. The contrast between the Japanese and Russian train service was characteristic. Bishop Harris of the Methodist Episcopal Church at Mukden told me that the Russians, while in possession of Mukden, had on a siding probably the best equipped and finest hospital train in the world, fitted with bath-rooms and every surgical appliance. It was palatial, and could accommodate nearly two hundred wounded. Imagine, one gorgeously equipped hospital train with a capacity of two hundred to care for nearly one hundred thousand wounded and sick! The Japanese had no hospital train, but they were soon using nine trains of freight-cars, the serious cases being cared for in box cars and the others in the ordinary open, flat cars. True, the invalids were exposed to the inclemencies of the weather, but so they were on the firing line, and here as well as there they bore the necessary ordeal with that stolid patience and fortitude that characterizes the soldier without "nerves."

CARRYING A WOUNDED MAN INTO A FIELD HOSPITAL

This Chinese building was some two miles from the nearest firing line

The same method was employed in transporting the wounded. In time of battle they were sent to the field hospitals, and, when no engagement was going on, to division hospitals, which were gradually emptied when it was safe to remove the patients to the etappen hospitals.

The field hospitals were organized to accommodate about two hundred patients, but the records of one division of Kuroki's army, which has already been made the basis of a foreign government report, shows that, for example, after the battle of Liaoyang the average number of patients to each field hospital must have been 426, since there were 2,348 wounded in that division, and only five and one-half hospitals to care for them. To understand the latter figure, it should be explained that each field hospital equipment was capable of division into two parts. The second division of the same army had to care for 849 wounded with only two field hospitals at the engagement on the left bank of the river at Liaoyang. In the twelfth division of the same army the average number of patients cared for in five engagements was 225, but sometimes as low an average as 115 to each field hospital.

Data regarding the evacuation of field hospitals varied widely. Of sixteen in Kuroki's army at Mukden two were only occupied for two days, but the usual time of occupation was from five to nine days. The longest stay — seventeen days — occurred at a hospital called Shimo-kokako. The largest number cared for

in those field hospitals, according to the records, were 2,300, 2,000 and 1,427, respectively. One hospital was open for two days, caring for only four cases, one for twelve and one for fourteen days, but the majority opened and closed in about a week.

Dalney, the great base hospital in Manchuria, where the lines of the sick and wounded, so to speak, converged, received every case that was to be sent to the reserve hospital at home in Hiroshima, and even there very few operations were performed.

Arriving at the etappen hospital the wounded and sick came for the first time in contact with the Red Cross Service. Their surgeons, nurses and supplies are not allowed on the battle-field according to the Japanese system. This was not the case in the Russian service, in which members of the Red Cross Society, men and women, were permitted to go to the front. At first the Japanese could not understand how it was possible for them to capture Red Cross surgeons and nurses, and they were inclined to think that the Russians were playing a trick on them.

Much has been written upon the admirable Red Cross System of Japan. With branches practically in every city and town, a membership of 1,250,000, a royal prince as honorary president and their Majesties the Emperor and Empress giving it their personal approval and assistance, it is unquestionably the best in the world. Organized strictly as an army auxiliary, it is practically transferred bodily to the army in time

WOUNDED READY FOR TRANSPORTATION

of war. Its surgeons serve under the directions of army surgeons and its nurses work in the same way. It becomes a part of the army's Medical Department organization, and its officials surrender all practical control of the Society and its affairs, so far as working in the field is concerned, to the Medical Department of the Army.

In anticipation of the present war the Society had filled its storehouses with surgical and medical supplies, instruments and clothing. Its large Tokio hospital, where its special staff of nurses is trained, was turned over to army control and became one of the most important military reserve hospitals in Japan. It had also kept in readiness two hospital ships, carrying a complement of 110 nurses and 131 litter-bearers.

Through the courtesy of the officials of the Society, of which I count it a great honour to be a life member, I am able to present for the first time a summary of its work since the early part of the war.

The Society had 3,852 nurses, men and women, employed up to July 1, 1905, 2,628 of whom were female, employed exclusively in hospitals and other home stations where the sick and wounded needed attention. In places where there were no female nurses 834 male nurses were employed, while 390 nurses of both sexes worked together at other institutions.

Of so-called Red Cross Relief Detachments twenty-one were at work on Army Hospital Ships (not Red Cross Ships) up to October, 1904, while more than

eighty-two Relief Detachments had been sent to the field to coöperate with the army surgeons. A Relief Detachment consists of two surgeons, one apothecary, one clerk, two chief nurses and twenty nurses. The detachments sent to the field consisted of men only, while those sent to the hospital ships consisted of men and women. In the hospitals at home women only were employed as nurses.

A new experiment consisted in the establishment of the so-called Patients' Transport Columns, consisting of a director, a surgeon, a clerk, two chief and three ordinary male nurses, and three chief and 120 ordinary litter-bearers, which were sent out to assist in bringing the wounded down the line. Although those bearers were selected from retired privates, they were instructed anew for two months for that particular work, and there is little doubt, from all accounts at hand, that their work was attended with the most gratifying results, although full details have not yet been made known.

Excellent work was also done by the "Nursing Association," which is allied to the Red Cross Society, and which the princesses and the wives of the nobles and the diplomatic staffs joined freely. They prepared bandages for the front, meeting a certain number of afternoons each week to roll them.

Through the instrumentality of the Red Cross Society packages were forwarded to the soldiers in the field, and it endeared itself to the nation by also for-

warding postal cards and other messages which it induced children to write to the soldier boys at the front.

The two Red Cross Hospital Ships, to which reference has already been made, were now ready at Dalney to assist in conveying the invalid soldiers to the reserve hospitals at home. They were, naturally, only able to take a portion of the wounded, but the Army had soon provided no less than twenty-two ships of its own for that special purpose. They were going and coming constantly. The journey to Japan was over what might be called a trunk line from Dalney to Ujina, the port of Hiroshima, a short voyage of three to four days. The Army Hospital Ships were not so thoroughly equipped as the Red Cross ships, but the trip was of such short duration that in view of the special preparations made for the patients they had few discomforts. Having undergone the hardships of a more or less tedious railway journey, mostly in open cars, the sea journey was comparatively a delightful rest. The thought of going home had a profound influence on the soldier's mind, a factor on which the government probably counted when stowing the men away rather closely in bunks. For a long voyage, like the one that many of the British troops made from Cape Town in the Boer War, the close packing would have been detrimental, but the Japanese authorities said they had found no bad results from it. When the Army Hospital Ships proved insufficient to carry to Japan all that were ready to be sent, transports were

sometimes pressed into service. At any rate, there never was a lack of ships in Dalney harbour for the transportation of the sick and wounded, and that duty was never neglected by the government. Nothing was allowed to interfere with the necessity of getting the sick and wounded home. It is a remarkable fact, however, that fully ten thousand of the patients sent to Dalney for transportation home recovered there and returned directly to the colours. The soldiers, much as they longed to see Japan and their people, preferred going back to the front, to die, if necessary, for their Emperor and for their country.

Exactly how many ship-loads of the patients were sent from Dalney to the other great distributing-places in Japan — Kobe, Matsuyama and Osaka — the authorities would not reveal. They simply said: "There were many." To put on board 250 patients, which was about the average for each journey, required a little more than half an hour, and in carrying them on board the Japanese used the same methods as in loading any other kind of transport. They formed a line of men, set a time for starting the work, and the procession of litter-bearers moved, placing each man in his assigned place and marching off the boat without confusion. Many a hospital ship has been under way in less than an hour from the time the first patient was carried on board. What a contrast to the methods of loading a transport with sick in the Spanish-American war! Days were often consumed in

such work. System was lacking, and many a poor fellow went to his long home by reason of unnecessary delay. Secretary Root of the United States War Department, in a memorandum issued January 10, 1904, referred to the "sacrifice of many thousands of valuable lives" because of the lack of proper Army Medical Service. Well was that deplorable lack illustrated in the methods of caring for the wounded and sick on transports. In comparison, it was a genuine pleasure to see the systematized action and the consequent rapidity and ease with which the hospital ships at Dalney were loaded and the promptness with which the ships took their departure.

"We have the most precious cargo here that the world can imagine. We must hurry home with all speed, so that not one of its parts may suffer the least damage on the way. Give us free road. Here come the nation's greatest treasures, the sick and the wounded."

Such were the sentiments expressed by every one who was in the smallest way connected with the task of seeing the invalided soldiers home.

The same system of prompt attention characterized the unloading of the patients at Ujina. The stay of the men at Hiroshima was made as short as possible; comfortable hospital trains were made up and the men were forwarded by branch lines to the various reserve hospitals throughout the empire. All along the route the people would come out to bring refreshments and

flowers, and here it was that the titled ladies, like the Marchioness Oyama, greeted the soldiers at the railroad station. Those who were bound for home were usually taken to rooms over the Nobles' Bank, and "fixed up" neatly, the stains of travel being removed before they were sent to see their relatives. Many of the convalescents were sent to the hot springs and mountain resorts, where every possible means was employed to restore them to health.

This superb system of care and thought had to chronicle as its greatest triumph the return of no less than forty thousand of the sick and wounded to the front, again to face the enemy and to assert their loyalty to Emperor and country.

An old French saying reads: —

"Attendance upon the sick or wounded soldier is a debt which every patriot owes to his country."

Japan has one impulse that outshines all others in time of war. It is that of patriotism. Need any one wonder, then, at the care she has taken, and is taking, of her sick and wounded, and that she considers it a duty of the loftiest character!

WOUNDED SOLDIERS BEING TAKEN FROM A HOSPITAL SHIP

CHAPTER VIII.

ARMY HYGIENE — THE SYSTEM

WITH his military training the Japanese recruit is inculcated with the idea that his health is of prime importance. He is taught not only to respect, but to implicitly obey the surgeon. He is instructed that his body is a fighting machine which is the property of his Emperor; that he is but one element in a great organization, the army, composed of the Emperor's children, and that it is the function of this organization to uphold and protect the Emperor and his people. He is imbued with the idea that it is just as necessary to maintain his body in the best physical condition as to keep his rifle in a state of efficiency; that to permit either to become impaired through his own carelessness or misconduct is to injure the organization of which he is a part, and constitutes an act of disloyalty to his Emperor.

The sense of filial duty to the Emperor has been well expressed, as follows, by Dr. Nagao Ariga, Professor of International Law in the Military and Naval Academies of Japan, and one of the most distinguished

members of the splendid Red Cross organization of that country: —

"In Japan the Emperor is the personal leader of the nation in arms, and the soldiers are his soldiers, not in theory only, but by the fact of historical tradition. Hence the nation which loves and respects the Emperor, literally as children do their fathers, naturally loves the soldiers whom the Emperor cherishes, and does everything in its power to help them. We owe to the Emperor the independence and prosperity of the empire, which he maintains by means of his soldiers, and the best means of paying back this immeasurable debt is to give aid to his soldiers while risking their lives on the field of battle."

The recruit, early in his military career, recognizes the importance of the surgeon in looking after his welfare, and respects and appreciates him accordingly; the officers likewise hold him in the highest esteem and render him the respect and courtesies due to his rank and professional attainments. The Japanese conception of the medical officer's duties and responsibilities is not that which prevails so notably in our army and some of the European armies, viz.: that the chief function of the medical officer is to care for the sick and wounded. In the field of prevention lies his most imperative duty — the responsibility of maintaining the army in a state of efficiency.

Not only is the status of the surgeon as a military factor recognized by the rank conferred upon him,

but what is of greater importance is the authority conferred upon him in all matters affecting the health of the troops. By this it is not intended to convey the idea that the medical officer exercises command, except of course in his own department, but his dicta and opinions on matters affecting the health of the troops are never questioned, and his recommendations are rigidly enforced. It is not an exaggeration to say that he is practically in complete control upon all matters pertaining to hygiene and sanitation.

The duties of the medical officer of the Japanese army may be set down under three heads: the selection of the recruit by physical examination, the preservation of his health after enlistment, and his care when he becomes sick or wounded. A résumé of the responsibilities under the second head may not be amiss at this juncture.

The military medical officer is called upon by this system to have the knowledge and care of practically everything connected with the life of the soldier except his strictly military duties, and includes a consideration of his clothing, food, water, shelter, habits and amusements.

The medical officer should possess a knowledge of the protection afforded by different textile fabrics with which the soldier is clothed and their adaptability to the climate in which he is serving. He should be able to determine whether any articles of clothing or equipment, through faulty construction or material, is lia-

ble to incapacitate him. He should be well versed in the physiology of nutrition, the value of foods, both as nutritives and as producers of heat and energy; the quantities of the proximate principles necessary to maintain health; the digestibility of different articles of diet; he must also be able to supervise the cooking and preparation of the ration and to suggest methods for its preservation under varied conditions; often, too, he is called upon to express his opinion as to whether the food supplies furnished are fit for consumption; and, at times, he may be required to make chemical, bacteriological and microscopic examinations of such supplies.

So, too, with reference to the water-supply, must his knowledge be varied and extensive. The question of sufficient supply, its source, character, its liability to contamination, and methods to be adopted to prevent its contamination; methods of purification — all come within his special province. He must be competent to determine by chemical or bacteriological examination the materials or organisms present which may produce disease and to suggest the means for their removal and destruction.

Closely connected with the problem of water-supply is that of the disposal of excreta and refuse, and the prevention of soil pollution; the necessity of the medical officer's attention to this problem is obvious and needs no further comment.

In the selection of camp sites the medical officer

must be able to appreciate the local conditions which may become factors in the production of disease, or the absence of which may tend to the maintenance of health. Such problems include a consideration of the exposure of the site to sun and winds; the character of the soil; its ground water; the presence or absence of disease-carrying insects. When the exigencies of the military situation forbid the selection of a salubrious site, the surgeon's energies must be directed towards minimizing the danger which threatens from unhygienic conditions. In barracks and other permanent stations additional problems, such as heating and ventilation, air and floor space, lighting of dormitories, construction of hospitals and quarters, are matters for his consideration and action. Such problems require familiarity with the laws of physics, building construction and chemistry.

The habits of the soldier may at times also become the concern of the medical officer, and then it is incumbent upon him to suggest the means to combat them. The soldier's life is often monotonous and depressing. That such depression may seriously affect the health of an army is well known, and under those circumstances it becomes the duty of the surgeon to recommend the institution of sports and amusements. In fact, everything which tends to the maintenance of the physical and moral welfare of the soldier comes within the province of the military medical officer. Furthermore, it is demanded of him that he be well grounded

and experienced in the practice of medicine and surgery in their various branches: he is at once a sanitary expert, a general practitioner, a surgeon, a specialist in various diseases, sometimes a chemist, a microscopist, an X-ray operator, and so far as insects are concerned in the propagation of diseases, something of an entomologist.

The population of Japan is small as compared to the requirements of its army during the recent war with Russia, and it thus became necessary to conscript many men who would ordinarily be rejected under the more stringent regulations of other armies regarding military service. Certain physical defects were waived, as for instance errors of refraction. One saw many of her soldiers wearing glasses, who were accepted in spite of their defect and were ordered by the surgeon to wear them. Many were accepted with other physical defects, which did not unfit them from performing certain duties. It should not be understood, however, that weaklings who were liable to succumb to the hardships of a campaign were accepted; indeed, many a young man has returned to his home, feeling himself eternally disgraced because of his rejection for a defect which, though slight, might in the future incapacitate him.

The Japanese government has fully recognized the importance and value of the application of hygienic principles to its military service, and in order to accomplish the best results has been for years educat-

ing her military medical men in this direction. The sanitary lessons learned in her war with China excited her serious apprehensions, and soon thereafter military surgeons were sent abroad to study the methods of foreign armies. During the Boxer uprising in China, in 1900, investigations were made by her medical officers into the various methods employed by the allied forces. From these investigations and studies Japan perfected its system. Military and naval medical officers were obliged to take special courses in hygiene and sanitation at their respective military and naval medical schools, and the study of hygiene was made compulsory in the military and naval academies. The young officers were thus brought to realize its importance and appreciate its necessity. The system of national sanitation has diffused a general knowledge upon the subject, with the result that the physician from civil life and the older officer who had had no special training in the subject are now more or less familiar with it. It follows, therefore, that every officer in the Japanese Army not only understands the principles involved but realizes the necessity for their application.

We now come to the consideration of this question in connection with the soldier in the ranks, and here is disclosed the chief method by which their success in the prevention of disease is achieved. This consists in the systematic instruction given in elementary hy-

giene as well as first aid by the medical officer to every soldier who is enrolled in the army.

It is the constant care of the surgeon to impress upon them the necessity of maintaining their health and the means by which this is to be accomplished. In addition to the instructions imparted, each soldier is issued a small "handbook" which treats of infectious diseases, sunstrokes, frost-bite and other injuries; how these are to be avoided and what to do when they occur; of sanitation on the march and in the camp, and what articles of food and drink should be shunned. Handbooks of instruction are also issued to all who are in any way connected with the medical service, different handbooks being provided for those detailed to different duties. So, too, with reference to military and auxiliary nurses, hospital stewards, orderlies, apothecaries and members of the Ambulance Corps.

There is no phase of caring for the sick or wounded that is neglected in these pamphlets, and no means of preserving the health of the troops is overlooked. In the spring of 1905, special books were issued to the troops on the dangers of cholera and plague and the best means to avoid those diseases.

If there is one hygienic rule that stands out clearer than any other, it is that the soldier shall never drink water that has not been boiled, and to make sure that he complies with this instruction the commissariat provides boiled water liberally and constantly. Every battalion had its outfit for boiling water. Every sta-

BOILING WATER KETTLES

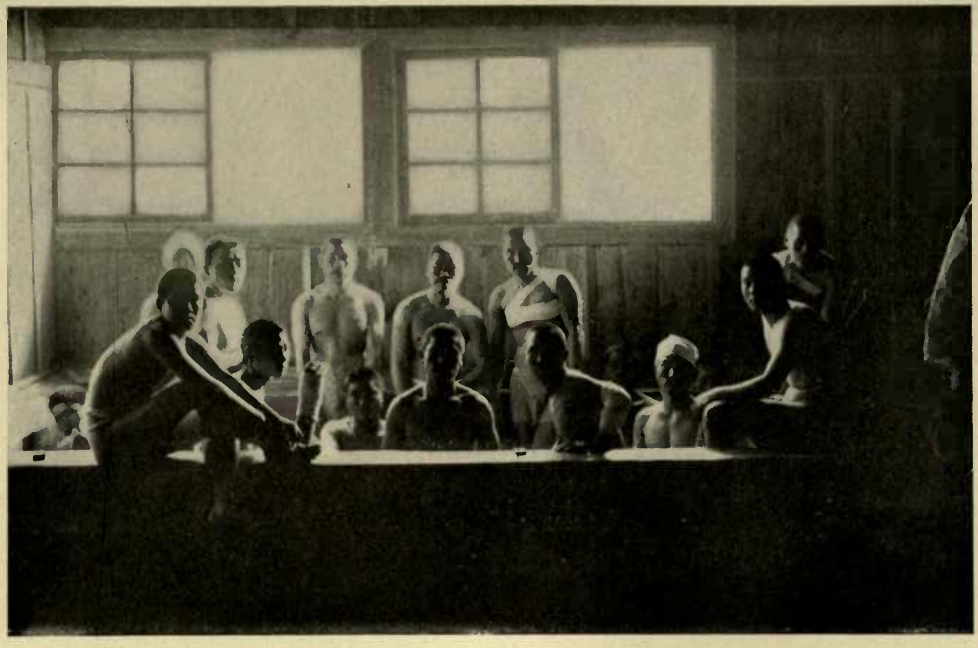
Used on the line of transportation

tion along the line of communications had its kettles for this purpose which were kept steaming constantly. One of the commonest sights, in going to the front, was to see a train-load of soldiers at the stations filling their canteens and drinking the boiling water, the soldiers having learned to prefer hot water to cold.

That custom of drinking boiled water was adopted by the attachés and war correspondents. One of the attachés, Captain Hoffmann of the German Army, told me that in fourteen months at the front he drank unboiled water only twice, once during the battle of Mukden, when he seemed choking from thirst, and once from a clear mountain stream far from any sources of possible taint. The death of an interpreter from typhoid fever through drinking unsterilized water made such an impression that correspondents in the field were requested to observe the orders regarding drinking water. Even during engagements lasting several days, when it was almost impossible to obtain supplies of food and when some of the foreign attachés were without food for days, thousands suffered from thirst rather than violate the regulations and thus endanger the fighting efficiency of the army. The manner in which the troops observed this rule during the great battle of Mukden was a supreme test of Japanese discipline. Every soldier carried his canteen of boiled water. When that was exhausted he endured the agony of thirst until a fresh supply was obtained.

Every man bathed before going into action and

made himself as near surgically clean as possible. The Japanese is habitually clean. He loves to bathe. While in barracks in Japan, he bathes every night; on transports *en route* to Manchuria he had at least two baths, and sometimes more. At the front, he bathed at every possible opportunity. During the winter, in the bitter Manchurian weather, when the men lived in dugouts, they had their daily bath. The enormous water-jars, which were found in every Chinese house, served as tubs. In many places bath-houses were built close to the company dugouts, where the soldiers literally steamed themselves almost to the boiling-point. It was a common sight to see a soldier dash in nude state across the space between the bath-house and his company dugout, with the thermometer fifteen or twenty degrees below zero, and enjoy the run in the heated condition of his body.



A HOT BATH

Each man has washed, with soap, before entering this common bath

CHAPTER IX.

ARMY HYGIENE — THE PRACTICE

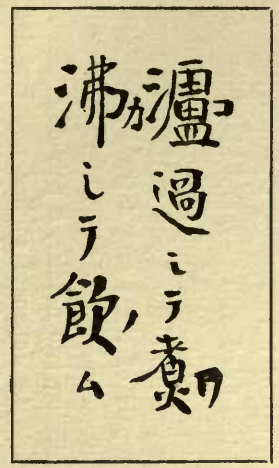
THE first hygienic precaution taken as the Japanese pushed the Russians back towards the north was to examine the water along the line of march and at every camping-place, whether it was to be occupied for a few days or for weeks. It was no mere perfunctory examination of wells and streams. With the scouts went the physician or the expert from the Sanitary Corps, and with his water-testing outfit, one of which I was fortunate enough to secure, the necessary investigations were made. As soon as such an investigation was completed a sign was put up on the well or on a post adjoining the stream informing the troops as to the uses to which the water could be put. Those signs were painted on boards, as a rule, and were in both Chinese and Japanese characters, so that a person not familiar with the one could read what was said on the other.

The signs were of three kinds, one describing the water as pure and fit to drink, another that it was unfit to drink but could be used for washing purposes, and still another saying that after the water was

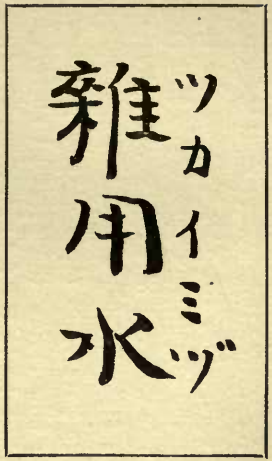
strained and boiled it might be drunk with safety. Samples of those signs are reproduced herewith. They were written out for me by Surgeon-Major T. Takai, in charge of the hospital at Tie-ling in June last, who proudly exhibited to me the water-testing kit that had been used many times with his detachment.

To show how thoroughly this water-testing was done, I must state that I did not see a single well at or near the front in the Second Army that was not posted with the wooden placard describing the uses to which the water could be put. I photographed many of the wells. Added to my personal experience is the testimony of several attachés, not only with Oku's army but with the other armies, to the effect that the testing of the water and the placarding of the wells was not neglected. The water was examined for organic matter, the presence of sulphides, chlorides, nitrates, and free and albuminoid ammonia. The chemical reagents used for that purpose were contained in every kit. Later in the campaign, at points where the army was to halt for any length of time, bacteriological examinations were made to determine the presence or absence of the organisms of typhoid fever and dysentery, and analyses were made to detect the presence of poisons.

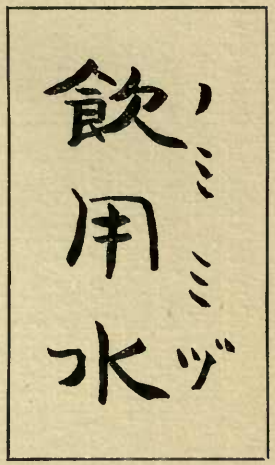
Whenever it was feasible, sanitary inspections were made of the places to be occupied by the troops, especially of the Chinese houses which had been previously occupied by the Russians. Sometimes in a swift pur-



"Filter and boil before drinking"



"Use for washing only; not drinking"



"Pure drinking water"

suit it was not possible to examine those quarters beforehand. The Japanese surgeons said that they almost invariably found the camps of the Russians, which the Japanese were often compelled to occupy for military reasons, in a bad sanitary condition, and that most of them were a source of positive danger to the troops. Indeed the Japanese surgeons were inclined to attribute a large part of the infectious diseases in their army to the enforced occupation of such camps and quarters. While there may have been justification for attributing some of those cases to the Russian occupation, the fact that at the earliest opportunity the Japanese either cleaned the camps or moved their men out of them would indicate that the infectious diseases from which their men suffered arose in a large part from other causes.

Let us now review the practical observance of hygienic principles in the field on the part of the soldier. He carried his rifle and supply of ammunition, of course, on his shoulders his knapsack, the catch-all, the catch all of his baggage, and dangling therefrom his mess tin, filled with rice, and his aluminum water-bottle filled with boiled water. Strapped over his knapsack was his blanket and at the sides were usually an extra pair of shoes and a little spade with which to dig entrenchments. He also carried two little sacks, one containing two needles, a pair of scissors, a comb, tooth-brush (a Japanese soldier would almost prefer to go without his shoes than his tooth-brush) and a

A WELL ON THE LINE OF MARCH

This illustrates the method of marking wells as safe or unsafe to drink from

skein of stout thread. This case was carried in the knapsack along with a small rubber sheet, which constituted one-sixth of a tent for six soldiers and which was used in bivouac. The second sack, a small brown canvas bag, contained an extra supply of underclothing. The weight of equipment was made as light as possible, but even then on a hot march it made the soldier weary to carry all this, and sometimes he suffered acutely from thirst. The temptation to drink water from streams or to eat fruits along the road was very great, but the soldier bore in mind that his body belonged to the Emperor and he obeyed his orders and endured the discomforts.

Here is a specific instance of the respect entertained for the surgeon's orders and of the method by which those orders were made effective. One hot day in July, 1904, after the battle of Kin-chau, Oku's men were marching north through a region that abounded in the little gourdlike fruits, which in that country are called watermelons. In one regiment the men who were attached to the Medical Corps, privates instructed especially to watch out for the health of the troops, reported that some of the men were suffering from diarrhœa as the result of eating that fruit to slake their thirst. At once the regimental surgeon issued orders, or strictly speaking, had them issued by the colonel, directing that under no circumstances were the men to eat any of the fruit. The heat was stifling and the men were staggering along from ex-

haustion and thirst, but not one of them touched the fruit after these orders had been issued, although they could have done so easily; the physical disorder that might have proved serious was checked at once.

This is but a simple illustration of the power of the surgeon. The recommendations of the medical officers are practically never overruled, and in matters of health his orders are promulgated as a matter of course, because it is recognized as absolutely necessary, if the army is to be kept at its full fighting strength, that his directions should be obeyed. What a contrast to the position of the surgeon in other armies, especially the American, where he is so often humiliated by having recommendations which he knows are essential to the saving of lives rudely tossed aside by some overbearing line officer who presumes to know more of health requirements of the troops than the surgeon, and who, by this display of costly ignorance, is frequently responsible for the deaths of many innocent victims!

The Japanese army surgeon made examinations of the sanitary conditions of the camping-places, he inspected the men constantly, and in addition he had reports from his assistants who were constantly on the watch for trifling symptoms of ill-health among the troops. He drew up orders to suit the conditions of the day, relative to food, water, clothing, etc., and at every noon he forwarded them to the adjutant of the regiment for the colonel to sign and publish or to

reject. As a matter of fact they were rarely if ever rejected.

If such an order had been rejected, what would have happened? The surgeon, if he had regarded his order as of vital importance, would have reported the facts in the case at once to his superior medical officer. The complaint would then have been carried to the chief medical officer of the army in which the act complained of took place, and he, in turn, would have submitted the matter to the general in command. The result would have been that the line officer would have been called strictly to account, all the more so, if in the meantime the health of the soldiers had suffered in the slightest, and, as the Japanese army officers say, "he would be punished." What that punishment might have been I am unable to say, for I could find no trace of a single instance where a surgeon had been overruled, or where any such case was reported to higher authority. The least punishment, of course, would have been a reprimand, something that would have so reflected upon the honour and intelligence of a Japanese commanding officer that it is doubtful if he could have lived under it. It will thus be seen that the medical officer in the Japanese army was not only respected to an extent that does not prevail in any other army in the world, but that he invariably met with the support of his superior officer, and in this way full responsibility for the health conditions of his command rested upon him. If the ration proved

defective then he took steps to have it changed. If he found a camp in a bad condition he had the condition or the camp changed. His opinion, as to water, clothing, camps, anything in fact that might have affected the health of the soldiers, was accepted without question and there was practically none to say him nay. The superb condition of the Japanese soldier fully vindicated the system.

In this connection I recall a conversation I had with Grand Marshal Oyama at his headquarters at Mukden, early in June last. I congratulated him on the health of the troops and said that Japan had taught the other nations a great lesson in the practice of military hygiene. The Marshal said he was sorry that Japan had not even better results to show, and added modestly that it was perhaps good fortune that the army had escaped epidemics like those which weakened it so in the war with China, ten years before. He thought it wonderful that the army had escaped epidemics, considering the unsanitary condition of the towns evacuated by Russians, and said it seemed like inviting epidemics to live in some of those places.

He expressed surprise that the Chinese did not suffer more from epidemics than they did. He thought that one reason was that they never ate raw food, in contrast to the raw food eating propensities of the Japanese, especially in the matter of fish, and also, that they drank so much tea, which was practically sterilized water flavoured with a pleasing extract. He

thought that because of these reasons they escaped many inflammations of the intestinal tract, a matter in which he found very ready acquiescence from his caller. To the suggestion that the simple food of the Chinese also had a large influence in preserving health, the Marshal said he believed that that was potent in preventing epidemics.

The power of the Japanese army surgeon having been made clear, one is now ready to see how it was manifested in another direction, namely, in the cleansing of towns and cities which they were to occupy for more than twenty-four hours. In every such place it was the custom to make a special sanitary examination of every building in the town, to clean those which were simply dirty, and to close or destroy those which were a direct menace to health. In every little village one of the first things done was to dig ditches in what would be the gutters of our streets at home, so as to allow the dirty water to run off. All night-soil was carefully collected and disposed of. Constant inspections were made and Japanese occupation of any city soon meant an improved sanitary condition of the place.

A good example of this was the city of Liaoyang, which we visited in June last. The city scarcely fills the great territory included within its walls, but it was crowded in the southern half. There was not a foul odour to be detected anywhere, so far as we could discover in a walk through many streets. The streets were all provided with gutter ditches. At the inter-

section of the two principal streets of the city we saw probably what no other city in China ever possessed — a modern public comfort station in a sanitary condition that simply could not be improved. Even the city jail seemed to catch something of the spirit of the times, and it, too, was in good condition, something rarely found in China.

It was in this jail that we witnessed one of the most unusual sights of all China. It was a common saying among the Japanese in Manchuria that a Chinaman never has but three baths in his entire existence. One when he is born, the second when he marries, and the third when he dies. What was our astonishment to see, therefore, and in a jail of all places, a large porcelain bathtub. The tub was filled with water and in it, not one Chinaman, but two were actually taking a bath. It is said that next to being beheaded a Chinaman in that region dreads a bath, but there there were two of them bathing and enjoying it. Truly the spirit of Japanese cleanliness had spread amazingly for such things to come to pass. Our only regret was that we could not secure a photograph so that we might present to others an ocular demonstration of what to us was almost an incomprehensible spectacle.

Liaoyang was not an exception in this sanitary work. In Mukden, at the time of both my visits, thousands of coolies were being employed in cleaning the town in a manner similar to that of Liaoyang. But in one

A MODEL JAPANESE LATRINE IN LIAOYANG

respect it was questionable if a certain procedure was altogether wise. Like all Chinese cities, Mukden was infected with mean-looking dogs of decidedly wolfish aspect. They and the hogs were the scavengers of the town, and they served a most useful purpose, too. There had been indications of rabies in some of the dogs, and forthwith the order was given to the soldiers to kill them. If this order had been carried out with discretion the Chinese residents perhaps would have had little to complain of, but they were aroused to a feeling of great resentment when compounds were entered and pet dogs were slaughtered ruthlessly, while some mangy specimens in the streets were allowed to escape. Moreover the manner of killing the dogs was objectionable. The soldiers engaged in this work used clubs, as a rule, and they were justly censurable to the charge of brutality in some of their acts. Repeatedly, people fled to escape the howls of the victims, as they were being killed by inches. The motive for this act was not open to question, namely, the prevention of the spread of hydrophobia, but the wisdom of the methods employed was questionable.

That purifying of cities by the Japanese began at the outset of the campaign. The following is a translation of a part of an order issued in Kuroki's army on May 26, 1904, relative to the cleaning up of Feng-wang-cheng. That order, after describing the boundaries of the three sanitary districts into which the place was divided, said: —

STREET CLEANING

Rules of the general cleaning are to be as follows : —

That the roads shall be repaired, and, according to the situation of the roads, open or closed gutters shall be made.

That waste water of the barracks shall be connected in such a way as to join the town gutters.

That the refuse of the military districts shall be burned by each of the sanitary corps at the most convenient place and that the refuse that is not combustible shall be carried away to an assigned place.

That the stables owned by the natives shall be repaired and thoroughly cleaned.

WELLS

That stone or bricks should be used to build up the wells, so that there shall be no danger of impure water flowing in, and that for draining purposes, bricks or tiles be placed around the wells.

FOOD

Foodstuffs that are sold by the Japanese or Chinese must be examined by the sanitary authorities and those that are not so examined are forbidden to be sold.

Articles sold publicly must have coverings to protect them from flies.

MISCELLANEOUS

Encouragement shall be given to Japanese as well as Chinese to open bath-houses.

Barber shops shall be controlled strictly.

An endeavour shall be made to prevent Japanese people from living in the same houses with dirty natives.

Slaughter-houses shall be built and the Japanese and Chinese shall not slaughter animals except in places assigned to them.

As an additional sanitary precaution the Japanese surgeons were directed to treat, free of charge, all sick found in the territory held by them. In consequence,

thousands of natives in Corea and Manchuria received free medical treatment, the Japanese occupation being really a great blessing to those regions. Hundreds came from distant places and some of the patients included Chinese ladies of high rank.

That free medical service soon led to the establishment of charity hospitals in several places, among them, Feng-wang-cheng, Hai-cheng, Liaoyang, Dairen (the Japanese name for Dalney) and Kaiping. At the time of my departure from the front it was planned to extend this system of charity hospitals to every important place occupied by the Japanese troops, the idea being, ultimately, to place the Red Cross service in charge of them in all the administrative districts.

The reference to flies in the above quoted order recalls an evidence of precaution that I saw in a division hospital in the village of Pa-po-tong, where the sick of the Fifth Division of Oku's army were cared for. The surgeon in charge was Major Taniguchi, who did brilliant work, especially at the battle of Mukden. He had a righteous hatred of flies.

Had similar efforts been made to kill off these pestilence-carriers at Chattanooga and other disease-breeding camps at home during our war with Spain, far different might have been the sad and reprehensible story of the epidemics in those places. Taniguchi had invented a fly-trap of his own, which was exhibited at a meeting of the Japanese surgeons and adopted for general use in the field. It resembled an Indian tepee, about eight-

een inches in diameter at the base, and consisted of four bamboo sticks about two feet high, tapering to a little chimney-hole about three inches in diameter. The poles were covered with newspaper to about four inches from the bottom of the little poles. The chimney-top was covered with a white cotton bag that fell over on the side of the tepee. A dish with sugar on it was placed under the tepee, and when a crowd of flies had gathered something was done to frighten them. They invariably flew upward in the big cone. It was then deftly removed from the table, and, with a quick swinging motion, the flies were drawn up into the bag at the top, which immediately dropped down and held them prisoners. Major Taniguchi had another trap which did not work so well. It consisted of an old condensed milk can with a bag attached to the bottom, which was open. When the can got quite full of flies, as they fed on sweets, a sheet of paper was pushed over the top and the flies shaken down into the bag at the bottom.

Another sanitary precaution which the Japanese army observed strictly was the burning of the dead. Military necessities required this after the great winter battles, and although there was some objection from religious feeling at first, this was overcome finally, for good and sufficient reasons, and the body of every soldier, whether he was killed or died in the field or at home, was burned. The Japanese, however, did not burn the bodies of the Russians. Consideration for the feelings of the enemy dictated that policy.

This chapter would not be complete without quotations from the book of instructions issued to the soldiers, as already explained. Here are translations of some extracts about infectious diseases: —

Infectious diseases are caused by poisons getting into the body from the outside, which can be prevented by proper care. These diseases are caused by microscopical objects called germs. In former times the number of deaths from these diseases exceeded the number of those killed in battle. Therefore never neglect to exercise the utmost caution against these germs.

The infectious disease which is almost always present with an army is typhoid fever. This is caused from germs in food or drink. Therefore the first step in preventing it is not to eat raw things and not to drink unboiled water.

The means of preventing dysentery and cholera are almost the same as those for preventing typhoid fever. Unripened fruit is apt to produce diarrhœa, therefore be very careful of that.

Plague generally comes through injuries to the skin. Therefore, even a little wound should be examined by a physician. Never walk with bare feet, as rats and fleas spread this disease; kill them or drive them away.

Malaria is spread by mosquitoes, therefore protect yourself from them as much as possible.

As to general sanitation, the book said: —

Do not forget to keep every part of the body clean. In case one cannot take a bath frequently, rub every part of the body with a towel daily. Keep the hair cut short and wash the head frequently. Every morning brush the teeth well. Keep the hands and feet clean especially. Dirt from the nails contains poisonous material, therefore cut the nails often and clean them.

Wash underclothing and stockings often, otherwise there is no value in keeping the body clean. Keep the shoes soft and oil them frequently. Shoes are the horses of the infantry, therefore protect them as carefully as riders do their horses.

As to food and drink the instructions said: —

The origin of strength in the human body is good food. Eat sufficient and do not go hungry, but remember that too much eating and drinking causes ill health. Never partake of any dish that gives an offensive smell or an unusual taste. Never eat any raw food, or drink unboiled water, and never eat or drink supplies left by the enemy. Tea and coffee are excellent stimulants when one is tired, and so is tobacco.

As to instructions for marching the book said that it was necessary to have shoes and stockings in good order; to have the clothing in thorough order and the water-bottle filled with boiled water or tea. Then it added: —

On the march be careful to walk with measured steps from beginning to the end, and do not march with the face downwards. When climbing obliquely or when marching against the wind do not talk much and do not smoke.

Always bear in mind to become accustomed to drinking little on the march, for those who indulge in frequent drinking feel thirst more keenly.

Never expose the head to the direct sunshine. Do not sleep on the damp ground, but cover it with straw or tree branches before lying on it.

During a rest, when it is impossible to get water to satisfy thirst, keep a pickled plum in the mouth or a leaf or a straw; either will help to check the feeling of thirst.

Elaborate instructions were also given to prevent frost-bite. The soldiers were told to wear double stockings and also to cover the shoes with straw. They were directed never to sleep in a snow heap, but to clear away the snow and use it as an entrenchment to keep

off the wind. In cold weather they were told never to drink saké, "because it cools the inside of the body, although it gives a temporary glow to the skin. It also induces sleepiness." The soldier was instructed, also, always to change his stockings when they got wet, because, as a literal translation of the instructions said, "the intrusion of wetness into shoes is the cause of sickness." Then it quoted a saying "of a famous general of olden times" to the effect that "the secret of victory is due to the feet."

In studying the system of hygiene in vogue in the Japanese army no one fact impressed itself more upon the observer than that of the care that was taken to provide the soldiers with pure water. The system of sending out sanitary experts to make examinations was carried out rigorously. I made inquiries regarding that at every place we visited in the field, as well as at headquarters in Tokio. From general down there was almost an expression of surprise that such a question should be asked. All said that as a matter of course physicians were sent ahead of the troops to test the water and to see that proper signs were posted. I remember that I spoke especially of this in Port Arthur to General Ijichi, — General Nogi's chief-of-staff. In answer to my inquiry if it was the rule to send out surgeons and pharmacists to make water examinations, he replied: "We always do it. It is our invariable custom. It is necessary to preserve the health of the soldiers. It is an absolute rule in the army, and, ex-

cept in grave emergencies, no commanding officer would think of moving into a new territory until the way had been prepared for the army by making these investigations. It is one of the most important things in the Japanese method of making war."

I did not meet a commanding officer, from the commander at Manchurian headquarters down to the leader of a small detachment, who did not corroborate the substance of that statement.

Although this chapter is supposed to deal only with matters directly concerning sanitation, it would not be complete without reference to the canteen in the Japanese army. No misguided band of fanatical but well-meaning women has succeeded in abolishing the canteen in the Japanese army, thereby driving the enlisted men to brothels and groggeries, with their associated degradation and disease. On the contrary, the Japanese soldier had provided for him a cleanly and attractive meeting-place, where he might spend his spare time with his comrades in wholesome and decent relaxation. The soldier could there buy a limited supply of liquor, and many necessities, such as soap, writing-paper, brushes, canned foods and milk, needles, thread and other necessities. Books and papers could also be purchased, and altogether the canteen was an almost indispensable adjunct to comfort in the field. I inspected several of those places and made purchases in them at the very front, and invariably I found them well managed and wholesome institutions. When I recalled the

terrible condition of affairs due to the abolition of the canteen in the American Army, especially in the possessions beyond the sea, and the woful results from a medical and sanitary standpoint, I could but wish that every person having the welfare of the American soldier at heart could visit one of those Japanese army canteens and learn a most desirable lesson.

CHAPTER X.

PORT ARTHUR

ON January 2, 1905, after the greatest siege known in military history, which General Stoessel, its gallant defender, in a despatch to the Tzar described as "unceasing fighting for the last eleven months," the fortress of Port Arthur surrendered.

The first questions asked by the world, waiting eagerly for the news of this triumph of Japanese arms, were: "How many surrendered?" and "How many were sick and wounded?"

Early reports stated that the garrison numbered about thirty-two thousand, and the sick and wounded about sixteen thousand. General Stoessel reported to the Russian war office on December 28th that the sick and wounded in the hospitals had reached a total of fourteen thousand men, and added, "about three hundred fresh patients enter daily." Somewhat pathetically for a grim warrior he said, "Our principal enemies are the scurvy and eleven-inch shells. Only a few persons remain unattacked by scurvy, which mows down men, and spreads despite all possible measures." Later it was learned that the number surrendered was more

than forty-one thousand, of whom over seventeen thousand were sick and wounded. It is not surprising that General Stoessel, in a highly overwrought mental condition, exaggerated the situation when he said, "Few persons remain unattacked by the scurvy;" nevertheless scurvy was epidemic in the entire fortified region, known collectively as the fortress of Port Arthur, and more than nine thousand cases of the disease were in the military hospitals.

Public interest in the capitulation of the stronghold soon changed until it consisted largely of a desire to know more of the details of the siege from within the fortress, to learn the amount of supplies captured, to watch the rapid succession of events in the disposition of prisoners; and so the sick and wounded were gradually regarded as mere incidents in the great scenes of slaughter and destruction. Little information as to the condition of the hospitals and their inmates was published by the Japanese, because to gather the details required time, and because other matters of a graver character were pressing upon their attention.

Aside from the facts that seventeen thousand wounded were in the hospitals and that scurvy was epidemic, practically nothing has been known of the exact medical situation when the Japanese, under General Nogi, took possession of the fortress. Since the surrender the facts have been collected and tabulated. But up to the beginning of July, 1905, when I visited the place by special permission of the Minister of War

— at a time when even Japanese army officers were not allowed within the fortress except on official business — the full report of this side of the terrible tragedy of months had not reached Tokio. The facts presented herewith are from the official records; and, while certain details of minor importance are still to be made public, they paint in vivid colours the harrowing picture of the sad condition of the sick and wounded when the Japanese assumed control.

From January 3d, the day of real capitulation, the medical affairs were managed in a general way by a board of surgeons from Nogi's leading medical officers. Colonel Hoshino was placed in charge of the hospitals of the fortress with full authority. At once he took census of the sick and wounded, and found 17,110 persons under Russian medical care, this number embracing 6,050 wounded and 11,105 sick. The sick were classified under the following heads: Scurvy, 9,093; dysentery, 368; typhoid, 18; miscellaneous, 1,626. Some of the wounded had scurvy in addition, and some of those sick with scurvy died from other causes.

From the time the Japanese assumed charge until the last Russian was sent away in May there were 801 deaths of Russian hospital patients, or 4.7 per cent. These deaths were classified as follows: Scurvy, 510; dysentery, 79, of whom 4 had scurvy; typhoid, 2; unclassified, 3; bronchitis, 33, of whom 14 had scurvy; venereal diseases, 4, of whom 1 had scurvy; diseases of the nose, ear and throat, 4, of whom 2 had scurvy;

COLONEL H. HOSHINO
Commanding Surgeon at Port Arthur

wounds, 118, of whom 13 had scurvy; nervous diseases, 6, of whom 3 had scurvy; unknown causes, 18; total, 801, of whom 47 had scurvy without its being the cause of death. The proportion of deaths from wounds was 1.9 per cent.

The earliest activities of the Japanese medical officers were directed toward the epidemic of scurvy. The best treatment of this dread disease is admittedly the dietetic; and the Japanese began at once to feed the afflicted Russians with vegetables. They enjoyed the satisfaction of seeing the scurvy cases reduced in number by nearly three thousand in one week, as a result of their improved dietary. No expedient was neglected by which proper food supplies might be procured for the victims of scorbutus. In fact, so absorbed were the Japanese in this work, inspired by the loftiest feelings of humanitarianism, that they incurred expenses which became matters of official inquiry by the home authorities.

The Japanese next decided that speedy convalescence of the largest number of patients would follow the adoption of the plan to leave them, so far as was practical, in charge of their own physicians. The Japanese surgeons were instructed to avoid friction and to coöperate to the fullest extent in every practical measure suggested by the Russian surgeons. That proved no easy task.

In addition to acting in a supervisory capacity for the Russian medical officers, then installed in charge of

the large hospitals, the Japanese surgeons began collecting and treating the sick and wounded who were scattered about the fortress in various places because of lack of room in the regular hospitals. About sixteen hundred of those cases were found in some forty different places in the old and new towns. They had been housed in hovels, in shanties, in shops, in shattered dwellings, in wrecked stores, in temples and in abandoned public buildings, and most of them were in a deplorable condition. Many had crawled to the first available shelter, and the larger number had had no medical attention. Barracks which had been shelled and partially ruined were hastily repaired and cleaned, and into those structures, as well as in the pretentious building that had been occupied by the Navy Club, the unfortunates were gathered. Those quarters, while lacking hospital equipment, were comfortable, and under the circumstances the Japanese could do no better; yet that arrangement resulted in friction with the Russians, who were inclined to demand more in the way of shelter and food than could be provided.

On January 14th, when Colonel Hoshino took charge of the medical work, he brought with him seven Medical Corps, three from the army and four from the Red Cross Society, the latter acting, of course, entirely under the direction of army officers. Each corps consisted of two medical men, one apothecary and thirty soldiers detailed as nurses. The total membership of the combined Medical Corps was therefore 231. He

also brought, as an additional part of his staff, twenty-five medical men and eighteen non-commissioned officers, and thirty-six soldiers, making in all 310 persons to care for the sick. He impressed others into service for emergency work, and thus assembled a force of 1,096 persons as a grand total of his Medical Corps.

Colonel Hoshino found that the Russian medical staff consisted of no less than 2,790 persons, including the so-called "families" of some of the Russian surgeons. Many of the members of the surgeons' "families" had caused themselves to be enrolled in this Relief Corps because they could secure better food supplies than if they had depended upon the common military system of distribution. Indeed, the scandalous custom prevailed of allowing the members of those families to appropriate for themselves what they wished from the hospital supplies, the patients receiving what remained, a fact the Japanese discovered when their own supplies were distributed.

In the Russian medical staff there were 136 surgeons and apothecaries, 15 medical students, 17 army officers detailed as inspectors, 11 priests, 46 clerks, and 112 female "nurses." The chief duty of those "nurses" seemed to be to minister to officers who either were sick or thought themselves so. All others enumerated were male attendants.

The Russian military hospitals in Port Arthur proved to be most admirable buildings, newly erected and splendidly adapted for the purposes for which they

were built. Some of them were in process of construction at the time of my first visit to Port Arthur, in 1899. They were substantial, one-story structures of stone, with large windows and low eaves, and were grouped on terraces upon the sunny, southeastern slope of Pei-yo-shan. This hill rears its head between the old and new towns of Port Arthur, almost directly behind Golden Hill, that forms the northern entrance to the fine harbour. Entering the fortress by the railroad, one passed along the northeastern side of this rocky slope on the opposite side of which stood the hospitals. There was plenty of sunshine for those attractive buildings, and they were fortunately situated in being sheltered, not only from the cold winds of winter, but also from the Japanese shells, which were hurled into the fortress from behind famous "203 Metre," wrecking the war-ships in the harbour and demolishing hundreds of buildings in the old and new towns. Golden Hill intervened between the hospitals and the shells from Togo's fleet, and they were safe till the Japanese, capturing the mighty string of fortresses to the north and northeast, were able to train their guns on that point, though many miles away. One or two shells did strike the hospital buildings, but no casualties resulted.

A substantial stone wall reaching far up the side of Pei-yo-shan surrounded the entire hospital compound, and that, with the administration building, rendered the hospital plant one of the most attractive

MILITARY HOSPITALS, PORT ARTHUR

architectural groups within the great fortress. In both old and new towns the public buildings, and some of the private dwellings, were of a character that could be found in any modern city of five hundred thousand inhabitants. Hardly could better evidence be furnished of the insincerity of the Russians in their repeated statement that their occupation of Port Arthur and the peninsula on which it is situated was only temporary. As a matter of fact, if one could have furnished to the foreign departments of the various nations a complete set of photographs of these buildings, and also of those erected by the Russians in the magnificent city of Dalney and the towns along the entire railroad as far north as Harbin, one would have offered sufficient ocular proof of that insincerity. From Port Arthur and Dalney northward every station was marked by a massive stone water-tank, constructed largely of cut granite; while at the railroad division stations great stone roundhouses and scores of buildings for railroad officials and others had been erected. The Russian quarter of Dalney boasted commodious and pretentious granite or brick theatres, churches, permanent barracks, and brick dwellings by the score; well-paved streets; stone and brick walls bounding the yards of the houses and facing the streets; and elaborate gardens. Those features, together with the evidences of measures taken for protection from the elements, illustrated more conclusively than anything else the Russian intention of a permanent occupation.

A few hundred yards from the main group of hospitals at Port Arthur stood the Red Cross Hospital, whose quota of beds brought the total hospital capacity into the thousands. Had the medical system of the Russian military surgeons been as adequate as the hospital equipment was complete, the Japanese would have found the burden of caring for the sick and wounded far lighter.

Retaining, of course, the general management in their own hands, the Japanese had left all details of hospital work to the conquered Russian surgeons, the desire being to save the self-respect of the surgeons and to secure to the sick ministration by their own countrymen. It was, therefore, a great surprise to the head surgeons to learn that orders were not obeyed. Obedience in a hospital they had expected would be as prompt and faithful as obedience on the firing line. But they soon discovered a deplorable lack of discipline. The surgeons were divided by bickerings and petty jealousies. The patients acted largely as they pleased. A dissatisfied patient, if able to go about, was allowed to visit a hospital other than the one in which he was enrolled. If his food was unsatisfactory, he could go elsewhere for meals. A patient might be enrolled in two or more hospitals. Subordinates executed orders only when disposed to do so.

Upon the discovery of those conditions, Colonel Hoshino summoned to a conference the three chief surgeons of the Russian force to devise some relief.

Differences and quarrels arose between the Russian surgeons before they had been in session twenty minutes, and one by one they left the room, nor could they be brought to an agreement as to any policy proposed by the Japanese. The latter wished to send one thousand convalescents for treatment to their well-equipped hospitals, but the Russians could not agree upon the selection of the men. To obtain any agreement or concerted action, the Japanese were obliged to confer with each Russian surgeon separately, and then decide upon the orders to be enforced. From the outset complaints came from the Russians that their countrymen in the hospitals received improper and insufficient food. Having at first provided liberally on the basis of the Russian census, and having ascertained from the patients that the fare was far superior to what they had received from Russian authorities during the siege, the Japanese set on foot an investigation which resulted in the discovery, to which allusion has already been made, that the officers' families and mistresses had appropriated the best of the supplies for their own uses. Beer was earnestly requested by the Russians for the patients and was found by the Japanese to be consumed by the Russian officers and their female companions. Radical action was thereupon taken by the Japanese, and they put into effect the arrangement by which the enlisted man received the same rations as the general, which is the rule in the Japanese army. Complaints then were

received of the quarters assigned to the sick, although vastly superior, in spite of their crudity, to those from which a large number of them had been taken. Those complaints were summarily dismissed, discipline was established in all matters, and soon order reigned.

Meanwhile reports had reached Tokio of extravagance in the Commissary Department — that the Russian sick received better treatment and food than the Japanese sick. With considerable difficulty explanation was made that the scurvy had necessitated special food, and the authorities accepted the reply, sparing the commanding surgeon from humiliating criticism or perhaps punitive discipline.

The aim of the Japanese surgeons had been not only to fulfil all humane obligations toward the wounded and suffering, but also to accelerate the evacuation of Port Arthur by the Russians. All the healthy troops had been marched out of town a few days after the surrender and sent to Dalney to await transportation to Japan, to be finally distributed among the camps for military prisoners in various parts of the empire. The transportation of the sick and wounded began the day after Colonel Hoshino and his assistants assumed charge of the medical work. Selected patients were started on the thirty miles of railway to Dalney, a journey that consumed five or six hours because of the bad condition of the railroad. Day after day patients were forwarded to the north, eight to a car if seriously ill, otherwise eighteen to a car. Freight-

cars, open and closed, were employed in this work, and during one day four hundred patients were mobilized. Sick and well prisoners of war travelled together until all of both classes were removed. The last shipment of Russian patients consisted of forty-two insane cases, who had been quartered separately on the military hospital grounds. They left the fortress May 22d, and were transported by boat from Dalney to Cheefoo, and thence to Russia. The Red Cross Hospital had closed May 10th. Finally but one Russian was left in Port Arthur, a resident of the town for many years, who remained at the request of the Japanese to assist in arranging municipal affairs.

The Japanese were satisfied with the results of their care of the sick and wounded, for but eight hundred of the seventeen thousand died. More than ten thousand were sent as prisoners to Japan practically restored to health. Over four thousand unable to bear arms were invalided to Russia by way of Cheefoo.

The cases of scurvy were studied with much interest by the Japanese, in the hope of isolating a specific bacillus. The results of operations on scorbutic patients were generally disastrous, and autopsy showed that about a third of them had tuberculosis. Had not the Russians crippled the hospitals by lack of discipline and by wreckage, the results would have been even better. The operating-rooms were adequate and surroundings were propitious. But in many cases the requisite instruments were lacking. The Roentgen ray

machine had been disabled, and many cases were robbed of the valuable diagnostic assistance. Other instruments had been broken or abused, wantonly, as it seemed, and the Russians were the greatest sufferers from the resulting deprivation.

But in addition to those thousands of cases the Japanese in Port Arthur had their own sick and wounded. At the time of my visit, at the close of June, 1905, there were about seven thousand Japanese soldiers in the garrison of the fortress, of whom only 120, or a percentage of only 1.5, were in hospital, as a result of the excellent sanitation in the field. During the early part of the occupation of the fortress by the Japanese the average number of their men in hospital was five hundred, with a sharp increase in March and April, due to accidents that resulted from the explosion of hidden mines during the removal of the dead from the battle-fields.

The record made by the besieging army in combating infectious diseases is impressive when compared with that made on the same spot ten years before. In the war with China, one out of every nine of the sick in Japan's investing army suffered from infectious disease. In the war with Russia, only one out of every eighty sick men suffered with infectious disease. The difference between the ratio of nine to one and that of eighty to one represents mathematically the progress made by Japan in ten years in the problem of grappling with preventable disease in war. When

the government publishes the full medical statistics of the siege doubtless more striking illustrations of that progress will be shown.

A very striking and interesting condition presented itself at the moment of the conclusion of the heroic siege. It concerned the effect of dietary. Inside the fortress the besieged army suffered little from contagious diseases; outside the fortifications the besieging army was comparatively free from contagion. But each army had its scourge: the beleaguered Russians, suffering from a dearth of vegetables, rapidly fell victims to scurvy; the investing Japanese, with a too liberal supply of one vegetable, rice, were sadly weakened by beri-beri at a time when their utmost strength was needed. Probably no more striking illustration has ever been presented of the effect of diet upon armies in the field.

The panorama which I viewed in the latter part of June from the window of my hotel at Port Arthur — Port Arthur, with its quivering memories and its tales of dread war and unspeakable horrors — gave me a thrill and a shock. The scene baffles description. Within a radius of three hundred yards in the little harbour I counted something like fifty-one sunken craft, their decks awash, their shattered gunwales and battered funnels telling more eloquently than words the story of retributive justice that had overtaken the proud Colossus of the North.

Looking toward the hills one could see where the

first, second, and third lines of defence ran; but, without climbing to old "203 Metre" or the fortifications to the north, it was impossible to realize what it meant to let loose the dogs of war in such a place, and with such masters as the Russians and the Japanese to urge them on. Havoc had been turned loose on those hills. There was scarce a square yard that was not littered with fragments of monster shells. Not a foot of the rock had escaped upheaval, and massive fortifications of concrete had been tossed about as if made of papier-mâché.

"203 Metre" hill is where the gallant son of that grizzled warrior Nogi fell, leading a "certain death" party. The Japanese characters for the figures 2, 0, 3 are pronounced ne-rei-san, which also signify "Your Spirit Mountain." So the grand old General christened the hill in the name of the dead, Your Spirit Mountain, ne-rei-san, a name the pathos and poetic significance of which is destined to last as long as the language in which it is written.

It was my privilege one evening, after a dinner given me by General Ijichi, Nogi's chief-of-staff, and served on the plates of the vanquished Russian, to hear the General recount tales of the siege. As the great searchlight on Golden Hill flashed over the porch from time to time, General Ijichi was reminded of numerous features of the conflict and of incidents of Russian bravery. It was a pleasure, as well as a surprise, to hear the following statement from this stern soldier, keen,

deliberate, accurate in his choice of words, German-trained in military methods, his figure as lithe and straight as that of a cadet fresh from the academy: "I think that the Russian private soldier was even braver than the Japanese private. I also believe history will justify General Stoessel in his surrender of Port Arthur. Had there been reason to believe that help from the north could have reached him, or that the Baltic fleet could have come to his aid, he might have been justified in holding out. We had decided to take the place in five days more. We had all the commanding fortifications. The rest simply meant hand-to-hand fighting in the streets. We out-numbered our opponents, but further conflict would only have resulted in the unnecessary killing of thousands more. Stoessel was right. History will justify him."

This expression may have been the generous tribute of the victor to the vanquished, but General Ijichi manifested the deepest feeling in manner and speech. In view of the sacrifices made in two wars by the Japanese in the capture of Port Arthur, it is not difficult to appreciate the subtlety of General Ijichi's humour as, with twinkling eyes, he said: "I am afraid that we are not quite civilized enough to give up Port Arthur again."

When Port Arthur finally capitulated, the opinion prevailed among those conversant with its terribly unsanitary condition that a serious epidemic would follow the advent of warm weather. The Japanese offi-

cials, after consultation with the medical staff and with other eminent authorities in Tokio, made no secret of their dread; but, whether the expected scourge would take the form of typhoid or cholera or plague, they could only conjecture. They remembered the conditions that followed the war ten years before, when their besieging army was decimated in that region and in China by cholera and plague, and realized that existing conditions were surely such as to favour a pestilence.

They were fully justified in their fears. The hills surrounding Port Arthur were strewn for miles with the dead of the opposing armies. There had been no attempt to bury the fallen, for the mountains on which the fearful struggle had taken place were enormous barren rocks affected so little by the attrition of centuries that single spears of grass could scarcely find a foothold in the most sheltered places. Gaunt, rugged rocks they were, with scarcely a handful of earth with which to spread even a blanket over the fallen soldier. There were small stones in great profusion which sufficed as a temporary covering for the victims, but it was obvious that with the approach of summer a condition of affairs might prevail that it is perhaps best to refrain from indicating.

It will be remembered that in the autumn, when the great siege reached its most discouraging stage, Nogi found it impossible to capture the mountain fortresses by assault. He saw that he must not only make his way, under fire, across the plains to the hills, but that

he must scale the sides of those hills, inch by inch, opening channels through the rock as he advanced, — an undertaking that completely exhausted the regiment of engineers in charge of the operations on two occasions before the valleys of death led to final victory. It was then that the conduits from the reservoirs near Erh-lang-shan were destroyed; and, while the cutting off of the water-supply did very little damage to the Russian cause, the weather at the time being cold, the unwholesome wells which the besieged men were compelled to resort to brought a menace to the Japanese later.

In addition the state of public and private drainage in Port Arthur was frightful. The streets were littered with filth and the houses were entirely neglected from a sanitary standpoint, so that when the fortress finally succumbed there was scarcely a thoroughfare or a building that did not invite epidemic and contagion with the advent of summer.

The Japanese, with characteristic forethought, administered the prevention, for, with them, the harder the task the more earnest was the effort to master it. It was Santiago over again, only in circumstances far more aggravated, with the result that the dreaded epidemic did not materialize but was throttled before it developed.

Following their custom when occupying a town more than two days, a commission was promptly appointed by the Japanese to consider the measures necessary to

insure sanitary order. The medical staff of the fortress were members of the commission, which was directed by Colonel Sato, assisted by Doctor Arigo, the international law expert attached to Nogi's army, who also drew up the articles of capitulation and was a leading official of the splendidly equipped Red Cross Society of Japan. Colonel Hoshino, the chief medical officer, took the leading part in the work, and was ably seconded by General Ijichi, who had succeeded to the command of the fortress.

The plan adopted provided that, first, all wells should be thoroughly cleaned, as it was impossible to repair the frozen conduit until the ice melted, and meantime the 150 wells that supplied the town with water were sources of gravest danger. Those wells were emptied and their interiors were thoroughly treated with lime and other chemicals, after which they were cemented by solid masonry to prevent the entrance of surface drainage. Dead bodies of men and animals were discovered in some of the wells, and in others all kinds of refuse had been thrown. Some contained family heirlooms, hidden for safety. Thrifty Chinese, with minds ever open to the chance for gain, had buried shells in some of the wells, and in others cases of gunpowder were found. There were few that were pure, or that would not have proved a serious menace to health as the season advanced.

The commission next turned its attention to the battle-fields. Thousands of men were still lying on the

mountainsides, and thousands more were only partly buried. Honour as well as sanitary safety required proper sepulchre for the dead. All available troops and thousands of Chinese coolies were employed in this work. No foreigners remained in Port Arthur three weeks after its capitulation, with the exception of the conquerors and a few sick and wounded Russian prisoners. Some coolies remained through the siege, and others had burrowed into cover, reappearing when the sound of the guns finally ceased. The Chinese were nearly as great a menace to the health of the fortress as the unburied dead. They not only searched the wearing apparel of the war victims, but stole it and left them naked, and they desecrated the graves under the loose rocks for clothing and trinkets. That revolting plunder was, however, summarily stopped, and the Chinese were pressed into service with the soldiers. The territory to be cleansed was divided into four districts, and each district was traversed three times. After the first and second searches it was found that some of the dead had been disturbed, but the Japanese took summary action that stopped any further nocturnal prowling among the graves.

The Russian dead were buried, while the bodies of the Japanese were burned, and sanitary safety assured. The magnitude of the undertaking may be conjectured from the fact that at the great Russian fortress, Erhlang-shan, more than three thousand bodies were burned. Large numbers were similarly disposed of at the other

fortresses, as well as at 203 Metre Hill, — which had not been fortified, the Russians believing that the enemy could never storm its heights in the face of the murderous hail of steel from the trenches and field artillery that commanded it. Nearly six weeks were consumed in the work of recovering the bodies of the dead, and the energies of the Sanitary Commission were taxed to their utmost. Great danger attended the task, owing to sunken mines that occasionally exploded, killing hundreds of the workers. Reference to the hospital records revealed the danger in that work. In February 37.74 per thousand of troops in the fortress were under treatment. In March this percentage increased to 52.95. In April the percentage had increased to 55.97; and, in May, when the work was completed, it suddenly dropped to 30 per thousand.

The skill displayed in concealing those mines was a credit to Russian engineering. Their force of detonation was tremendous, as I had occasion to ascertain when visiting Erh-lang-shan, where one of them exploded, scattering an enormous mass of rock for hundreds of yards. Powerful, indeed, were these death-dealing machines. They were quite similar in appearance to those about the Gulf of Pechili, one of which I had attempted to explode with a rifle the previous summer, thirty miles off Port Arthur, where it was anchored. A lamentable tragedy had occurred just before my last visit, when seven of a party of well-known citizens from Dalney were killed, and several

others wounded, by the explosion of one of these hidden volcanoes.

Having completed the burial and cremation of the bodies of the dead soldiers, the commission next took up the matter of drainage and street cleaning. During the last few months of the siege the highways of the town had become indescribably filthy and almost impassable. Débris from the shattered buildings had fallen into the streets, where every conceivable species of rubbish had also been dumped, so that good drainage was imperative. Thousands of coolies were promptly set to work removing the litter and digging ditches to carry off the surface water.

Surface drainage is universal in Japanese cities, as it is in all Oriental countries where any system is in use at all, and it is not a menace to health, because of the method employed in disposing of night-soil, which is carried away in pails and used for agricultural purposes. These surface drains, which are about a foot wide and from a foot to eighteen inches deep, are sometimes covered, but usually they are left open and kept in a sanitary condition through being flushed by rains and by the free admission of sunlight.

The next step of importance was the sanitation of the buildings, which was rendered difficult because hundreds of them were masses of ruins as a result of the effective bombardment of the Japanese. Even those structures that had escaped damage were left in frightfully unsanitary condition as a rule, so that an exten-

sive plan of wholesale house-cleaning was inaugurated. Not a single building was neglected, and the result was that Port Arthur, in spite of its battered condition, became a clean city. In the course of this work it was discovered that the Chinese quarter near Golden Hill was a dangerous menace to the health of the rest of the town. It was a squatter settlement near the "old lake," lying snug under Golden Hill, and absolutely safe from Togo's guns. In that settlement were fully one hundred large buildings that had been used as barracks by the Chinese army during the war with Japan in 1894, and in which about 1,500 Chinese had lived through the siege in squalor and filth. The commission summarily destroyed those barracks, and sent the inhabitants to a neighbouring settlement.

As spring advanced, the city reservoir was thoroughly cleaned and the main conduit repaired by new sections sent from Japan, thus restoring the water-supply. The reservoir lies to the north of the great fortresses, where thousands of Japanese were killed in the effort to storm the mountain fastnesses, and the drainage from those hills ran into it. It was necessary to take special precautions to prevent that drainage from reaching the reservoir, therefore; and, although it involved some difficult engineering, it was successfully accomplished. That problem having been solved, the coolies were employed in road-making; and, during my visit, thousands of square yards of broken stone

were converting Manchurian ruts into excellent macadamized highways.

The work of sanitation was well done, and it was pleasant to reflect that it would not be long before Nature's beneficent hand would obliterate the horrible traces of the awful struggle that took place in and around that great port, and that Time, the merciful healer of wounds of spirit as of flesh, would efface the record of suffering, and leave only the memory of heroism to be enshrined in the pages of history. Port Arthur is probably destined to be for centuries a Mecca of historical interest. To-day it is one of the most extraordinary spots on earth, not only because of the great struggle that took place there, but by reason of the masterful manner in which the demon of Pestilence was foiled after the fiend of War had been annihilated.

CHAPTER XI.

THE HISTORY OF MEDICAL SCIENCE IN JAPAN

PROBABLY no better illustration of the characteristic power of adaption rather than adoption, of creation rather than imitation, by the Japanese people can be found in all their history than the manner in which they have grasped and absorbed into the routine of their scientific life every real advance made by medical science. To-day Japan takes equal rank with Occidental countries in the practice of medicine, and in activity and success in certain fields of original research, especially in bacteriology and pathology, while in the application of practical sanitation in her army she occupies the vanguard of the world.

Although it is only half a century since Japan was a "hermit nation," it would be a grave mistake to assume that little was known in the science of the healing art in the empire before Commodore Perry caused her gates to open to the world. From the time of the earliest historical records, indeed from the period when the Japanese people began to emerge from the mists of mythology, one finds they have been eager to learn

all that was possible about the cure of human ills. Medicine was the one subject excepted when they closed the doors of their empire to all foreign teaching. Even that was debarred for a time, but soon books relating to medical subjects were readmitted, and nothing deemed advantageous for the development of medical science was rejected.

Indeed, as a "hermit nation," and even before that era, when her civilization, her art, science and religion were those imported from Korea and China, Japan had shown progressive tendencies in medicine. To substantiate this fact one has only to cite the case of the surgeon Hanaoka Seishu, famous for his daring in surgery, who, in 1798, invented a narcosis of his own, although the Chinese had previously used hemp as a narcotic. This was forty-six years before the use of ether as an anæsthetic, and fifty-one years before chloroform was used for the same purpose. If one studies the chronology of Japanese medicine, he finds that from the earliest times students were sent by the government to foreign countries to gather the latest information about the healing art, a practice which still prevails. From the earliest times the emperors, and later the shoguns, were favourable, as a rule, to those missions of research. Hospitals were established as early as the year 667 A. D., and 701 medical examinations were held in the colleges that had been founded by imperial decree. This, too, at the time of the midnight of the Dark Ages of Europe. In 808, a hundred

volumes, representing the medical erudition of the Orient, were compiled. All those books have been lost, but in 984 the great Ishin compilation of medical works was made, consisting of thirty volumes and treating of botany, pharmacy, hygiene, and sanitation. It is said to be the oldest medical book extant.

From the beginning, when the gods Oanamuchi-no-Mikoto and Sukuna-hikona-no-Mikoto practised what was called medicine, with some knowledge of surgery, midwifery, and children's diseases, and used blood-letting and acupuncture and the water-cure with exorcisms, the practice of the healing art was associated with religious rites. About 100 B. C. the civilization of Korea, with its literature and arts, was introduced into Japan, and many Korean medical men went to Japan to practise medicine and to spread their religious ideas. Later Buddhism reached the shores of Japan and took firm root in the land, and Chinese culture and civilization, with its medical system, became established. It was through the Buddhist priests that knowledge of medicine was promulgated. The Buddhists were great students of astronomy as well as philosophy, and the spirit of learning developed a desire to know more about the ills of humanity and their treatment. As early as 459 an autopsy was performed. It was made upon the body of the daughter of the Emperor Yuryaku. Although there are few other records of autopsies until hundreds of years later, when the bodies of executed criminals were used for that purpose, it

MANCHURIAN DUGOUT

In which soldiers lived during zero weather

is a fact that the Japanese scholars were not only eager to examine all medical theories, but to establish what they believed to be true conceptions of human anatomy.

In the period from 608 to 808 great encouragement was given to learning by the emperors, and hundreds of students were sent to China to study and report on the latest systems in vogue there and to make recommendations for reform in Japan. The wise Emperor Tenchi was a leader in this work. He established a university and many schools and even founded an astronomical observatory. It was during the reign of Emperor Mommu that a code of laws, founded upon the jurisprudence of the To Dynasty in China, was compiled and enacted. This was in the year 701. A comprehensive series of regulations for medical studies was promulgated. Schedules of the courses of study were prepared and examinations instituted. A course of seven years of instruction in internal diseases was required before graduation. Instruction in children's diseases and surgery required six years, and diseases of the eyes, ears, and throat four years, before the student was deemed sufficiently proficient for practice. Thus, the idea of specialization in medicine began in Japan over 1,200 years ago. A bureau of sanitation and pharmacy formed a part of the curriculum of the medical school founded by the Emperor. Included in the faculty was a professor of gynæcology. A charity hospital was also established, and a small book on the treatment of diseases was printed and distributed over

the land, so that the poor might reap the benefits of the latest knowledge.

At this time the effect of mineral waters upon the human system was studied and made known to the medical men throughout the empire. In the reign of Emperor Heijo all the obtainable precepts and formulas of other countries were compiled and printed, and copies were sent to the government physicians in each of the prefectures. This book, consisting of one hundred volumes, was known as the Dai-do-Rui-Shu, and it treated of sanitation as well as medicine, and was compiled by the most learned men in the empire. It was during this period that great progress was made in medical education. In 984 the famous Ishin compilation was made by Niwa. This work not only dealt with the history of medicine, but also contained treatises on botany; anatomy (especially of the circulatory system); pharmacy; nutrition and the latest ideas of treatment of specific diseases then known.

The progress made at this period was largely due to the spirit of research promoted by the Emperor Nimmyo, himself very learned in medicine. Physicians were sent to China and Korea to teach the results of their own researches and by special request to treat members of the royal families of those lands. Among these was the famous physician Sugawara, especially skilful in the treatment of malaria, who visited China and made a special study of sanitation, thus displaying the marked tendency for research in this branch that

has been evidenced all through the history of Japan. As a result of that development a learned physician, Fukane, compiled a collection of researches in the field of hygiene which was published in seven volumes. Another book, compiled during the reign of Emperor Nimmyo, related to Japanese plants and remedies.

It was at that time that the ancient systems of medicine reached their highest development. The spread of learning was no longer confined to the nobility. The warrior period of national existence was approaching, and representative men soon found it to their advantage to become patrons of learning and to participate personally in what might be called the higher education of the times.

But the military spirit soon grew so predominant that refined ideas had to yield to brute strength, and martial ardour absorbed the energies and controlled the impulses of most of the nation's greatest men. The study of medicine no longer progressed. Indeed it retrograded; although Buddhist priests continued to visit China and to bring back the most recent results of medical research.

The powerful support of the rulers of the land was lacking, however, and from 1100 to 1450 little advance was made. Nevertheless, during that period five important medical books were written and a pharmacopœia was compiled by royal authority. There was also established a hospital for leprosy at Nara. That

period is known in the annals of Japanese medicine as the "time of struggle."

With the advent of the Ashikaga shogunate comparative peace reigned, and during that period the famous Ashikaga Medical Institution and the Kanazawa library were established. Many Chinese scholars visited Japan, and Confucianism began to supplant Buddhism as a national force in civilization and culture, bringing with it many great students, such as Fujiwara, Hayashi and others learned in the metaphysics of the newer school of thought. What is known as the King-Yen school of Chinese medicine had full sway then for about one hundred years, or until 1542, when the Portuguese discovered Japan and brought revolutionary influence to bear upon its mental development. Then a new era dawned in medicine as well as in metaphysics and scientific culture.

The Portuguese brought medicine as their chief offering of friendship. In 1549 Francis Xavier, the Jesuit missionary, arrived and through medical charities made his greatest headway in his effort to introduce Christianity. He established a charity hospital for leprosy; and, having converted the son of a leading daimio, he was presented to Nobunaga, the shogun, from whom he received much encouragement. Christianity was first taught in Shimabara, and then by stages Xavier and his followers passed over to Yamaguchi on the mainland, converting three thousand persons and baptizing them within a single year. The shogun allowed

Xavier to erect a church in Kioto and was induced to open the harbour of Nagasaki to the Europeans, which led to the long restricted occupation of Desima by the Dutch. That fact was instrumental in establishing what is known as the Dutch era in Japanese medicine.

The Jesuit missionaries continued to practise medicine in the furtherance of their purposes, and they established three charity hospitals in Yamaguchi. Many Japanese studied medicine with them, a fact of significance and influence in the future development of the science. Those missionaries were the pioneers of Occidental medical ideas in Japan.

The members of the Tendai and Shingon sects of Buddhism, having resented the influence of the Christian missionaries with Nobunaga, the shogun put them down by force, and to humiliate them further he continued to show favour to the Christians. It was at that time that the shogun allowed the Christian church to be built at Kioto. An annual gratuity was also provided by the shogun, in addition to which he gave them fifty cho of ground upon which to establish a pharmaceutical garden in the province of Omi, where they soon had nearly three thousand varieties of plants growing for medicinal purposes. After the death of Nobunaga there came a reaction against the Jesuits, and the Christians were massacred and modern religious thought and influences were banished from the land for centuries. The new medical ideas, however, could not be uprooted; for the Japanese who had studied

under Xavier and his followers continued to practise after the Dutch School of Medicine, especially in Osaka and Sakai.

The Dutch, however, who had come to Japan solely for the purposes of trade, were not banished, but were allowed to occupy Desima Island at Nagasaki. They continued to teach medicine orally, as all importations of European books had then been strictly forbidden. That state of affairs continued nearly one hundred years, but even then the Japanese were progressing in medical science, especially in matters relating to sanitation. The Charity Hospital in Kioto was much enlarged and pharmaceutical gardens were established at Shinagawa and Ushigome in Yeddo, according to Japanese methods of gardening. They were united afterward and transferred to Koishikawa Hakusan, and exist to-day as the botanical garden of the University of Tokio.

During the latter part of the Ming Dynasty in China there was introduced what has been called vaccination, but which was really inoculation for smallpox. The common method then in vogue was to blow the pulverized germ-laden crusts of smallpox into the nostril through a silver tube, — the left nostril for a male and the right nostril for a female.

The Tokugawa shogunate was thoroughly established by that time in Japan, and the ruling shogun encouraged the study of medicine, even seeking personal instruction in the science through an interpreter from

the Dutch. In 1688 a treatise on ophthalmology was published, a work which to-day commands respect for the minuteness and care that characterized its preparation. In 1690 the German physician Kaempfer, with the Dutch Minister, visited Japan and remained two years, studying not only Japanese medicine and history, but also spreading modern medical ideas. From that time until the arrival of the Dutch government physician, Siebold, who established a modern hospital and medical school at Nagasaki, Japan's progress in medicine, embracing a period of 133 years, was all her own.

During all that period the practice of medicine was not only crude, but most of the theories upon which it was founded were almost grotesque. The Chinese School in the twelfth century held that the origin of all diseases consisted of five elements and six senses. The method of curing the afflicted was by harmonizing the factors. Another school held that gas, water and fire were the causes of disease, and that the best method of treatment was through perspiration, emetics and laxatives. Still another school attributed the causes to internal and external discord through the action of the elements, arguing that there is a superabundance of health in the positive elements and a great diminution of health in the negative ones.

Those theories held sway during various periods of action and reaction until the beginning of the eighteenth century, when a celebrated Japanese physician,

Yoshimasu, decided that time was ripe for reform. His personal experiences did not agree with existing theories. He thought the practical and not the theoretical should prevail. He attacked both the Chinese and Japanese schools, attributing all disease to a poison, contending that all medicines should be poisons, and advocating the *similia similibus curantur* plan. The way to overcome poison in the human system, he said, was to fight it with poison. The Japanese physicians, schooled as they were in Chinese metaphysics, did not take kindly to this theory, and continued to argue that the principles of life and death depended upon the movement of positive and negative elements of the universe. Yoshimasu's son continued his father's work — it was the custom to hand down the profession from father to son — and asserted that all vitality came from the circulation of the blood and from water, but held that disease did not come from one poison alone, as his father believed, but from many poisons. He continued his father's theories as the best method of treatment.

Soon arose another school, which might be called the Chinese-Dutch School. Its progenitor was an eminent man, Yamawaki, who was imbued with the spirit of modern science. He sought the truth regardless of its source, whether from China or Europe. After he had been dissecting the body of a criminal, he discovered that the Chinese ideas of anatomy were erroneous. Eclecticism was soon in full sway in this era of indi-

vidual progress, after arrival of the Dutch and the prohibition of the importation of books. As a result of Yamawaki's researches in anatomy, he wrote a work on surgery that was far in advance of anything then existing, a work that received the personal approval not only of the Emperor, but of the Chinese court. Kagawa, one of the most famous obstetricians of the century, lived at that period, and the Japanese assert to-day that his book "San-Ron," a treatise on midwifery, is one of the most remarkable in the world. His disciple, Hiruta, became obstetrician to the court.

A third famous man in that period was the great surgeon Hanaoka, to whom reference has already been made. He was schooled in the belief that gas, fire and water caused all human ills, but he decided to make personal investigations. He performed surgical operations that were unknown prior to that time. He treated cancer, stone in the bladder, abscesses in various parts of the body and performed amputations. Many instruments were devised by him, and so modern were his ideas that he sterilized those instruments with fire and wrapped them in dried gauze. For the purpose of performing his operations he invented a narcosis in 1796, using a compound of four plants, the principal of which was conium, by which he stupefied his patients. The drugs usually put the patients to sleep in from one to two hours, and during the stupor Hanaoka performed the operation. To arouse the patient he used a mixture of hot tea and common salt.

To illustrate something of the originality and the daring of this man one only need quote from his writings:

"If we permit ourselves to be biased by the teachings of the ancients, we may fail to understand those of the men of to-day. If we do not consider the internal condition of the body, how can we treat understandingly those diseases which manifest themselves externally? Chinese science is indeed minute or accurate in practice, but is restrained by the theories of the past. Therefore, as to treatment, I look to the living body alone for indications, seeking for the mode afterward from philosophers. I am consequently not restricted to rules in giving medicines, but act as necessity demands. When medicines are ineffective, as well as acupuncture and the moxa, the abdomen and back may be opened, the stomach and intestines washed, and whatever is likely to save the patient may be attempted."

The physician Nagata, who was born in 1512 and is said to have lived until 1630, was the progenitor in Japan of the mind-cure cult which has such vogue in modern times. He allowed his patients to eat whatever they craved and treated most of them without medicine. In conversation he strove to arouse some feeling of indignation or passion, usually anger, so that when they became thoroughly aroused they forgot their other ailments. Those were the days of the expression of violent rage in men, and it is possible

that Nagata obtained better results than his followers, the Christian Scientists of to-day.

Another man of influence in that era was Katsuragawa, who, having heard of Harvey's discovery in 1628, proved the circulation of the blood by binding one of his arms tightly and concealing the bandage while he asked his doubting colleagues if they could explain the peculiar variation of his pulse as shown at his wrists. They pronounced him dangerously ill and likely to die, whereupon he revealed the hidden bandage.

Many medical books were produced during that era, one of which, by Takahisa, was on forensic medicine, and another, by Ninomiya, was on fractures and dislocations. Kaibara published his elaborate treatise on Japanese botany, dwelling especially upon medicinal plants. Wooden models of skeletons were made by Seoka and Hiraga, who also designed crude electrical instruments. A great medical college was established in Yeddo with pharmaceutical laboratories and a Japanese pharmacopœia was compiled, a list of common remedies being printed and sent broadcast to all parts of the empire for use by the common people.

From this evidence it will be seen that Kaempfer was justified in his summary of Japanese medical methods of that age, as printed in his famous "History of Japan," when he said: "They are more expert in physic than in surgery, at least, in the European way of treating chirurgical cases. The physicians, how-

ever, do not load their patients with medicines. They make use of two external remedies, fire and the needle, both of which are thought very efficacious for the eradication of the causes of distempers (which they call obstructions), thus allowing the obstructing matter, the cause of pain, to escape from its prison."

Before the arrival of Siebold in 1823 a wise shogun, Yoshimune, removed the restriction upon the importation of foreign books, and encouraged the development of literature and the sciences. In 1764 there appeared the first translation of a Dutch medical book, entitled "A New Book on Anatomy." Before that time there had been one or two secret translations of medical books by physicians who took great personal risks and experienced many hardships in the prosecution of their work.

With the arrival of Siebold all was changed, however, and from 1823 to 1868 what were known as the Dutch ideas in Japanese medicine had full sway. The Emperor had a physician of the Dutch School, and the shogun established a Bureau for the Translation of Foreign Books. Medical schools sprang up throughout the empire, and by 1842 dissection was common in the study of anatomy. Five years later a work on general pathology was published. In Sakura an extensive work on general pathology was published, and, under the directorship of Prof. S. Sato, father of Dr. S. Sato, Surgeon-General of the Army, a large hospital was opened in connection with a school, in which

physics, chemistry, botany and other fundamental sciences for the study of medicine were taught.

Then came a brief period of reaction, the last effort to check the spread of modern medical ideas. The Tokugawa shogunate, under pressure from the old Chinese and Japanese schools, prohibited the spread of Dutch medicine, but the arrival of Commodore Perry changed that; for the days of the shogun were nearly numbered, and the period of the Restoration was approaching. The Translation Bureau of the government was transformed into the "Institution for the Study of European Affairs," where matters of general education as well as political institutions were carefully investigated. The result was the establishment of a great school in Tokio which reached a rapid development after the fall of the shogun and the Restoration of the Emperor in 1868. Dr. William Willis, an English surgeon, was engaged as the first professor of medicine, with Japanese, who had been educated by the Dutch, as assistants. As a result of investigations made abroad, it was decided to adopt the German methods of study in medicine and to engage German professors for the college, which, under the favour of the Emperor, was now in a flourishing condition. In 1870 thirteen medical students were sent to Germany to study the German methods, and from that pilgrimage dates the real beginning of modern medicine in Japan.

In 1877 the medical school was incorporated with

IMPERIAL HEADQUARTERS, TOKIO,
May 17th, 1905.

To Harbour-Commanders, Etappen-Commanders and the commanding officers of the Manchurian Army:

Major Louis L. Seaman, Surgeon, United States Volunteer Army, will be attached to the Second Army Headquarters for the purpose of observing and studying the sanitary work of the field hospitals at Dalny, Mukden, and other places at the front. Kindly give him every possible assistance on his way. His secretary and one interpreter will accompany him.

TRANSLATION OF PASS ISSUED TO THE AUTHOR.

大本營陸軍部

明治三六年五月十七日

大本營陸軍幕僚

碇泊場司令官

兵站司令官

御中

米國三等軍醫正 ルイ、リビングストン、シーマン

右今般大連又奉天其他戰地諸病院ノ衛生事務視察トシテ帝國軍隊軍ニシテ支那全中諸種ノ便宜ヲ與ヘラレタシ

大本營

追テ書記「フランクリン、マトシウス」ナル者及通弁人壹名附隨ス

PASS ISSUED TO THE AUTHOR

the Imperial University, and branches were established in Kioto and Fukuoka. German professors were engaged, but when the students who had been sent to Germany returned they gradually assumed the chairs in the university, and since 1902 the instruction in the Medical Department of the University has been solely by the Japanese.

The country has produced many eminent men in medicine. One of them had a great influence, especially in matters relating to sanitation. That was Nagayo, who visited Europe and America one year after the thirteen students whose foreign studies were to have a momentous influence upon the development of Japanese medicine. Nagayo went abroad to study national hygiene and sanitary methods. In 1873 he established the Medical Bureau of the Department of Education for the purpose of regulating the practice of medicine in the empire and for improving the public health. He caused the enactment of a law requiring examinations for licenses to practise medicine and pharmacy, and laid the foundation for the establishment of boards of health in the leading cities of the country. He caused regulations regarding vaccination to be enforced, and established in Tokio a bureau where the virus used in vaccinating might be prepared and purified.

In 1876 Doctor Nagayo was present at our Centennial Exhibition in Philadelphia, after which he visited every State of the Union to study the systems in vogue

for the improvement of public health. During his visit he made arrangements with the directors of provisional boards of health for the exchange of their annual reports, a custom which has continued to the present time with excellent results. Doctor Nagayo became the President of the Tokio Medical School and also retained office in both the Educational and Home Departments of the government. In the various epidemics of cholera in Japan since 1877 his services were required constantly. He soon became President of the Central Sanitary Board of the empire and brought about the establishment of the national quarantine system. He also secured the compilation of the Japanese pharmacopœia, and then the establishment of boards of health in every prefecture. His successor, Goto, in the National Sanitary Bureau, developed that great work, improving the health regulations, increasing the requirements for the practice of medicine and encouraging study in special fields of research, such as bacteriology, histology and pathology. Eminent men like Kitasato and Takaki arose, the one to discover the germs of the bubonic plague and tetanus, and the other to eradicate beri-beri, that dread of Oriental countries, from the navy of Japan. Other men especially skilled, like Shiga, the discoverer of the germ of dysentery, and Sato, eminent in surgery, appeared, and at the beginning of the present century Japan was abreast of the world in her modern ideas of medicine, while in national and military sanitation and in certain fields

of bacteriology she was among the foremost countries of the world.

Throughout the history of the development of medicine in Japan there has been patent a constant desire to absorb everything of intrinsic value from the outside world. The Japanese trait of discarding that which is valueless and of assimilating that which is of sterling worth has been evident at every age. The encouragement to the study of sanitation has also been striking, and the relation of that to the military success of the nation, where preventable diseases in both army and navy have been reduced almost to a minimum, are worthy subjects for deeper study.

CHAPTER XII.

MODERN MEDICINE AND MILITARY HYGIENE

THE return of Nagayo Sensai from Europe in 1874 was marked by the creation of a Sanitary Bureau in the Department of Education, the function of which was to control the medical affairs of the nation in their widest scope. This supervision included national sanitation and hygiene. Nagayo formulated a set of regulations consisting of seventy-six articles, eleven of which provided for the creation of national and local sanitary boards; fifteen prescribed the courses and rules for medical education; twenty-six for the methods of examination and the issuing of licenses to practise medicine; and twenty-three to the examinations for apothecaries and regulations for the sale of drugs. The bureau also established laboratories in the five leading cities of the land for the examination of drugs and foods.

Medical schools attached to the great hospitals in various cities, and also the several private medical schools, where some of the best medical instruction in Japan is taught, were thus brought under the supervision of the national bureau.

Vaccine farms were also established by the government under the supervision of this bureau. In 1876 the bureau was relieved from the responsibility of supervising medical education, which was transferred to the Home Department; and thereafter its jurisdiction was confined to sanitary affairs exclusively.

There are four distinct classes of institutions of medical instruction in Japan. The three Universities in Tokio, in Kioto and in Fukuoka might be called schools of the first grade. Then come the Higher Medical Schools, the post-graduate instruction given at the hospitals in the great cities. These are situated in Chiba, Okayama, Ishikawa and Nagasaki. The next grade has what are known as Provincial Medical Schools, the outgrowth of the former schools, as of Kioto, Aichi and Osaka. The fourth class embraces the private medical schools. In addition to these, there are also two medical schools for the education of women, and the army and navy medical colleges, where the study is of a postgraduate order, with special reference to conditions that obtain in warfare.

The University schools owe their origin to the medical school established in Tokio at the time of the Tokugawa shogunate. In 1869 the great Shitaya hospital was united with the latter under the name of The Medical College and Hospital. In 1874 this became known as the Tokio Medical College, and in 1877, by its union with Tokio University, it became the medical department of that institution. In 1886 the Imperial

University succeeded the Tokio University, and in 1897 branches of the Medical Department of the University were established in Kioto and Fukuoka, the latter really a branch of the one in Kioto.

The curriculum of all the medical schools of the country is practically the same and compares favourably with that of the leading medical institutions in the world. The courses of study each cover four years, and licenses to practise are granted by the Home Department to those who pass the examinations successfully. Altogether there are about forty thousand licensed medical practitioners in Japan, about twenty-four thousand of whom were practising physicians before the present regulations were enforced. There is also a system of examinations by the state for those who study in the offices of physicians instead of in the class-rooms of the medical schools.

The Bureau of Sanitary Affairs in the Home Department has national supervision of medico-sanitary matters. In each prefecture and in the prefectural cities of Tokio, Kioto and Osaka there are local sanitary bureaus all reporting to the national board. In addition to these boards there are boards of health, national and local, which act in an advisory capacity. Each of these boards includes among its members eminent physicians, one or more chemists, one or more engineers and invariably a member of the local police department.

The National Sanitary Board has control of all matters pertaining to public health, including the inspec-

tion, manufacture and sale of drugs and medicines; the granting of permission for autopsies; the control of the sale and purity of foods, beverages, cosmetics and dyes, and the inspection of the sanitary condition of water-supplies and of tenements, schools, hospitals, jails, theatres and other public places. It collects vital statistics and in case of epidemics can immediately put in force drastic regulations, such as the destruction of dwellings, disposal of the bodies and effects of the dead and the establishment of special quarantines.

This National Sanitary Bureau has a deep influence upon the Japanese people directly. It has numerous sub-bureaus, the chief of which is the institute for the study of infectious diseases, of which Doctor Kitasato is the head, and which is doing the most important original medical work in Japan to-day. This institute has control of the preparation of various varieties of sera, including the preparation of vaccine at the three government vaccine farms. Its work has a direct bearing upon the health of the army, as will be demonstrated later under the directions of the Sanitary Board.

During my stay in Tokio the surgeons of the Police Department were making over six hundred microscopical examinations of rats daily, in search of the germs of bubonic plague, as a few sporadic cases of the disease had appeared in the city. The specimens were brought from various localities to the nearest police

station by the people, who received five sen for each rat. It will be remembered that the national sanitary system was inaugurated by Nagayo, but it was not fully developed by him. For that great work Japan is indebted to Doctor Goto, who is now president of the Board of Civil Service of Formosa and the Acting Administrator of that island during the absence in Manchuria of General Baron Kodama, the brilliant genius of Oyama's general staff. Goto became the assistant of Nagayo in 1884 and seven years later succeeded him. He it was who established in all the cities the sanitary police bureaus which coöperate with the local boards of health. He also established the system of national quarantines and the special military quarantines, which prevented the importation of infectious diseases by the returning army from the war with China in 1894. He also improved the regulations for the sale of drugs and the inspection of water-supplies.

From a military point of view the Japanese regard the quarantines established by Goto as his greatest achievement. Cholera and plague, as well as typhoid and dysentery, had seriously afflicted the army in the China campaign, and it was feared the returning troops would introduce these diseases and subject the nation to the danger of serious epidemics. Goto established a most rigid quarantine station on the island of Ninoshima, near Hiroshima, where all returning troops were temporarily quartered and their effects fumigated. A rigid system of detention was enforced, and Goto

had the satisfaction of eradicating infectious diseases from the victorious army before its final disbandment.

He also founded the serum and the vaccine-lymph institutes in Japan, in which measure he was ably seconded by the talented Kitasato, under whose direction they are now conducted. It was Goto also who established the Temporary Board for the prevention of the spread of epidemics; who caused a new compilation of the parmacopœia; who reformed the system of examinations of medical practitioners; who drew up the ordinance providing for the instruction of trained nurses, and the regulations for quarantines at various seasons of the year. In this work he was assisted by Dr. Tai Hasegawa, who as a member of parliament secured the passage of the necessary remedial legislation, and was one of the pioneers of the modern medicine in Japan, and for a long time was president of Saisei-Gakusha, a well-known medical school of Tokio.

Doctor Kitasato, whose discoveries in bacteriology gave him a world-wide reputation, did more than any other man to make Goto's regulations effective. The manufacture of sera to prevent the spread of infectious disease is due almost solely to Kitasato's researches and skill. While a student at the Medical College of Tokio he paid special attention to bacteriology, and after graduation visited Germany under the patronage of the government to continue his studies in the same branch of medicine. Later he became an assistant to Dr. Robert Koch, of Berlin, in the study of infectious

diseases, and in 1887 delivered an address on cholera in Japan, before the International Medical Congress at Vienna, which attracted the attention of the leading medical men of Europe. In 1889 he discovered the bacillus of tetanus and exhibited it at the medical congress in Germany as a result of the anaerobic culture, a process which until that time had not been known. In 1890 he made public his antitoxin discoveries regarding diphtheria and tetanus and thus became a pioneer in this field.

For these successes and for his assistance to Koch in the investigation of tuberculosis, Kitasato was honoured by the Prussian Government, and as a result the Emperor of Japan directed him to remain abroad another year to continue his researches. On his return he established his institute for the investigation of infectious diseases, which the government soon adopted as its own, Kitasato being appointed director to continue his brilliant work. At the time of the great epidemic of bubonic plague in Hong Kong he was detailed to proceed thither to investigate the disease on the spot, and he soon succeeded in isolating the bacillus. During the course of this work Professor Aoyama inoculated himself with the germs, an act which, though of great value to science, nearly cost Japan the life of its eminent investigator.

Later he discovered a process for the purifying of vaccine, so the danger of inoculation with other infectious or contagious diseases through vaccine was elim-

inated. This was accomplished by adding carbolic acid and glycerine to the vaccine preparation. He also discovered a method of preserving the activity of vaccine lymph so that after inoculation from cow to cow 176 times it showed no diminution of its virulence. Formerly after three or four inoculations it became inert. Eliminating the danger from vaccine had the additional advantage of popularizing vaccination in the empire, and as a result all persons now submit to it willingly. Doctor Kitasato has many brilliant assistants, among whom are Doctor Umeno, who discovered a method of inoculating calves without diminution of the virulence of the vaccine; Doctor Shiga, who isolated the bacillus of dysentery and discovered the serum with which to combat it; Doctor Kitashima, whose investigations of antitoxins place him in the rank with Behring, the eminent German investigator in that field; and Doctors Asakawa and Ohno, who have investigated the nature and phenomena of bacilli under many varying conditions.

To every studious layman a visit to Kitasato's laboratories is interesting. At present the institute occupies two establishments, but an extensive one specially designed for scientific research is now in process of construction, and will be completed next year, when all the departments will be sheltered under one roof. In the lecture-room of the institution for postgraduate students are elaborate diagrams illustrating the various germs of infectious disease, bubonic plague, dysentery,

anthrax, diphtheria, tetanus and typhoid, with specimens of cultures. Many young girls are employed in the laboratory, where from three hundred to four hundred cultures are made daily. The girls are especially skilful in handling these cultures and in their preparation, and many assistants are engaged in microscopical work, studying specimens and preparing slides.

In an adjoining building a large number of animals are kept for purposes of experimenting with the sera, including dogs, goats, rabbits, monkeys, guinea-pigs, and mice. It is a veritable menagerie. A few blocks away is the institution where various sera are prepared in liquid and dry form. This establishment and one in Osaka are the only places where sera are prepared for shipment, although in many other localities cultures are made in the study of bacteria.

Some idea of the work done in the institute may be gathered from the statistics of a year's activity. In 1904, 55,000 bottles of diphtheria antitoxia serum were prepared there; more than 1,500 bottles of bubonic plague therapeutic serum and as many of plague prophylactic fluid; nearly 1,000 bottles of dysentery therapeutic serum; 125 of erysipelas antitoxins; 300 of typhoid therapeutic serum, and 2,500 of tetanus serum. In addition over 450,000 capillars were filled with vaccine lymph, each capillar capable of vaccinating five persons.

All this work had a most direct relation to the war with Russia, for no less than 335,000 capillars for

vaccination were supplied to the army and navy in 1904-5, most of it for use in Manchuria, where smallpox is endemic among the Chinese. More than three hundred bottles of diphtheria antitoxin and smaller quantities of sera for dysentery, typhoid, and tetanus were also sent to the army. Investigations of dysenteric organisms found at the front were also conducted at the Institution. Kitasato's assistants succeeded in getting cultures from two places where the army had been in Manchuria, one near Yingkow and the other near Haicheng. They isolated the bacillus, and later a Japanese naval surgeon isolated precisely the same bacillus in cultures made from sick Russian prisoners, a fact which convinced the Japanese medical authorities that the dysentery of the Japanese army was the result of occupying infected places vacated by the retreating Russians. Whether the Russians or the natives had the disease first, the Japanese were unable to say, but the identity of the organisms convinced them of the danger of remaining in quarters previously occupied by Muscovite troops.

In addition to the achievements of Kitasato, Japan has especial reason to be proud of the work of another investigator, who received his postgraduate training in medicine abroad, Dr. K. Takaki, renowned for his eradication of the Oriental disease of kakke, or beri-beri, from the navy of his native country. This accomplishment contributed tremendously to Togo's success on the sea, for it gave him sound men behind the guns.

In the troubles with Korea, in 1882, the efficiency of the Japanese navy was impaired almost fifty per cent. by this dread disease, and Takaki's triumph in overcoming it is one of the brilliant feats in modern medicine. In recognition of this great service he was decorated and made a baronet by His Imperial Majesty the Emperor, in 1905.

Takaki was one of the few students who received his medical training in England, where his work attracted wide attention and obtained for him not only various medals, but a fellowship in the Royal College of Surgeons. He is the President of the Charity Hospital in Tokio and also of a private medical school in connection with this hospital, where a large part of the instruction is in English. For many years German was the language of the medical institutions of Japan, and indeed a great deal of the instruction is in that tongue to-day, but Takaki believes that English is to be the world-language of commerce, diplomacy, and science, and prefers his students should be proficient in that language. In May last I had the pleasure of attending a meeting of the second year class of this school, where every word spoken was in English. Papers were read on the physiology of breathing, and on the functions of the stomach and of the skin. These were followed by short addresses on geography, largely for the purpose of gaining facility in the use of the language. Not one of the students had visited England or America and few of them had studied English before entering

the medical school. It was interesting to note that the grammatical construction of their papers was excellent.

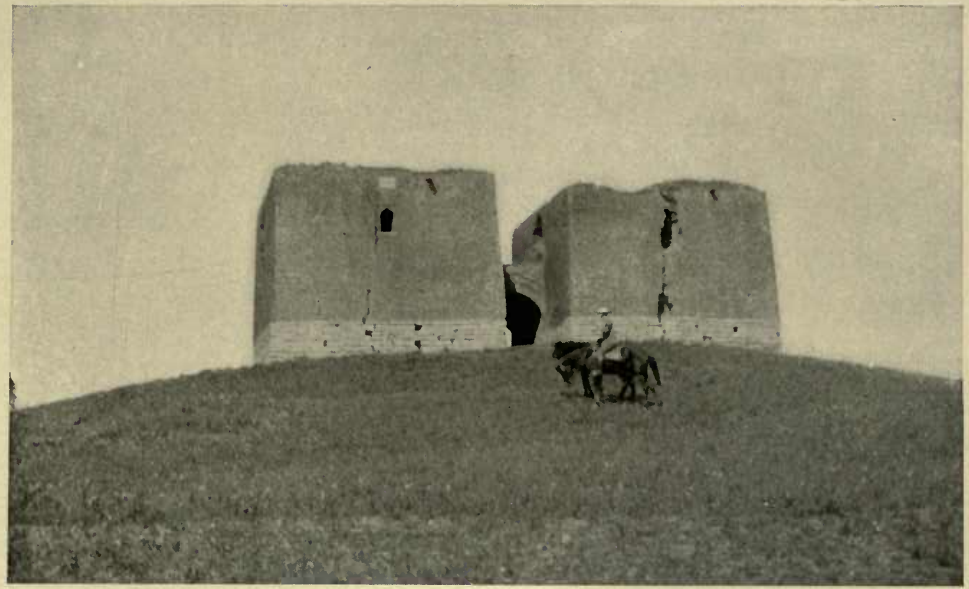
Occidental languages present enormous difficulties to the Japanese mind. There is nothing in common with their own language in origin or grammatical construction. The study of medicine is sufficiently difficult for most students; but to study it in a foreign language like English, and to use its technical terms correctly is a task that would stagger students of almost any other land than Japan.

With the return of her medical men from abroad and with the rapid advances in almost every branch of science that Japan was making, it was a natural step to apply the results of their researches in medicine and sanitation to the great work which the wise men of the nation saw Japan must perform in the field of Mars. When hostilities with Korea were threatened, Japan saw her navy practically prostrate with beri-beri, and in the war with China she had seen the ranks of her army sadly decimated by contagious disease. Her medical men had impressed upon the elder statesmen that to be successful in a war with one of the great modern nations she must limit preventable disease in her army and navy, and that her soldiers must be on the firing line rather than in hospitals.

All the achievements of her medical scientists and their work in national sanitation were utilized in this important military preparation. With a population of less than 50,000,000 she realized the hopelessness of

the outcome of a war with any of the great Western nations, unless every possible precaution was taken, and every available resource was utilized; and so the promotion of military sanitation became a national necessity of the first importance.

The first book on military sanitation in Japan was a pamphlet written by a physician named Hara, in 1854, and while it was meagre in details, it was broad in scope, and proved that the author was a keen student in this field, which was destined to be so important to the future welfare of the nation. It treated of such subjects as camp sanitation, the regulation of food and drinks, of poisons and the summary treatment of emergencies. This work was shortly supplemented by another, the work of a physician named Hirano, which treated of gunshot and sabre wounds, burns, contagious and infectious diseases, frost-bite, drowning, bruises, the topography of camping places and camp sanitation. The next year a physician named Otsuki published a book entitled "A Word on Rifle Wounds," which was printed by the special permission of the government at a time when the publication of foreign works was prohibited, owing to the complicated diplomatic relations then existing with Occidental countries. An elaborate treatise on this subject by Kuga followed in 1867, the year before the Restoration, and for the first time attention was called to the need of improved sanitation in the navy as well as in the army. During the War of the Restoration Dr. William Willis, the eminent



WHERE MANCHURIA AND MONGOLIA DIVIDE

One of the series of great monuments on the Willow Palisade, near the headquarters of General Oku
The boundary line of the two countries runs between the towers

English surgeon whose name is indelibly associated with the development of medicine in Japan, established the first camp hospital, and special attention was paid by the government to medical matters relating to the military establishment immediately after the close of the war. Military hospitals were erected in Yokohama, Osaka, and Yeddo (Tokio), and in 1871 the Military Surgeons' College was opened. The following year the army and navy departments were organized separately, and in 1874, the navy had its separate medical college. In the brief rebellion of 1877 the first field hospitals were used by Surgeon-General Hayashi, who also opened the base hospital in Osaka assisted by Surgeons Ishiguro and Sato, each of whom afterward became surgeon-generals in the army with enviable records. Army sanitation in the field had made its first appearance in Japan, and thus began the work which thirty years later was to astonish the world.

The promotion of military hygiene and sanitation in the broadest scope thenceforth became the most important work of the medical colleges, and has been crowned with a degree of success that has surprised the military wits of the world, and has driven home to other nations the stupendous lesson that preventable diseases *are* preventable and that the normal condition of troops in the field should be and is one of health.

The young surgeons, after a brief service with the troops, enter the army medical college, where for six months they study military hygiene, make tests of

water, clothing, and food supplies, and attend clinics with special reference to gunshot wounds and various injuries incident to warfare. Then they serve three years with the colours, after which they return to the college for another course of a year's study, when microscopy and bacteriological work are given special attention. They also investigate the newest theories and discoveries in medicine and especially in surgery. While attendance at this college is not compulsory, every army surgeon eagerly avails himself of this opportunity to improve his professional education.

At the Naval Medical College the newly appointed surgeon probationers study twelve months immediately after their admission to the service, the work being similar to that taught in the army college. They serve four years at sea or ashore in subordinate positions, after which they return to the college for another year of study. At this time they specialize to a large extent, and thus it is that the navy has experts in the various branches of surgery and medicine who rank with specialists in civil practice.

There was some attempt at special medical education in the navy before the college was opened. It was begun by Mr. William Anderson, F. R. C. S., England, whose position bore about the same relation to the navy that Doctor Willis's did to the army. When Doctors Yoshida and Takaki returned from England, however, the Navy Medical College was opened. The Minister of Marine looked kindly upon scientific advancement, and

unlike many cabinet ministers, especially in our own country, did all he could to foster the application of scientific principles in the way of sanitation and hygiene in the navy. The result was the brilliant victory of Surgeon-General Takaki over beri-beri. This alone commanded great attention; and from that day the military men of Japan have been glad to welcome the suggestions of the surgeon in his efforts to promote the health of soldiers and sailors.

Although there is comparatively little danger of the introduction of any infectious disease by the returning army from Manchuria, the precedent set by Goto has been followed and the regular quarantine service at the ports of Yokohama, Kobe, Nagasaki, Moji and Hakodate have not only been strengthened, but no less than twelve temporary quarantine stations at various ports of entry have been established, so that every person returning from the field must undergo careful inspection and fumigation of his clothing, and he may be detained if necessary. That this system is most complete and effective is a fact of which the writer has personal knowledge. Although he had been at the front, with all the privileges of a foreign attaché, he was obliged to undergo the usual inspection when he reached the port of Ujina on his return. While minor details were waived, the spirit of close examination was observed to the limit, indicated by the fumigation of clothing and baggage and the disinfection of his person by means of a specially prepared bath. The Ujina quarantine station is on a

separate island in the harbour and consists of a well-equipped series of buildings capable of caring for several thousand troops at once. Every device for the application of scientific quarantine is at hand and no effort is lacking to carry out its purposes and prevent diseases.

Thus it is seen that enormous strides have been made by the Japanese in medical research and achievement. From their earliest history they have eagerly accepted every real advance, and through the application of their acquirements in medicine and sanitation to their military establishments they have utilized a mighty power for the preservation of the nation.

CHAPTER XIII.

BERI - BERI

BERI - BERI is a disease limited almost entirely to tropical and subtropical countries, especially of the Orient. The etiological factor which causes the disease has not yet been positively determined, but it is the consensus of opinion of those who have studied the disease in its various manifestations, and the conditions under which it appears, that it is of specific origin; that the organism which causes it is introduced into the body, probably by the mouth, and its propagation generates a toxin which causes degenerative changes in the peripheral nerves. It manifests itself in a peripheral neuritis, usually multiple, with consequent sensory and motor palsies, the heart being in the majority of cases likewise affected.

It presents itself in various forms clinically: the atrophic or dry, the œdematous or wet, and the acute pernicious.

The atrophic form, after the appearance of the prodromata, begins with numbness and formication in the extremities, the lower being more frequently affected than the upper. This is gradually succeeded by paraly-

sis, both sensory and motor, of certain groups of muscles, the extensors being more frequently affected than the flexors.

The œdematous, or wet type of the disease, is similar in its advent and progress to the atrophic form, but has added to it cardiac disturbances with dropsy.

The pernicious form of the disease attacks chiefly the young and is rapid in its progress; cardiac symptoms appear early in the disease and are well marked. No specific remedy has been discovered for its treatment, cathartics, diuretics, and stimulants being the most popular remedies employed.

Medical opinions vary as to the cause of the disease. That it has a direct relation to food is admitted by all authorities, and as it only occurs among those races which make rice their chief staple, the question among experts is whether the rice alone or some fungus or toxin of rice is the exciting cause. The disease is undoubtedly endemic and has been called by some authorities a "place" disease. On the other hand, it has been ascribed to deficiency in the nitrogenous elements of food with an excess of the carbohydrates. Be that as it may, the fact remains that this disease occurs in endemic form and only among rice-eating peoples, whose dietary is deficient in nitrogen. Baron Takaki attributes it solely to an improper or insufficient dietary, of which rice is the principal component, resulting in an improper proportion of carbon to nitrogen in the food. This view coincides with that held by Dr. Irvine Rowel,

and is the general opinion now held in Japan, and with good reason.

Doctor Takaki, as Surgeon-General of the Imperial Navy, acting upon this theory, completely eliminated the disease from that branch of the military service. He holds that neither meteorological conditions nor foul surroundings have any serious relation to the ailment. He regards its frequent appearance in pregnant women as due to the fact that in that condition they forego nitrogenous food in Japan, living chiefly on soft boiled rice, but this custom is being gradually changed. The disease is not common among children, although he has seen a few cases. It occurs most frequently in summer, and this Doctor Takaki thinks is because at this season the Japanese live on a light diet, consisting almost exclusively of rice.

The work of Takaki in eradicating this disease from the navy furnished a brilliant page in Japan's medical history. In 1880, when he was Deputy Medical Inspector General, he noticed the great disproportion between the number of cases occurring on war-ships and those in barracks. He thought this might result from the difference between the food supplied aboard ships and that supplied ashore. Acting upon this belief, he made an analysis of the naval dietary and came to the conclusion that the proportion of carbohydrates in the food was in excess of the requirements and that the proteids were deficient. In February, 1882, he was appointed Vice Medical Director of the Navy. Shortly thereafter

he issued a blank form, upon which medical officers were directed to record the different forms of the disease, as they observed them; from these he drew his conclusions and then presented a memorial in regard to preventive measures. He continued his investigations of different foods in relation to this disease, and on November 22, 1882, he had a personal interview with the Emperor, to whom he set forth his theories as to the cause and the remedy to be adopted in order to cure the disease. Previous to 1881, the number of cases of beri-beri in the navy was about three-fourths of the entire cases of illness. In 1882, when there was a prospect of war with Korea, most of the crews of the five largest ships of war in the Japanese navy were prostrated with the disease, and it was a serious question whether the navy would be of any use in case war should break out. The victims often suffered from three to four times a year from the disease.

In 1883, the cruise of the Japanese war-ship *Ryujo* brought the beri-beri trouble to a crisis in the navy. This vessel made a voyage of 271 days to New Zealand and South America, stopping at the ports of Wellington, Valparaiso, Callao and Honolulu. There developed on the voyage one hundred cases of the disease out of less than 350 persons on board. An alarming situation of affairs presented itself, and Takaki determined to grapple with it boldly. He was fortunate in securing the coöperation of Count Kawamura, the Minister of Marine, and he determined to send another ship over pre-

cisely the same course and under the same conditions, so far as they could be duplicated. The *Taukuba* was selected for this voyage, and a commission of medical men participated in the cruise for the purpose of studying beri-beri. This voyage was taken at the same season of the year as when the *Ryujo* made her trip. The time occupied was 287 days and the same ports were visited with a similar number of days' stay at each port.

When the *Ryujo* reached Honolulu on her return trip home, she had 125 cases of beri-beri on board. When the *Taukuba* reached there, she had three cases. The total number of cases that developed on the *Taukuba* were sixteen as compared with 160 cases on the *Ryujo* the year before. When Doctor Takaki received a cablegram from Honolulu saying that beri-beri had practically not existed on the ship (for many of the cases were so slight as scarcely to be worthy of notice), he was jubilant and greatly relieved. He had sent the *Taukuba* out under a new diet scale, avoiding the excessive use of rice, and the result proved the accuracy of his theory.

He had previously asked for the appointment of a commission to investigate the disease and had received no less than 10,465 answers to questions that he had sent out. Success attended his efforts and from the time of the return of the *Taukuba,* the work of eliminating beri-beri from the navy was pursued and crowned with success; so that during the war with Russia the navy was entirely free from it, while the army suffered considerably.

This was the diet on the *Taukuba:*

Rice, 648 grams, or
Bread, 600 grams, or
Sea biscuit, 490 grams
Fish, 15 grams
Vegetables, 450 grams
Milk, 45 grams
Sugar, 75 grams
Miso, a kind of bean sauce, 50 grams
Flour, 75 grams
Beans, 45 grams
Pickled Vegetables, 75 grams
Meat, 300 grams

In addition sixty grams of "shoyu," a kind of pea sauce, fifteen grams of fat, a gram of salt, tea and vinegar, and ninety grams of "saké," a Japanese liquor, were allowed. According to Baron Saneyoshi, the present Medical Director General of the Navy, the nutritive value of this daily ration was equal to 775 grams of carbohydrates, forty-three grams of fat and 196 grams of proteids. The results proved it to be a remarkable improvement on the old diet.

This was the diet that was supplanted:

Rice, 782 grams
Fish, 96 grams
Beef, 73 grams
Pickled Vegetables, 145 grams
Fresh Vegetables, 215 grams
Sugar, 18 grams
Miso, 16 grams

The nutritive value of this ration amounted to 622.32 grams of carbohydrates, 15.8 grams of fat and 109.29 grams of proteids. It is of this ration that Baron Saneyoshi had said: "This falls far short of the nutritive value of foods, as estimated by Voit, that is five hundred grams of carbohydrates, fifty-six grams of fat and 118

grams of proteids. These amounts are those laid down by him for a man of 154 to 160 pounds, working at moderately hard labour taking nine or ten hours a day. And if compared with the minimum quantity of the nutritive value of the food needed by a man working at hard labour the same length of time — that is five hundred grams of carbohydrates, one hundred grams of fat and 145 grams of proteids — it shows a still greater deficiency.

"The diet of our navy compared badly with that of European countries, but the sanitary conditions of our ships were not inferior to those of European nations, for most of them had been constructed in America, England or other European countries, and were equally well equipped, the daily exercise and work of our seamen being identical with that of the English Navy. Our seamen are also provided with clothing and beds similar to those of the West. Despite these facts we never heard of the breaking out of beri-beri on any European warship sent to the East — to our waters. The crews of foreign ships floated on the same waters, exposed themselves to the same climate as ours, and they lived in similar ships, engaging in the same tasks, so that there was no other difference between our ships and the European but the diet. Consequently, the other conditions of life being the same, we naturally sought the cause of the disease first in the diet."

Note now the result of the change in the navy in the record of beri-beri after this improvement in the

ration was made. Here is the record, divided into two parts from 1878 to 1884, when the change was made, and from 1884 to 1889, an equal portion of six years: —

FIRST PERIOD OF SIX YEARS

Year	Force	Cases of Kakki	Ratio of Kakki per 100 of Force
1878	4,528	1,485	32.80
1879	5,081	1,978	38.93
1880	4,956	1,725	34.81
1881	4,641	1,163	25.06
1882	4,769	1,929	40.45
1883	5,346	1,623	23.12

SECOND PERIOD OF SIX YEARS

Year	Force	Kakki Cases	Ratio of Kakki per 100 of Force
1884	5,638	718	12.44
1885	6,918	41	0.59
1886	8,475	3	0.04
1887	9,106	0	0.00
1888	9,184	0	0.00
1889	8,954	3	0.03

That is to say, about one-third of the entire strength of the navy had been afflicted with the disease during the years from 1878 to 1883, both included, while during the second period of six years, viz. from 1884 to 1890, both included, but one sixty-third were so affected, the annual rates per thousand of mean strength being 324 and 15.8 respectively.

Moreover, the 765 cases of the second period were not

distributed evenly over the six years, for 718 of the cases appeared in 1884, the very year the change in the diet was made. If this latter year be excluded, the annual rate per thousand of mean strength for the remaining five years (1885 to 1889 inclusive) would be but a little more than one per cent. (1.1 per cent.) By 1887 not a single case of the disease existed in the navy, and from that time on its appearance was only occasional, the largest number of cases being in 1894, when there were twenty-nine victims of the disease. Constant improvement in the diet, by resorting to slight variations, was made, and since 1900 there have not been a dozen cases in the navy, notwithstanding the enormous increase in its strength. Baron Saneyoshi, the present medical head of the navy, is the authority for the statement that during the war with Russia no case has appeared in the floating force of over twenty-five thousand men. To illustrate the value of this change of ration in another way, it may be mentioned that in ten years the average weight of the sailors has increased from 52,500 grams to 58,500.

It was with great personal satisfaction, therefore, that Director General Takaki reported personally to his Majesty the Emperor, on October 16, 1890, the great success in eliminating beri-beri from the navy which ensued from the change in the ration, and that hereafter there would be no reason why Japan should longer dread the ravages of this silent foe.

In view of that unquestioned success in eradicating

this disease from the navy, the reluctance of the army authorities to adopt a ration that had been tried with so much success was all the more surprising. In February last, however, the number of cases in the army had become so alarming that General Terauchi, the Minister of War, under the guise of economy, as has been related, ordered a change in the army ration, by which a mixture of rice and barley, seven parts of rice to three parts of barley, was issued to the troops instead of pure rice. The mixture is known as "black rice," from the dark specks in it. At first the soldiers, like the sailors, did not take kindly to the new ration, but according to the unanimous testimony of the army medical authorities, an immediate change for the better took place, a testimony confirmed by the diminishing number of cases at the season of the year when the disease is most prevalent.

The following was the ration in the army prior to the above change: —

REGULAR RATION

	MATERIAL	QUANTITY
Chief Food	Rice	6 go
	Canned Meat	40 momme
	Dried Vegetables	30 momme
	Pickled Plum	10 momme
Substitute Food	Soup Extract	5 momme
	Powdered Miso	5 momme
	Salt	3 momme
	Sugar	3 momme
	Tea	1 momme

ALTERNATIVE RATION

MATERIAL	QUANTITY	
Rice	5 go	One of these
Bread	270 momme	
Hardtack	180 momme	
Fresh Meat without Bone	40 momme	One of these
Fresh Meat with Bone	50 momme	
Dried Salt Meat	30 momme	
Eggs	40 momme	
Fresh Vegetables	120 momme	
Salted Plum	15 momme	
Soup Extract	4 momme	
Miso	20 momme	
Salt	3 momme	
Sugar	3 momme	
Tea	1 momme	

(1 go equal to 100 momme.)

The ration as issued to the Japanese soldier in the field was as follows: —

RATION FOR ONE DAY

1 go of rice and barley, mixed (7 parts of rice to 3 parts of barley)
1 can of beef, 40 momme, or
a similar amount of fresh beef, or
a similar amount of pickled fish, or
pork instead of beef, with an addition of
some vegetables (potatoes, onions, etc.), and
some Japanese soup (mido-shiru)
2 or 3 eggs, and sometimes more, if the supply could be found
1 go of saké (Japanese wine)

The extra eggs are given to counteract the danger of beri-beri, chiefly. As to its wholesomeness, the writer can testify from personal observation.

EMERGENCY RATION (FIGHTING OR MARCHING) FOR TWO DAYS

12 go of hoshii (glutinous rice, boiled and dried, to be reboiled when used, if possible)
2 cans of beef, 40 momme each
2 packages of table salt
12 packages of hardtack, each package containing four crackers

EMERGENCY RATION FOR THREE DAYS

6 go of rice and barley, mixed
12 go of hoshii
2 cans of beef
2 packages of table salt
12 packages of hardtack

There were two grades of hardtack, one called kago, for the officers, and one called otsugo, for the men. The difference was in the grade of flour, the darker colour being used for otsugo.

It may be interesting to quote the article in the Naval Regulations of Japan regarding the ration: —

"The articles of food shall be as follows: — rice, bread, beef (fresh or preserved), salted beef, salted pork, fowl or eggs, fish, miso, shoyu, vegetables, beans, wheat flour, tea, fats and oils, sugar, milk, vinegar, spices, alcoholic liquors, salt and pickles."

What the final result of that change of ration for the army will be remains to be seen. The naval officials are especially interested in it and are confident that it will sustain their contention that beri-beri can be prevented. So sure is Baron Takaki that his theory is right that he does not hesitate to say that he could produce beri-beri by diet alone, and that he could cure a case and

prevent a relapse by diet alone. If the disease shall be eliminated from Japan's army it will add vastly to the strength of this militant people, and will confer a boon, not only upon that nation, but upon mankind, especially in the Orient. It is to be hoped that the present war will prove the death-knell of beri-beri as a scourge.

The vulnerable spot in Japan's campaign against preventable disease was the failure to overcome beri-beri in the army, and dearly did she pay the penalty. Almost one-half of the sickness in her army was from that disease. The estimate of the number of cases — 24.3 per cent. of the entire sick and wounded — show that they amounted to the enormous total of 84,545.

That failure was the exception which proved the rule of her wisdom in the use of reformed army sanitation and dietary as a means of securing triumph on the field of war. Had it not been for the presence of the dreadful scourge, the story of her achievements in army dietary and sanitation would have been a dazzling revelation. As it is, its brilliancy challenges the admiration of the world, and the unfortunate blot simply intensifies the whiteness of the page.

All the more lamentable was that failure to prevent the ravages of beri-beri in the army in view of the fact that she sinned against her own light; and, speaking in all kindness, the sin may be characterized as almost wilful. For Japan knew how to prevent that disease, and is proving it by her work of repentance. An earlier

change in the ration (the substitution of barley for a portion of the rice) would have accomplished it. That change was made, but not until after the mischief had been done.

Japan had already eliminated beri-beri from her navy. The adoption of the methods used in the navy would undoubtedly have saved thousands of men to the firing line. And the pity is, that with all that knowledge and experience her War Department set its face against the light; and for what reason? The old, old reason, — the reason that has cost many, many thousands of lives in other campaigns by other nations, — professional jealousy between the army and navy; one of the same reasons that really brought on our own costly and unnecessary war in the Philippines.

English ideas prevail in the Japanese navy, and German ideas hold sway in her army. The army was willing to admit that beri-beri had been eradicated from the navy, as the overwhelming fact could not be disputed, nor could the means by which it was accomplished be denied. But they were unwilling to admit that the methods employed by the navy would bring the same results in the army. They argued that campaigning on land was vastly different from campaigning on shipboard. On ships, the men, as a rule, have dry, comfortable places in which to sleep; have their commissariat and medical supplies always with them; are not exposed to the trials and exhaustion of long marches and the vicissitudes of extreme heat and cold and dan-

gers from defective camp sanitation. All of which is true. But it should have emphasized the fact that if the navy had found a means of preventing this scourge which had always existed in Japan's military forces, and which the army knew must appear among her soldiers, with consequences that might be most serious, it was the more incumbent upon the army to give the naval theories a thorough test on land. Indeed it was utterly unlike the spirit of Japan not to have done so, and makes this chapter of her history all the more pathetic.

Officers of the navy repeatedly urged those of the army to make a change in the ration, and the spirit, which, in polite phrase, may be called conservatism, rejected the advice. Largely upon the ground of economy, the navy was originally induced to make the change which eliminated the disease on Japan's ships. And finally, when thousands upon thousands of Japan's soldiers lay in her hospitals, from the Manchurian front to the rear at Tokio, when the loss of the services of these trained soldiers, unnecessary victims of disease, was a menace to the success of her arms, the army yielded. In February last the change in the ration was made, and it is to the lasting credit of General Terauchi, the Minister of War, that he brought it about. Even at the last moment army conservatism would not yield. Ostensibly on the ground of economy General Terauchi ordered the change, and thus spared the army's stubborn pride.

Indeed, the Japanese Army erred not only in the light of the nation's experience, but in spite of warnings

from other sources. In October, 1904, the writer, in an address before the International Congress of Military Surgeons in St. Louis — an address which for the first time seemed to reveal to the world the marvellous success that the Japanese arms had attained in preventing unnecessary disease in war — uttered this warning: —

"This excruciatingly painful disease, known in the literature of the Orient since the days of Confucius, was for centuries the dread of Oriental armies. Nor were the navies exempt, for as late as 1882, in a total force of 4,769 in the Japanese service, 1,929 suffered from kakki, of whom fifty-one died. Elaborate investigations were instituted by Doctor Takaki, then Medical Director of the Admiralty, resulting in the establishment of the fact that kakki, or beri-beri, is a neurotic disorder resulting from a lack of nitrogenous nutrition, — in other words, of nerve starvation. The ration was remedied, to supply the lacking elements, with the result of practically eliminating it from the diseases treated in the hospitals of the Admiralty. From 1886 to 1893 not a single case developed. But the army is less fortunate than the navy. Its ration is not so rich in nitrogen. Economy is a factor that had to be studied most carefully in Japan, and so no variation was made in the old ration of the soldier. This proved satisfactory in time of peace, when the soldier was not bound to it so rigidly as when on foreign service, and even in the first six months of the

present conflict it served its purpose. But during the long, unbroken marches, when for weeks men were reduced to two meals a day, and the terrible fighting (in one instance with no interruption for seven days, during three of which a large part of the army had almost nothing to eat and but little to drink), the nervous tension and deficient nutrition began to tell, and, when I left Newchwang late in August, kakki began to show itself in the ranks. It is to be hoped that the reported capture of sufficient provisions at Liaoyang to last the entire army three years is true, in which event kakki will soon disappear. *If not, the sooner the authorities substitute barley or lentils for a portion of the rice allowance, and a little pemican, as formerly used by our own army, or biltung as used by the Boers, or pea sausage as used by the Germans and by Kitchener in his famous campaign to Khartoum, the better it will be for their welfare. These foods will supply necessary deficiencies and banish an enemy that is second only to the foe they are trouncing so beautifully in the field."*

Confirmation of the ravages of this disease was received in every military hospital visited. At Dalney, the great base hospital to which the sick and wounded were sent preparatory to being transported to Japan, there had been handled in the year of the hospital's existence which ended on June 24, 1905, more than 220,000 cases of sick and wounded. Of these, between one-sixth and one-seventh were beri-beri cases. That

would account for nearly thirty-four thousand cases of the disease alone. These figures come from the most authentic sources. Indeed they were an open secret at Dalney at the celebration in June that marked the anniversary of the first year of the hospital's existence, a celebration intended primarily for the enshrinement of the dead, and one which I had the honour to attend. Mention was there made of the number of cases the hospital had cared for and the proportion of cases of beri-beri. In addition there were many cases of the disease in other hospitals that never reached Dalney, while others originated and were exclusively treated in Japan. Everywhere the prevailing illness in the army was beri-beri.

Consider the record in General Oku's army for seven months, figures taken from the official documents in my presence. In October last, the total number of sick cases in the Second Army at the front was 1,846, of which beri-beri numbered 618. The record for the other months stands:

November,	total,	1,721;	beri-beri,	691
December,	"	883;	"	416
January,	"	1,356;	"	561
February,	"	2,300;	"	851
March,	"	1,444;	"	548
April,	"	1,241;	"	383

This makes a total of 4,066 beri-beri cases out of 10,791 cases, a rate of approximately forty per cent.

Typhoid gradually lost its virulence, and in Febru-

ary there were only two cases among Oku's troops at the front. Beri-beri, however, increased in February, but rapidly declined in March and April after the adoption of the new ration.

Here are some figures which have been made the basis of official reports, showing the relative proportions of beri-beri to other serious illnesses in the First Army — Kuroki's — which, according to Japanese authorities, suffered less from this disease than any other: —

1904	DYSENTERY	TYPHOID	BERI - BERI
March	3	3	22
April	20	1	56
May	16	1	54
June	21	9	128
July	29	4	251
August	10	9	737

The same relative proportions existed along the etappen lines from Kuroki's army, except that dysentery showed a decided increase. These are the etappen figures: —

1904	DYSENTERY	TYPHOID	BERI-BERI
March	3	0	9
April	88	3	52
May	143	3	100
June	189	12	207
July	115	25	647
August	214	16	1,244

During the winter campaign the ratio of beri-beri to other serious diseases in Kuroki's army corresponded closely to that of Oku's army, both of which had a reasonable supply of vegetable food other than rice.

At the Toyama branch of the Tokio Hospital, the number of wounded treated was 6,189 in this period. The sick numbered 8,832, and of these 4,623 had beri-beri. The total number of enteric cases was but thirty. There were 1,653 cases of what are known as "home diseases," that is, of soldiers who have not been to the front, and of these 457 had beri-beri.

In the Shibuya Hospital, another branch, there were on April 8, 1905, 103 beri-beri cases out of 314 sick. At that time there was but one case of dysentery, while the typhoid fever cases numbered fifty.

In the great hospital at Osaka the authorities would not give specific figures as to sickness, but they said that, of the serious cases, beri-beri furnished by far the larger part.

At Hiroshima the authorities said that about forty-one per cent. of their cases had been wounded and fifty-nine per cent. had had beri-beri. The condition of affairs at Dalney has already been mentioned.

At Mukden, at the time of my visit in June, 1905, the great hospital had been nearly emptied, but of the 847 cases of sick and wounded, 173 suffered from beri-beri. At Liaoyang, 1,182 cases remained in the hospital, sick and wounded, 218 of which were beri-beri.

And so it was at all the hospitals, great and small.

Everywhere the chief illness encountered was beri-beri; but the reports showed it was decreasing, and every surgeon with whom I conversed on the subject attributed this result to the substitution of barley for a portion of rice in the ration.

CHAPTER XIV.

LEST WE FORGET

LEST we forget as a nation and lie supine in the easy content of Peace, let me in this chapter draw a few comparisons between our little wars in Cuba and Porto Rico and the stupendous and masterly conducted campaign of the Japanese in Manchuria, and also of the medical and sanitary history of those campaigns.

It is not agreeable reading for proud, self-reliant Americans, and there are some men alive to-day who are responsible for the heinous negligence who may not relish the narration. However, they deserve greater punishment than the mere prickings of conscience, for I believe that just as surely as the engineer who disregards set signals, or the train-despatcher who gives wrong orders, is legally responsible for the loss of human lives in the wreck which ensues, so these men are responsible for the thousands of manly soldiers needlessly, criminally sacrificed — not on the glorious altar of war, but in pestiferous camps from preventable causes. Every American citizen who loyally offers his services to his nation, and every patriotic wife and mother who sees

her loved ones march away to war, has a right to feel that their lives will be safeguarded so far as modern science, equipment and organization can accomplish that result. After Japan's example, it will not hereafter suffice for responsible officials to shrug their shoulders over the shrouds of disease-killed phalanxes, and say — as they did after Cuba — that "war is not a pleasure excursion," that "war is not strictly a hygienic business," that "the outcry about sickness and neglect is largely sensational and for the manufacture of political effect," and that the criticism is "a concerted effort to hide a magnificent triumph."

The sons of Nippon have set a new standard: four men killed by bullets to one who dies from disease! In the face of these figures are we ever again to repeat that ghastly tragedy of the Spanish-American Campaign — fourteen dead from disease to one who died a soldier's death on the field of honour? Yet, if we were to become involved in war to-morrow, all that would occur again, and worse. To prevent its reoccurrence there must be a radical reorganization of the Medical Corps, including the creation by law of Medical Inspectors General and an adequate Reserve Corps, made equal to the Japanese standard by giving it an independent transport service, and by making its officers of equal rank with the highest in the fighting arm; with executive power in medical and sanitary matters, and advisory power over the Commissariat. Thus only can we hope to change those frightful percentages of

death from disease, to approximate the remarkable figures of the Japanese campaign. No less a conservative and conscientious war correspondent than George Kennan writes of the hospital camp established before Santiago a day or two before the battle of July 1st, 1898, as follows: —

"The hospital consisted of three large tents for operating-tables, pharmacy, dispensary, etc.; another of similar dimensions for wounded officers; half a dozen small wall tents for wounded soldiers; and a lot of 'dog-kennels' or low shelter tents for the hospital stewards, litter-carriers and other attendants. I do not know how many ambulances the hospital had for the transportation of wounded from the battle line, but I saw only two, and was informed by Doctor Godfrey that only three had been brought from Tampa. Fifty more had been sent to that port for the use of the Fifth Army Corps, but had been left there by direct order of General Shafter when the Expedition sailed."

The monstrousness of that offence of unpreparedness became greater when, after eight weeks of mobilization at Tampa of a mere handful of men as compared to the Japanese hordes, the Commanding General of the forces could not, or did not, get the necessary supplies and accessories to take care of his wounded; and in some verified instances refused to transport to Cuba with his army the supplies he had at hand.

The incompetence, negligence and stupidity exhibited in moving only our little Cuban Army of fifteen thou-

sand men into the field — less than one Japanese division — surpasses belief. That it was as unwarrantable as it has been described has been emphasized by the example of the Japanese, scientifically loading transport after transport at the military seaports at Hiroshima with supplies of all kinds, apportioned in variety and quantity, for the forces taking the field. At that port, too, in the quiet hours of night, silently and without a loud-spoken word, thousands and thousands of soldiers paddled in sampans to the ships anchored in the roadstead, and went aboard. At one of those embarkations, during my stay there, forty thousand men took ship in a single night, and when the eastern sky lighted, only a broad expanse of burnished water met the gaze, where the day before lay anchored twenty or thirty vessels.

Remember that, thirty-five years ago, Japan had not a single sea-going steamship, and yet, when she went to war, she moved expeditiously and sent with her valiant soldiers everything known to modern science for the prevention of disease, and sufficient technical and skilled men to promptly administer to every sick and wounded man who might require care.

At Tampa our men warred and cursed and stamped until pandemonium reigned. We piled greasy bacon mountain-high in the broiling sun, until the very sands might have been rendered for the grease; we stacked cases of watery, canned tomatoes, open to the blistering sky, until the cans fairly writhed in ferment. We

jammed the railroad and freight yards with trains until it was impossible to switch a car, and nobody knew where anything was; and we congested the piers at Port Tampa until the stevedores and soldiers could hardly work, and the quartermasters in despair cried out: "Oh, hell, put any old thing on board!"

An army quartermaster told as a good story how he had put thirty thousand pounds of sugar in the bottom of the hold of a transport for which he never accounted. There may have been others who knew what they had on their particular ships, but it is doubtful. The army which went to Cuba was not an army of "Rookies" or of raw recruits. It was not an army of Volunteers, at whom the Regular is inclined to scoff. There were two or three regiments of Volunteers only, but they, the flower of our country. The bulk of the regiments were of our standing army, and our most highly trained and organized body of fighters. That they were fighters, God bless them, was what saved this nation from disgrace on July 1, 1898, before Santiago. They were wonderful men, those Regulars of the ranks; handicapped from start to finish by the most unconscionable inefficiency ever displayed by executive officials.

Think of it, a campaign where troops penetrated only seven miles inland from the sea — that army was almost wiped out of existence because it had insufficient transportation, insufficient food, insufficient shelter, insufficient medical supplies, insufficient medical attendance; and the United States was less than three days away

by fast ships! Listen again to what Kennan says about the hospital camp established just before the battle of Santiago: —

"The hospital staff (the main field hospital) at the beginning of the first day's battle consisted of five surgeons. The resources and supplies, outside of instruments, operating-tables, and medicines, were very limited. There was tent shelter for only about one hundred wounded men; there were no cots, hammocks, mattresses, rubber blankets or pillows for the sick or injured soldiers; the supply of woollen army blankets was very short and was soon exhausted; and there was no clothing at all except two or three dozen shirts. In the form of hospital food for sick or wounded men there was nothing except a few jars of beef extract, malted milk, etc., bought in the United States by an officer, taken to the field in his own private baggage, and held in reserve for desperate cases."

Again he says, of the time after the battle was on:

"As the hot tropical day advanced, the numbers (of wounded) constantly and rapidly increased until, at nightfall, long rows of wounded were lying in the grass in front of the operating tents, without awnings or shelter, awaiting examination and treatment. The small force of field surgeons worked heroically and with a devotion that I have never seen surpassed; but they were completely overwhelmed by the great bloody wave of human agony that rolled back in ever increasing volume from the battle line. They stood at the operat-

ing-tables wholly without sleep, and almost without rest or food, for twenty-one consecutive hours; yet, in spite of their tremendous exertions, hundreds of seriously or dangerously wounded men lay on the ground for hours, many of them half-naked, and nearly all without shelter from the blazing tropical sun in the daytime, or the damp chilly dew at night. No organized or systematic provision had been made for feeding them or giving them drink, and many a poor fellow had not tasted food or water for twelve hours, and had been exposed during all that time to the almost intolerable glare of the sun.

"Of course, the wounded who had been operated upon, or the greater part of them, had to lie out all night on the water-soaked ground; and in order to appreciate the suffering they endured the reader must try to imagine the conditions and the environment. It rained in torrents there almost every afternoon for a period of from ten minutes to half an hour, and the ground, therefore, was usually water-soaked and soft. All the time it did not rain the sun shone with a fierceness that I have seldom seen equalled, and yet at night it grew cool and damp so rapidly as to necessitate the putting on of thicker clothing or a light overcoat. Many of the wounded soldiers who were brought to the hospital from a distance of three miles in a jolting ambulance or army wagon, had lost their upper clothing at the bandaging stations just back of the battle line. They arrived there consequently half-naked and without

WOUNDED AMERICAN SOLDIERS AS THEY LAY FOR SEVERAL DAYS AT THE MAIN FIELD HOSPITAL, SANTIAGO

rubber or woollen blankets; and as the very limited hospital supply of shirts and blankets had been exhausted, there was nothing to clothe or cover them with. All that a little squad could do with a man when they lifted him from the operating-table was to carry him away and lay him down, half-naked as he was, on the water-soaked ground under the stars. Weak and shaken from agony under the surgeon's knife and probe, there he had to lie in the high, wet grass, with no one to look after him, no one to give him food and water if he needed them, no blanket over him, no pillow under his head. What he suffered in the long hours of the damp, chilly night, I know because I saw him and scores more like him."

Would not that narrative wring tears from a stone? Would it not cause the hardest heart to bleed? And it is told by a man recognized as one who truthfully and forcibly states facts, and facts only. What he says about the shortage in ambulances does not impress me much, because in the Japanese campaign an ambulance was unknown. Bringing the badly wounded back three miles from the front in "jolting ambulances" — the very thought of the suffering makes one shudder — has been proven to be wholly unnecessary by the Japanese, for they transported all their wounded from the firing line and dressing stations to the field hospitals, from three to five miles, in litters. What is needed with an army is sufficient litter-carriers, Red Cross men and hospital stewards, on the field of

action, to take care of the wounded and transport them gently to the hospital. It was the lack of men, the lack of everything, bad management in even the trivial facilities, which made the Santiago affair such a gruesome spectacle. When our soldiers of that Fifth Army Corps fell wounded in the field, there they stayed, unattended in some cases for hours, or, as was more usually the case, until a brother soldier for humanity's sake stopped to apply the first aid bandage. Not so in the terrible Manchurian battles. No fighting soldier in the advance need stop to succour the wounded, for scores of men, just as brave as he, unarmed, wearing only the Red Cross upon their sleeves, caught him almost as he fell, and bore him back to some haven of protection, ministering to his sufferings. Hundreds of litter-carriers rushed forward behind the charge, and, in great battles, almost endless lines of litters wound through the protected gullies and behind the hills, each with its burden of wrecked humanity, back to the nearest field hospital. The hospital train of little one-horse carts was as much in evidence as the ammunition trains, but they carried the wherewithal to *mend* life, and litters and blankets. The wounded soldier came off the field usually without his field kit or his gun. If the day or night was cool, or the poor fellow frozen with shock of mortal wound, one always saw him cheerfully wrapped in blankets lying prone upon the litter. At the field hospital, he was stowed away in a clean white kimono, thin in summer, padded and quilted in winter; and seldom beyond

the first temporary field station was he forced to wear his dirty, blood-stained uniform.

It seems almost inconceivable how any civilized army organization could be so wofully mismanaged that twelve hundred odd wounded men could not be properly handled and cared for in two days, and yet we have the frightful reminder of incompetency in the battle of Santiago, — a battle which in Japanese eyes would be considered a mere skirmish. Our casualties were less than one-tenth our small force of fifteen thousand men, and still, hundreds of the wounded lay half-naked, scorched and chilled, by midday sun and midnight dews; with parched throats and empty stomachs; covered with blood and dirt; unattended; suffering untold agonies from torn bodies, through lingering hours of day and night. Brave men, brave as God ever made — but the ghastly horror of it all, that we, the richest, the most advanced nation on earth, should be subjected to this shame; and, because with cunning sophistry the cry was raised " A glorious victory," that we should straightway forget the needless brutality that made it possible for heroes, who had faced the enemy and fallen, to suffer and die from neglect!

Kennan says: " The truth briefly stated is that, owing to bad management, lack of foresight, and the almost complete breakdown of the commissary and medical departments of the army, our soldiers in Cuba suffered greater hardships and privations in certain ways than were ever before endured by an American army in the

field. They were not half-equipped, nor half-fed, nor half-cared for, when they were wounded or sick; they had to sleep in dog-kennel shelter tents which afforded little or no protection from tropical rains; they had to cook in coffee-cups and old tomato cans because they had no camp kettles; they never had a change of underclothing after they landed; they were forced to drink brook water that was full of disease germs because they had no suitable vessels in which to boil it or keep it after it had been boiled; they lived a large part of the time on hard bread and bacon, without beans, rice, or any of the other articles which go to make up the full army ration; and, when wounded, they had to wait hours for surgical aid, and then, half-dead from pain and exhaustion, they lay all night on the water-soaked ground, without shelter, blanket, pillow, food or attendance. To suppose that any army will keep well and maintain its efficiency under such circumstances and conditions is as unreasonable and absurd as to suppose that a man will thrive and grow fat in the stockaded log pen of a Turkish quarantine."

General Shafter himself, in a telegram from Santiago on August 8th, stated: —

"At least seventy-five per cent. of the command has been down with malarial fever, from which they recover very slowly. What put my command in its present condition was twenty days of the campaign when they had nothing but meat, bread and coffee, without change of clothes and without any shelter whatever."

What a preposterous and humiliating admission for any general commanding such a small body of soldiers as that which went to Cuba! If the government with all its purchasing power and the facilities at its disposal could not properly supply and equip that diminutive command, I dread to think what would happen to us, the first year, in case we should ever engage in a real war.

Our Nippon friends kept six hundred thousand men in the field for over a year and a half; they fought the greatest battles of history, one of twelve days of incessant fighting, and the other of sixteen days; there were dozens of other battles of greater magnitude than our Santiago affairs; and skirmish fighting constantly went on during the entire period of hostilities. Their soldiers had their camp kettles with them; they had their water-boilers on hand; they had their blankets with them; they had their mosquito nets, and every man was enveloped in one during the mosquito season. Their casualties have been nearly forty thousand in a single battle, or almost three times the entire number of soldiers we sent to Cuba; and yet, every man was promptly, carefully and scientifically cared for. Every soldier who acquired a temperature or disclosed a furred tongue immediately got medical treatment. They fought through a country where unsanitary conditions obtain, and they camped on germ-infested sites of former Russian camps; and yet, by the incessant precautions of a numerically adequate medical corps, in hygiene, sani-

tation, food, drink, clean clothing, the army was enabled to make a health showing unheard of before in the annals of war. Think of it, thirty-four out of every hundred men who went to war, and fought through eighteen months of bitter strife, were never wounded or reported at sick call! Only thirty-one per cent. of the soldiers, or less than one-third of the force, were ever sick in hospital, and but two per cent. of the army died of disease. There were more men killed on the battlefield and wounded than were sick or died from disease.

Let it not be forgotten that the Russian army failed to win a single victory during the war, but in every battle, from the Yalu to the Mongolian frontier, were driven from the field. In their retreat their sick, wounded and dead often fell into the hands of the Japanese, who were further impeded by this added responsibility. In Port Arthur alone the captured sick and wounded numbered over seventeen thousand, nine thousand of whom were victims of scurvy, while at Mukden the sick and wounded prisoners numbered about twenty thousand.

And to the eternal credit of Japan let it be recalled that no distinction was made between those men and her own in matters of medical treatment, rations, transportation and nursing from the first aid dressing on the firing line to their comfortable quarters in her home hospital. To this I can testify from personal observation.

In Cuba, Shafter admitted that seventy-five per cent.

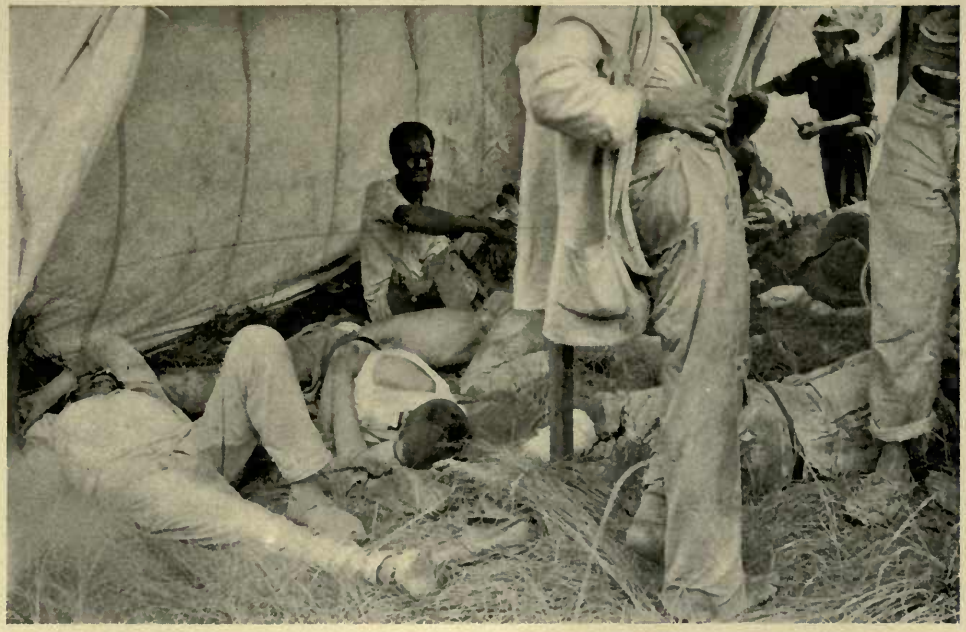
of his army was incapacitated for active service after less than six weeks in the field. Granting that the campaign took place in a tropical country where germ life was most dangerous, it simply increased the burden of blame to the military officials who dared to take an army into such a field with such wretched hospital, medical, dietary, and transport equipment. They did this in the face of wide-spread information given them and the public by technical and trained experts on the proper treatment and care of the health which must be observed in such a region.

That it was wholly unnecessary for the Fifth Army Corps to have fallen prey to disease in excessive numbers before Santiago has been amply demonstrated by the medical reports made upon the fighting naval contingent, which landed at Guatanamo, some fifteen miles east of Siboney. That force lay in hastily constructed trenches for forty-eight hours, fighting desperately to maintain their position; they were in the field practically the same length of time as Shafter's army, and in exactly the same climate; and still after eight weeks of life ashore, when the Santiago force was almost destroyed by disease, the naval soldiers showed but 2½ per cent. of their men on sick report. The remarkable difference in showing was accounted for by the fact that the naval men had proper shelter, more nearly proper food, proper clothing, proper medical attendance, better sanitary system enforced, and boiled water.

Struggle as one may with the Surgeon-General's re-

port for 1898, one cannot find a clean separation of the statistics of the Fifth Army Corps from the General Statistical Tables of the whole army mobilized for the Cuban War. It is unfortunate that this is so, for it prevents a ready analysis of what happened to the corps of sixteen thousand men, who were engaged in actual warfare in Cuba. There is one table, however, on page 128, which shows the number of cases and deaths reported from field hospitals of this corps at different points of their travels from Tampa through Cuba and back to Montauk Point. During the five months from May to the end of September, the hospitals took care of 9,246 cases, and four hundred men died. If the army in Cuba had had hospitals to go to, instead of being forced to lie on the damp ground in filthy shelter tents, with scanty medical attendance and no medicines most of the time, we may rest assured that the official returns would not have shown every man moving through the hospitals three or four times. The deaths are very significant, for it means that in less than five months twenty-five men out of every thousand succumbed to disease.

On page 239 of the 1899 Report we do find a paragraph which states that the total deaths in our army from May 1, 1898, to June 30, 1899, were 6,619, equivalent to a death-rate of thirty-three per thousand, and from disease *alone* twenty-five per thousand. Interesting figures these, for the mean strength of the American Army during that period of thirteen months could not



WOUNDED AMERICAN AND CUBAN SOLDIERS BEFORE SANTIAGO

Nothing but single canvas to protect the patients from the alternating scorching sun and torrential showers

have been as much as 135,000 men, or less than one-third the mean Japanese strength. The Japanese lost 11,992 men from disease in fifteen months, with an army of nearly six hundred thousand in the field.

The confusing admission is made in the 1899 Report that 45.14 men per thousand died from disease in Cuba, which makes the death-rate in actual campaign four and one-half times greater than the Japanese.

Another significant statement is that 23.81 men per thousand died in the United States from disease, while in Manila the rate was reduced to 17.20 per thousand. This clearly indicates that the high death-rate in the United States was to be accounted for by gross mismanagement and incompetency of the responsible officials, and in the lower tropical zone the Philippine death-rate showed an awakening sense of the officials to better medical supervision.

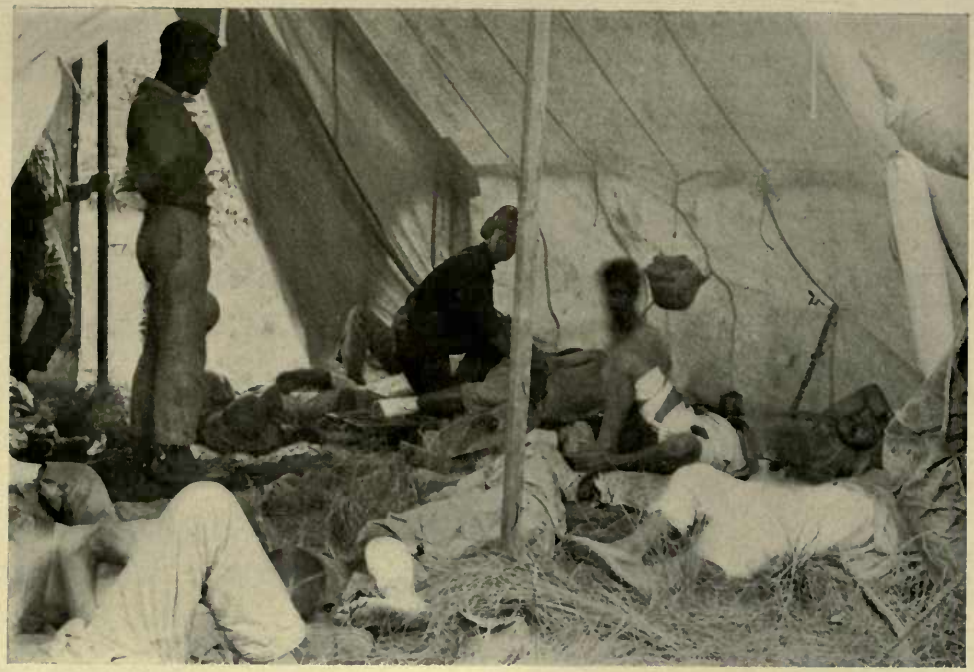
In thirteen months our army lost 2,774 men from typhoid fever, while in fifteen months the Japanese, with a mean strength three times ours, lost but 3,141. However, the Japanese mortality from this disease was exceedingly high, while ours was decidedly low, so that the discrepancy in actual cases in the two armies is greatly in favour of Japan.

I believe, however, that a large proportion of the cases classified as typhoid fever in our army during the Spanish American War no more suffered from that disease than from housemaid's knee. Diagnoses were too frequently made without blood tests or microscopic

examinations. A prominent factor in the production of the diseases which caused the mortality in that war was the totally unsuitable ration given to the unseasoned troops. Indeed, I am fully convinced that had our army been properly prepared for tropical service by subsisting on a judicious diet prior to the invasion of Cuba and Porto Rico and during its stay in the tropics, sickness and mortality would have attained very different proportions.

No better evidence of this can be had than the pathological features, in cases of death, whether the cause had been pronounced intestinal catarrh, hepatitis, duodenitis, typhlitis, enteritis, enteric or typhoid fever, colitis, dysentery, or diarrhœa associated with malaria. In the hospital of the Quartermaster's Department, under the care of Surgeon Moret, a native Porto Rican, where I was frequently called in consultation, there were 130 serious cases of intestinal disease, all of which were put exclusively on a diet of pure milk. In every case but two, and those were hopeless on admission, there was rapid recovery without an evidence of typhoid fever; nor did the two which proved fatal have this disease.

Had the army been provided with a ration in which the carbohydrates were given a greater and the nitrogenous elements a lesser part, there would have been far less recorded sickness and mortality. The cases on which we were fortunate enough to hold autopsies presented many similar characteristics. The liver was



WOUNDED AMERICAN AND CUBAN SOLDIERS BEFORE SANTIAGO

Another one of the few tents of the main American field hospital, four miles from the firing line and opposite General Shafter's headquarters.

almost invariably congested. The mucous membrane of the intestine was pale and covered with a thick tenacious adherent mucus, the mucosa was hypertrophied, often deeply congested, and ulcerated, in two instances those ulcerations almost encircled the entire canal. The toughness of the opaque secretions obliterated the intestinal glands, causing atrophy and thus interfering with the vital processes of absorption and metabolism.

Why is it that a simple intestinal catarrh, a diarrhœa with malaria, a mild duodenitis, or enteritis is aggravated when salt meat, beans, fat pork, fermenting tomatoes, etc., are taken into the intestines? Because they act as irritants, exciting instead of allaying inflammation, thus engrafting on a comparatively trifling disorder one of serious proportions. One was almost as much puzzled to know how to sign a certificate of death after an autopsy as before, for the diseases seemed to be blended, the areas of congestion or inflammation being only slightly interrupted, or of a general character. The diagnostic features were so tangled and masked, as to make differentiation extremely difficult and to lead to the conclusion that the enteric diseases prevailing in the army in Porto Rico and Cuba during our war were of a new form of development. They were the result of a tin-canned-salt-junketed-fermenting-tomato-salt-pork diet, intensifying a simple catarrh; and resulted in sending many of our men to their eternal home, or to the hospitals of the North in the pitiable

conditions with which we are all familiar, and in making the camp more dangerous than the firing line.

Simple catarrhal affections of the stomach and upper intestinal tract, not resolving rapidly, will lead, under an unsuitable dietary, to congestion of the liver with all the dangers attached to such a state, in a climate where the natural antiseptic of the intestine is of such paramount importance. The reduction in quantity of bile leads to autointoxications, and extension of the processes of inflammation until the entire intestinal tube may be involved; and jaundice, duodenitis, enteritis and colitis are developed, conditions which are an open door for all micro-organisms that can find entrance. And that is what happened to the American Army.

Another table in the Surgeon-General's Report for 1898, where a hideous record of disease is hidden by comparing it with worse tables of the Civil War, forty odd years ago, when we knew so little of sanitation and less of germ infection, show that out of a mean force of 167,168 men, the majority of whom stayed in home camps that should have been equal to summer resorts for building up constitutions, 158,460, or ninety-five odd per cent., were admitted to the hospitals. The Japanese in an equal period of time had but fifteen per cent., and that fifteen per cent. was represented by men who were fighting in the field week after week, exposed to the greatest hardships and rigours of war.

In the Surgeon-General's Report for 1899, on page 331, in which are tabulated the medical statistics of

the United States Army for the year 1898, we find that the mean average strength of the army was 46,635. The ratio per thousand of men admitted to the sick report is here given for the year as 2,146, or every man was sick twice in the year. In the Japanese army for an equal time, assuming the mean strength to have been four hundred thousand men, the ratio was 463 men per thousand, or less than one man in every two was admitted to the hospital. There died from disease in the American Army during the year 27.55 men per thousand. The fact must be remembered that we started the year with only twenty-seven thousand Regulars, carefully housed in garrisons, presumably under the best hygienic and sanitary conditions, and that this twenty-seven thousand did not begin to leave their fine quarters for the first three months of the year, or until war with Spain became imminent. Remember also that the several hundred thousand of volunteers mobilized for the campaign were never out of the country, with the exception of a few regiments; and their total service was less than five months. They should, by all the rules of the game, have been having a delightful summer outing, without hardships, and with plenty of fine fresh air and outdoor exercise, or the kind of life we live when we go into camp with a view of rejuvenating ourselves after a winter of hard work. Still, the death-list from disease for the whole year, seven months of which really should not be counted, included twenty-seven men out of every thousand. It seems almost like juggling of

figures to present them to the eye as does this official report.

Taking the report of deaths from disease in our army for the worst single month, August, we find that 6.14 men out of every thousand died. That was the month when numerically the force was the largest, and the bulk of it was camping out in beautiful parks, for its health. Roughly, the Japanese army did not show in its worst months over two deaths from disease per thousand; and, pardon the emphasis, that in actual, strenuous campaigning, with incessant, frightful hardships confronting the troops and a thousand miles from home.

The official medical reports from the Philippines, bound into the so-called "Surgeon-General's Report," are pathetically humourous to the man on the inside. Personally I saw much of the hospital life in our distant possessions in 1899, and I heard the bitter complaints of many army surgeons directly from their lips. Fear of court martial, fear of official disfavour, dread of the machine, makes it a difficult task for any medical officer in the United States Army to utter freely his heartfelt convictions. It has been a veritable travesty, a medical corps at the mercy of an autocratic military commander, who knew nothing of army hygiene or sanitation, and mighty little, apparently, of how to command fighting troops in the field. As one able subaltern put it, "He would make an excellent quartermaster sergeant in any regiment, for he is great on detail."

Yet, the entire medical organization was in such hopeless hands, in the hands of a man who sent an infantry officer to report on the sick men in the hospital because he had empirically asserted his conviction that at least forty per cent. of the patients were malingering. The same man bluntly told a young medical officer on the voyage to the Philippines that a case he had reported as measles was not measles at all, and so cowed the inexperienced surgeon that it took him twenty-four hours to muster up sufficient courage to approach the General again and ask him to please state officially that it was not measles, so he might be relieved from future responsibility. The General backed down.

It was this officer who, when an alphabetical list of insane sick soldiers was placed before him with the request that they be transported to the United States immediately to save many of them from dying, said that those names from A to M might go on the next transport, but that he had no room for any more, thus allowing the surgeons no discretion in the selection of cases to be returned.

It was the same man who, it was said, cut every requisition in two as a matter of economy to the government, thus forcing officers into the unpleasant duty of doubling their requisitions in order to secure what was actually necessary.

Under Japanese military organization, the youngest medical lieutenant would not hesitate to report the General of the fighting arm to his superior, with the knowl-

edge that his complaint would reach the hand of a medical officer as high in rank as the General commanding forces, and if he were right he would be sustained. Of course, no fighting officer among the Japanese would for a moment question the right of a brother medical officer to exercise his own judgment within the lines of his own technical profession. The medical expert is in that army for the specific purpose of furnishing expert opinions on hygiene, sanitation and medical matters, and his word is obeyed without question.

Medicines were fairly abundant in the Philippines at all times, and there were no repetitions of the Cuban affair, when three times in the six weeks before Santiago medicines were exhausted and thousands of sick men had to go without medicinal treatment for days at a time. The medical necessity in the Philippines was mainly for doctors, stewards and nurses, the demands for which the General commanding ignored discourteously until the situation became alarming.

In Porto Rico, Cuba and the Philippines the ration supplied to the army, and over which the medical officer had no control, did more toward the production of the diseases affecting the troops than any other single factor. The following extract from my final report of the First Regiment, United States Engineers, was made to the Surgeon-General January 21, 1899: —

"When whole regiments were suffering from intestinal catarrh (and I have seen ninety per cent. of an entire command afflicted with this trouble at one time),

they were subsisted on a ration consisting principally of fatty bacon, salt beef, tomatoes, frequently in a state of fermentation due to the intense tropical heat, canned beef and hardtack, with the natural result of aggravating the disease and producing a condition which left the entire intestinal tract a fruitful culture-ground for the development of every micro-organism that could find entrance."

Under such circumstances it was not surprising that the hospitals were soon overcrowded, and that all precautions taken against disease had little or no effect.

The most distressing feature was that the conditions could not be changed, for the government made no provision for furnishing the army with any other ration for weeks, and the wretched system of the Medical Department gave its officers no authority to enforce a change. Repeatedly I asked that rice might be substituted for that irritating ration which served as an excitant of disease, only to be refused. I firmly believe that if my regiment had been supplied with a liberal allowance of rice and other light diet during its stay in the tropics, it would have returned to this country in better condition than when it took its departure. So, also, with the troops that never reached the front but were mobilized in the various camps of the country, tens of thousands of whom returned home with shattered health and in such debilitated condition that over fifty thousand pension claims have since been filed in

Washington as a proof of the ignorance and incompetence of the management to which they were compelled to submit. And only twenty thousand men were actually engaged in the war.

CHAPTER XV.

CONCLUSION

IN the preceding chapters I have tried to picture the medical and sanitary protection given to the soldiers of Nippon; to tell of the splendid aid, the fatherly solicitude and gentle care taken by the Emperor of his children. In that land, where the traditions of feudalism, of the Daimio, and Samurai, and of chivalry are still vivid in the memories of the people, where caste and class distinctions were, until the Restoration in 1868, more marked than in any part of the world, there patriotism is the sublimest duty of the soldier, while the care of the sick and wounded is the proudest duty of every citizen from the highest to the lowliest. It is a filial duty, welcomed alike by rich and poor, — an honour indeed, to be permitted to help the soldier who has risked his life in his country's service; and the medical officer is clothed with the authority necessary to safeguard the soldier's right — his health.

How is this sacred trust regarded in our own land? We, too, have our wars — for liberty and for principles, no less sacred than those for which Japan has fought

so valiantly. With us, a nation of free men, every one is a sovereign ruler; and patriotism ought to be far more sacred than even in Japan. Our armies are not made up of conscripts, but of proud volunteers, as ready to sacrifice life for their country's honour as the men of Japan. No fighting in the Russo-Japanese War approached in ghastly slaughter the terrible tragedy of Cold Harbour, in 1863, where ten thousand Union soldiers fell in less than ten minutes, — more than a thousand a minute; and Liaoyang and Mukden had their counterparts in Gettysburg and the Wilderness. In spite of graft and scandal and the mad chase for gold in America, the fire of patriotism and bravery and sacrifice is merely slumbering, and only requires the electric spark of insult to national honour to kindle it into action. But how is this patriotism appreciated by the soldier's government? How is his health protected? How is he given the square deal? Is the medical officer, the man who fights the foe which kills the eighty per cent., given authority and power by oversight of dietary and sanitary control to safeguard his inalienable interests? Let us see.

That a grave crisis would confront this country in the event of another war through the deficiencies of the Medical Department of its Army, and its lack of power, has been abundantly indicated by the marvellous statistics of the recent Russo-Japanese conflict. The question now is whether this department shall remain in its present deplorable condition, owing to lack of

numbers, organization and power to cope with the sanitary emergencies certain to arise in war, or whether it shall be reorganized on a basis which will give its officers the necessary rank and power to enforce its orders, and thereby accord to the soldier his physical rights. The personnel of the department is not so much at fault as is the lamentable system under which that personnel is compelled to carry out its measures. Every department of the United States Army, excepting the Medical Department, is practically autonomous. The officer of Ordnance, of Cavalry, of Infantry, or of the Signal Service, can issue his orders within his province and have them executed. Is it so in the department that has to contend with the enemy that kills the eighty per cent.? No. The medical officer can make a recommendation, but never issue an order. This recommendation he can submit to the commanding officer, who may accept or ignore it at his pleasure, provided only that he states his reasons for his disapproval before forwarding it to a higher authority, who, in turn, frequently fails to appreciate the importance of the recommendation which has been made to him.

Therein lies the secret of the failure of the Medical Department. It has no authority to carry out any systematic sanitary work, whereby preventable disease may be prevented. I first recognized this in the Spanish-American War, where the deaths from preventable diseases were fourteen times as great as those from cas-

ualties received in the conflict. Perceiving that this loss was nearly all unnecessary and preventable, I set about to study the reasons thereof and, if possible, to find some method by which it could be prevented. With this object in view I have served with the Army in the Philippines, passed a winter with the troops of the Allied Armies of the world in Peking in the Boxer Campaign, and twice visited the seat of war in Manchuria; and as a result of observations in these various expeditions, I am firmly convinced that that needless sacrifice of life could have been prevented, and that the reason for our failure to prevent it lay mainly in the lack of authority given to the Medical Department.

The present system of this department of the army is founded upon false premises. Its efforts are directed toward the *cure* of disease instead of its prevention.

As stated in my article on Military Surgery in the New International Encyclopædia, edited by Doctor Gilman, "In order to prevent the invasion of that deadlier foe, whose fatalities in every war are never less than five times greater than those killed in battle, the medical officer must prove himself a keen sanitary engineer in the selection of camp sites, of camp drainage, of the location of latrines, in the inspection of all water-supplies, the quality of the food and its cooking, and of the soldier's clothing and his personal cleanliness. He must be an epidemiologist and a bacteriologist, as well as a

student of dietetics and metabolism, and he must have power to carry out sanitary measures.

"Terrible epidemics of typhoid fever, cholera, dysentery and diarrhœa have resulted from flies carrying disease germs from unsavoury places to the mess-hall, or through the drinking of polluted water. The parasite of malaria and of yellow fever is transmitted through the medium of the mosquito, that of tuberculosis through the sputum. The iron-clad ration of the soldier has at times led to starvation or scurvy, or has proved an excitant to intestinal disease. With all these problems the military surgeon must be prepared to wrestle, especially when he is with newly recruited troops, unaccustomed to the rigorous discipline of army life, or when stationed in tropical climes. The normal condition of the soldier is health; disease and premature death are to a large extent unnecessary. They are to be overcome, however, not by the abrogation of the intellectual faculty, but by its exercise. With a thorough knowledge of the micro-organism of any disease, their exclusion is a comparatively simple matter. But it is only by the exercise of the greatest vigilance and judgment that these most pathetic tragedies of war can be averted, and that a high standard of health in an army be maintained, so that in the emergency of battle it may respond most effectively to the call of its leaders."

And here it may be observed that medicine has contributed as much in advancing civilization as militarism.

It has conquered or mitigated plagues and pestilences, which in single epidemics have destroyed more lives than the total of the combined armies of the world. In one outbreak of cholera in China thirteen million victims succumbed to the disease. History commits no greater injustice than the mention of a thousand generals to one physician. But what great purposes have the conquests of science attained for our armies?

Europe, to-day, is one vast military camp; the resources of each country are taxed to the utmost limit to support the great living plants for human destruction, the armies and the navies; and America is following. Thousands of millions of dollars are annually expended by the civilized nations of the world in the maintenance of great military schools and arsenals, for the education of men in the art of war, and in the manufacture of machines for human destruction, while comparatively little is being done in the study of those equally important subjects, preventable diseases in armies, and the preservation of the health of "the man behind the gun." We go blundering on, expending a quarter of a million of dollars a day in our effort to destroy our human foes, while the more formidable adversary in the ranks, five times more deadly than the bullets of an enemy, is left comparatively unheeded.

And what is the logical result of such mental myopia?

In the five months of the Porto Rican campaign in

the late Spanish-American War 262 men died from disease, while only three were killed by bullets. In the mobilization camps of the United States during that war, 2,649 men died of preventable diseases without one of them leaving the country or seeing the firing line.

Every death from preventable disease is an insult to the intelligence of the age. When it occurs in an army where the units have to submit to discipline, it becomes a governmental crime. The first responsibility of the government in times of war or peace should be the proper care of its guardians. The state deprives the soldier of his liberty, prescribes his exercises, equipment, dress and diet, and, in the hour of danger, expects him, if necessary, to lay down his life in its defence and honour. It should, therefore, give him the best sanitation and the best medical supervision that the science of the age can devise, be it Japanese or Hottentot.

And yet, should occasion arise with us for the gathering of another army of 250,000 men next summer, what evidence is submitted to prove that the lamentable scenes of 1898, with all their nauseating details, would not be repeated? From Porto Rico, Tampa, and Chickamauga, where no fighting was done, but where more sick and invalided were gathered at one time than would overload any dozen transports and hospital trains, the American Volunteers, had they been properly subsisted on the principle of the Japanese to-day, would

have returned to their homes and vocations healthy and happy as after a summer's outing. I ask what tangible evidence is submitted to show that history would not repeat itself, and that such an army, gathered hastily, would not again be brought almost to its knees, through the same ignorance and incompetency? None — none in the Medical Department, which is worse off by fifty-eight per cent. than it was in 1898. The army is to-day officered throughout for a strength of one hundred thousand men, except the Medical Department, which is only sufficient for forty-two thousand.

At the Fifty-ninth Congress a bill has been introduced to increase the efficiency of this department of the Army. It failed at the previous session because the Chairman of the Committee on Military Affairs, and many of his colleagues, regarded it as a "graft," and could not be brought to see wherein it benefited the interests or safeguarded the health of the men who did the fighting, — and in this conclusion, I believe, they were partially justified, because the bill was hopelessly defective in essential features. It made no provision for medical inspectors or for an independent transport system; it gave the medical officer no advisory authority over the Commissary Department; and it failed to advocate an increase in the rank of the Surgeon-General commensurate with the importance of the department of which he is the head. He should be directly responsible only to the Secretary of War, or the Presi-

A WARD IN THE EXCELLENT RESERVE MILITARY HOSPITAL OF THE UNITED STATES ARMY IN MANILA, 1900

dent of the United States, and he should have conferred upon him by law the authority to take action in matters of sanitation, dietary and hospital transport, all so necessary for the safeguarding of the soldier's health. With these reforms enacted we would have no more such humiliating spectacles as were witnessed in the Spanish War, or more recently at Panama, where the recommendations of a brilliant exponent of the medical corps, Colonel Gorgas, were ignored by a commission composed principally of men untrained in, and ignorant of, hygienic law. The consequences at Panama have been neglected sanitation, and the final result a costly epidemic, to say nothing of the delay in the construction of the canal and the loss of interest on the sixty-million-dollar investment for nearly a year, — an amount of money that would have run the entire Medical Department of the Army for years. The second Panama Commission promptly indorsed the findings of Colonel Gorgas, and the only reason he did not repeat on the Isthmus his splendid record of sanitary reform made in Havana was because he was a victim of this damnable system of submission; a system in which there is no incentive to individual development, no reward for original work, but where the tendency is to create bookkeepers and time-servers, whose value as medical experts increases in inverse ratio to the time they remain in the service.

A prominent officer of the United States Regular Army, who had never been through Japan or in Man-

churia, said to me recently that the medical service of the Japanese was inferior to that of the Americans; that no doctor had any business at the front; that, if one of them appeared on the firing line or near it, when he was in command, he would kick him back to his place in the hospital, where he would remain looking after the sick and the wounded and attending to the business he was paid for; and, if he refused to go, he would put him under arrest and have him court-martialed; that all these examinations of water and wells and streams were humbug and tomfoolery, and that the use of boiled water on marches or in camps was impracticable. In times of war, he said, the place for a doctor was behind the army, taking care of the sick and wounded, but never in the front. If a doctor objected to a situation selected by him for an encampment, on the ground of its unsanitary condition or bad water-supply, he would tell the doctor to go to hell.

This man, too, had been detailed as an instructor in one of our large universities. I would not mention his utterances were it not for the fact that he reflects the sentiment of a class of officers whose knowledge of sanitation scarcely rivals that of a mud turtle; and that he illustrates the type of man most dangerous to the safety of the army, and to the nation.

On October 10, 1905, the United States Surgeon-General sent me the following vital statistics of the American Army for the year 1898: —

Deaths in the Philippine Islands from		battle casualties	17
" " " " "		disease	203
" " Porto Rico		" battle casualties	3
" " "		" disease	262
" " Cuba		" battle casualties	273
" " "		" disease	567
" " the United States (camps, etc.)		from casualties	0
" " " " "		" disease	2,649
Total deaths,			3,974

Or about *one from casualties* to *fourteen* from disease.

When contemplating these marvellous figures and the reverse record made by the Japanese, of only one death from disease to four from battle casualties, with what a ghastly and melancholy smile the once Commanding Officer of the Army at Manila must recall his action in censoring the cablegram of the Chief Surgeon, who had requested fifty additional officers and two hundred more nurses, when the hospital wards were overcrowded, because such a despatch would prove the falsity of his claim that he had "the situation well in hand." Months afterward the surgeons and nurses were provided, but not until the horrible condition was intensified, and taps had sounded the requiem for many a poor boy who had joined the great majority.

Perhaps the same delight may solace the contemplative Commander of the Cuban Campaign, when he recalls his famous order at Tampa, directing the unloading of a ship filled with medical and hospital supplies for Santiago and the substitution of a load of mules instead. Or another Major-General during that

war, who, on being waited upon by certain medical officers with a protest against the use of certain water at Chickamauga, said in response to their complaint:

"When I want your advice, I will send for you; until I do so, you can attend to your own business."

Or solace may even be brought to the then Secretary of War, who, when inspecting the camps at Montauk Point with the President of the United States, said, on looking at a glass of water furnished the troops at that infected camp, and which certain medical men had pronounced to contain germs of disease: "Why, it looks all right to me!"

Is the great medical profession, — a profession that in one of the bloodiest wars of history has contributed so largely in reducing the mortality of deaths from disease by eight hundred per cent., — is it to remain subservient to the dictates of the variety of judgment just cited, or is its department in our army to be reorganized upon rational lines, and its personnel empowered to enforce its mandates so that the medical and moral rights of the soldier may be safeguarded and the country receive the benefit of his protection?

It is my belief that, until the line and staff officer of the American Army is taught the necessity of sanitation, and the medical officer is given rank and authority to enforce it, our Medical Department must remain a humiliating failure. Its continuance under present conditions is no less than an evidence of national imbecility.

The widow of an American officer, whose life had been needlessly sacrificed through preventable disease in one of our Island Possessions, returning from the sad scene, recently said to me: —

"Those who love their country are willing to give their dearest and best for their country's good. But there is little glory and much suffering for the soldier who dies from disease in a foreign clime, *wasting* his life, instead of losing it in the defence of his country's honour. We, the mothers, must teach our children the lessons of loyalty; must imbue the boy of to-day with the patriotism that will make him the soldier of to-morrow. We may dwell with loving pride on the glory of death on the firing line, and inculcate in him the lessons of heroism which characterized his father's life and made his death a triumph. But what can we say to the son of the man who has died from disease, due to the lack of care by the government for which he was willing to sacrifice his family's interests and happiness, and his own life? Loyalty has its birth in love, and its death in hate. This is not the first nor the last war America will have to fight, and it behooves our lawmakers to look well to the care of the soldier of to-day so as to count on the sons of to-morrow, for America's future depends on the lessons her sons are now learning."

THE END. (4)

From Tokio Through Manchuria with the Japanese.

By Major LOUIS L. SEAMAN. With 32 graphic Illustrations never before used. 12mo. Cloth, $1.50 net.

A straightforward, untrameled account by an American officer. The author was formerly in the United States army and has just returned from the seat of war. Major Seaman also went through the Boxer uprising and the Chino-Japanese War, and is a trained observer and experienced writer.

"The immediate purpose of Dr. Seaman's journey to the front with the Japanese army was that of inspecting the sanitary and medical work among them. His experiences and adventures incident to that undertaking are most interestingly narrated in the present volume. His chronicles thrill with the spirit of 'Banzai Nippon,' the shout of patriotism in the 'Land of the Rising Sun.' He shows the course of law and order that transforms a Japanese citizen into a patriot and warrior, and points to the masterly preparation for war, based on scientific principles, which Japan has made a national business.

"One of the most entertaining and at the same time one of the most instructive books thus far written about the war in the Far East."

—*Army and Navy Journal.*

"Though his book abounds in adventure and incident, including experiences among Chinese bandits, his most surprising chapters are those on the triumphs of Japanese hospital methods."—*Chicago Record-Herald.*

"Each of the chapters reads like a thrilling story, and some of the subjects will show that the materials are of the most valuable kind."

—*St. Louis Globe-Democrat.*

"Dr. Seaman's observations standing alone would be invaluable, but he has given them truer scientific worth by comparing the condition of the Japanese army with that of the armies of the other nations in all the modern mass."—*Baltimore Herald.*

"'Banzai Nippon,' which being translated means, it appears, 'ten thousand hurrahs for Japan,' is the first phrase and the last of Dr. Seaman's book, and properly so, for the burden of the story is to show how wisely and well the Japanese are carrying on the disagreeable business of war—not in the matter of strategy and such like, for upon these things Dr. Seaman does not dwell, but in the article of keeping the soldiers fit and eliminating almost entirely the loss by preventable disease which in previous wars has killed its five hundreds at least where bullets have killed its hundreds. Dr. Seaman saw service as military surgeon in the volunteer army of the United States in Cuba, in the Philippines, and with the allies in China at the time of the Boxer troubles. He is, therefore, a man of experience."—*New York Times.*

Forty-five Years Under the Flag.

By WINFIELD SCOTT SCHLEY, Rear-Admiral, U. S. N. Illustrated. 8vo. Cloth, uncut edges, and gilt top, $3.00 net.

About one-third of Admiral Schley's volume is devoted to the Spanish War, in which he became so great a figure. He tells his own story in simple and effective words. His recollections are constantly reinforced by references to dispatches and other documents.

Readers will be surprised at the extent of Admiral Schley's experiences. He left the Naval Academy just before the outbreak of the Civil War and saw service with Farragut in the Gulf. Three chapters are devoted to Civil War events. His next important service was rendered during the opening of Corea to the commerce of the world, and the chapter in which he describes the storming of the forts is one of thrilling interest. Another important expedition in his life was the rescue of Greely, to which three chapters are devoted. Two other chapters pertain to the Revolution in Chili, and the troubles growing out of the attack upon some of Admiral Schley's men in the streets of Valparaiso.

Altogether the book contains thirty-eight chapters. It has been illustrated from material furnished by Admiral Schley and through his suggestions, and makes an octavo volume of large size. It will appeal to every true-hearted American.

The author says in his preface: "In times of danger and duty the writer endeavored to do the work set before him without fear of consequences. With this thought in mind, he has felt moved, as a duty to his wife, his children, and his name, to leave a record of his long professional life, which has not been without some prestige, at least for the flag he has loved and under which he has served the best years of his life."

"Rear-Admiral W. S. Schley's 'Forty-five Years Under the Flag' is the most valuable contribution to the history of the American Navy that has been written in many a year."—*New York Times.*

"The author's career is well worthy of a book, and he has every reason for pride in telling of his forty-five active years in all parts of the world."

—*Edwin L. Shuman in the Chicago Record-Herald.*

"It is a stirring story, told with the simple directness of a sailor. Its reading carries the conviction of its truthfulness. The Admiral could not have hoped to accomplish more."—*Chicago Evening Post.*

"He has told his own story, in his own way, from his own viewpoint, and goes after his detractors, open and above board, with his big guns."

—*Washington Post.*

"It is a work that will interest everyone, from the sixteen-year-old schoolboy who is studying history and loves tales of stirring adventure to the grandsire whose blood still pulses hotly with patriotic pride at the recounting of valiant deeds of arms under our starry flag."—*Boston American.*

"The Admiral tells the story well. His is a manly and straightforward style. He leaves nothing to doubt, nothing open to controversy."

—*Baltimore Sun.*

BY CYRUS TOWNSEND BRADY.

The Conquest of the Southwest.

The History of the Mexican Wars. Illustrated. 12mo. Cloth, $1.50 net.

"In style the narrative is clear, simple, and graphic. The maps, plans, and illustrations provided add much to the interest and value of the volume. Moderate—in spite of certain striking and even accusatory assertions—reasonable, thoughtful, absorbing, the book should become a classic of its kind."
—*Chicago Herald.*

"The book is a most valuable contribution to American history."
—*St. Louis Star.*

Commodore Paul Jones.

A new volume in the GREAT COMMANDER SERIES, edited by General James Grant Wilson. With Photogravure Portrait and Maps. 12mo. Cloth, $1.50 net.

"A thousand times more interesting than any of the so-called historical romances that are now in vogue."—*Spirit of the Times.*

"Mr. Brady's vigorous style, vivid imagination, and dramatic force are most happily exhibited in this book."—*Philadelphia Press.*

"Incomparably fine. Being the work of a scholarly writer, it must stand as the best popular life yet available. The book is one to buy and own. It is more interesting than any novel and better written than most histories."
—*Nautical Gazette.*

Reuben James.

A Hero of the Forecastle. A new volume in the YOUNG HEROES OF OUR NAVY SERIES. Illustrated by George Gibbs and others. 12mo. Cloth, $1.00.

"A lively and spirited narrative."—*Boston Herald.*

"Mr. Brady has made a stirring tale out of the material before him, one of those brilliant and forceful descriptions of the glories of the old wooden-walled navy which stir the blood like a trumpet call."—*Brooklyn Eagle.*

D. APPLETON AND COMPANY, NEW YORK.

COLUMBUS AND WASHINGTON.

The Story of Columbus.

By ELIZABETH EGGLESTON SEELYE. Edited by Dr. Edward Eggleston. With 100 Illustrations by Allegra Eggleston. Delights of History Series. 12mo. Cloth, $1.75.

"This is no ordinary work. It is preeminently a work of the present time and of the future as well."—*Boston Traveler.*

"Mrs. Seelye's book is pleasing in its general effect, and reveals the results of painstaking and conscientious study."—*New York Tribune.*

"A very just account is given of Columbus, his failings being neither concealed nor magnified, but his real greatness being made plain."—*New York Examiner.*

"The illustrations are particularly well chosen and neatly executed, and they add to the general excellence of the volume."—*New York Times.*

"A brief, popular, interesting, and yet critical volume, just such as we should wish to place in the hands of a young reader. The authors of this volume have done their best to keep it on a high plane of accuracy and conscientious work without losing sight of their readers."—*New York Independent.*

The Story of Washington.

By ELIZABETH EGGLESTON SEELYE. Edited by Dr. Edward Eggleston. With over 100 Illustrations by Allegra Eggleston. Delights of History Series. 12mo. Cloth, $1.75.

"One of the best accounts of the incidents of Washington's life for young people."—*New York Observer.*

"The Washington described is not that of the demigod or hero of the first half of this century, but the man Washington, with his defects as well as his virtues, his unattractive traits as well as his pleasing ones. . . . There is greater freedom from errors than in more pretentious lives."—*Chicago Tribune.*

"The illustrations are numerous, and actually illustrate, including portraits and views, with an occasional map and minor pictures suggestive of the habits and customs of the period. It is altogether an attractive and useful book, and one that should find many readers among American boys and girls."—*Philadelphia Times.*

"Will be read with interest by young and old. It is told with good taste and accuracy, and if the first President loses some of his mythical goodness in this story, the real greatness of his natural character stands out distinctly, and his example will be all the more helpful to the boys and girls of this generation."—*New York Churchman.*

D. APPLETON AND COMPANY, NEW YORK.

STANDARD HISTORICAL WORKS.

History of the People of the United States,

From the Revolution to the Civil War. By JOHN BACH MCMASTER. To be completed in Seven Volumes. Vols. I, II, III, IV, V, and VI now ready. 8vo. Cloth, gilt top, $2.50 net per volume.

The Beginners of a Nation.

By EDWARD EGGLESTON. A History of the Source and Rise of the Earliest English Settlements in America, with Special Reference to the Life and Character of the People. The first volume in a History of Life in the United States. Small 8vo. Gilt top, uncut, with Maps. Cloth, $1.50.

The Transit of Civilization,

From England to America in the Seventeenth Century. By EDWARD EGGLESTON. Uniform with "The Beginners of a Nation." Small 8vo. Gilt top, uncut. Cloth, $1.50.

The Household History of the United States and its People.

By EDWARD EGGLESTON. For Young Americans. Richly illustrated with 350 Drawings, 75 Maps, etc. Square 8vo. Cloth, $2.50.

Bancroft's History of the United States,

From the Discovery of the Continent to the Establishment of the Constitution in 1789. (Also *Edition de Luxe*, on large paper, limited to one hundred sets, numbered.) Complete in six volumes, with a Portrait of the Author. 8vo. Cloth, uncut, gilt top, $15.00 net; half calf or half morocco, $27.00 net; tree calf, $50.00 net.