

department a free agent to sustain its great responsibility and gave it the Quartermaster's Department for collaboration and assistance. In this they were in advance of the methods of all other armies; but the Regulations issued one-third of a century later fettered the medical department with the bonds of slavery. The surgeon dropped to the status held by him in foreign armies as the mere attendant on the wounded when permitted by the officers of another department to come into personal contact with them. Even the medical director, a director in name only, was ordered to take his post for professional work at the principal depot.

The Regulations of 1861 found us engaged in a great war, with the army medical department responsible before public opinion for the care of the wounded, yet unable to accomplish anything without the consent and active cooperation of officers who were not held to this responsibility. Many of these officers were volunteers ignorant of their power under the Regulations, but all were actuated by the patriotic desire of accomplishing the end in view, of doing the best for the wounded under the conditions of the time. The medical work on the battlefields of the civil war progressed, therefore, under an intelligent appreciation of what the Regulations should have been rather than of what they were, and as a result, the excellent system of field hospitals and associated ambulance trains was developed.

Although at the close of the civil war the medical department of the army was trained into efficiency by its long experience, and although later, in 1887, it was strengthened by the formation of a trained hospital corps, wholly under its command, the conditions existing at the outbreak of the Spanish-American war in 1898 were most unfavorable for efficient service. At this time the medical staff and the hospital corps of the regular army were insufficient for the proper care of a command of twenty-five thousand men in time of peace. Suddenly the strength of the army, regular and volunteer, was raised to two hundred and eighty-five thousand men. Surgeons from civil life were appointed by the President as chief surgeons of corps, divisions, and brigades, and by the governors of States as regimental surgeons and assistants. Most of these officers were able surgeons and physicians, but few of them had had any experience of the duties pertaining to the medical department of a large army. Some had seen service in the national guards, but this was rather detrimental than otherwise, as it gave them an exaggerated idea of the importance of the regiment as a unit of organization. The law authorizing the muster in of volunteer troops provided for a surgeon and two assistants for each regiment, but there was no provision for any privates of the hospital corps. Transfers from the line of the volunteer army to the regular hospital corps were authorized, but the volunteer soldiers did not care to leave their comrades in the State regiments to accept service in the regular army; and, moreover, company and regimental officers did not look favorably upon such transfers. The medical department of the army was therefore met at the outset with the difficult task of raising and educating a hospital force of about five thousand men when it should have been organizing such a force for field service. As troops were being concentrated for an immediate invasion of Cuba and Porto Rico, instructions were issued looking to the organization of field hospitals and ambulance companies for divisions, by the consolidation of the regimental medical force and equipments. Great difficulty was experienced by chief surgeons of corps and divisions in effecting this organization, first, by the opposition of regimental medical and line officers to the breaking up of the regimental hospitals; second, the regulation allowance of one ambulance to each four hundred men and one four-horse wagon to each six hundred men; the effective force had to be built before being issued; and, third, the nine hundred hospital corps privates required to man the division hospitals and ambulance companies of each army corps had to be enlisted or transferred from the line before their services could become

available. To perfect the field hospital organization of the army which invaded Porto Rico, the hospital personnel and equipment of commands remaining in the home camps had to be drawn upon, greatly to the detriment of the latter. Less difficulty was experienced in organizing the hospitals of the divisions of the Fifth Army Corps which invaded Cuba, as most of the regiments of this corps were regular regiments, each of which brought some hospital corps men and ambulances to the point of embarkation at Tampa, Fla. Long before the embarkation of this corps its field hospitals were in condition for efficient service, and although its ambulance companies were not filled up to their intended strength, nor fully equipped with wagons, horses, and harness, those sections which had their equipment completed were well drilled in hospital corps work and ready for active service. Each hospital had about eight six-mule wagons to haul its tentage and supplies. Operating tents were provided with enamelled-steel folding operating tables, steam sterilizers and water heaters, bath tubs, and other necessary furnishings. Subsequent events, however, rendered these preparations comparatively valueless. When the command embarked on the transports, the baggage wagons and mules, the ambulances and horses, and a large part of the equipment of each of the hospitals were left behind by order of the military authorities, to be forwarded after the troops on later transports. With the exception of a few ambulances, none of this medical provision thus left behind succeeded in reaching the army investing Santiago de Cuba. Even the small regimental medical and surgical chests were not available at the time the enemy was encountered because the transports, in accordance with military orders, stood out to sea after landing the troops. The medical officers of the command recognizing the impossibility, under existing orders, of giving any systematic aid to the wounded of a probable engagement, made the most strenuous efforts to recover some of their hospital supplies and equipment from the transports, and had such articles as they succeeded in obtaining carried by hand litters from the landing place toward the front. In this way a part of the equipment of the division hospitals was landed and utilized at the front as a field hospital and at Siboney as the nucleus of a base hospital. The tents of the reserve divisional hospital were landed to increase the shelter at Siboney, while the operating equipment and stores were retained on one of the transports, the *Olivette*, to outfit her as a hospital ship. The medical department of the army was severely criticised at the time of the attack on Santiago for its failure to have on hand all the material and equipment of its division hospitals in rear of the firing line of the divisions engaged; but this failure was in no part due to the carelessness or inefficiency of medical officers. The responsibility lay with the military authority which ordered and superintended the embarkation at Tampa, the landing at Daiquiri, and the immediate advance on Santiago. Military necessity may require an assault before the medical stores are on the ground, but the medical department is no more responsible for the consequent failure to have every comfort provided for the wounded than it is for the number killed and disabled in the attack.

Meanwhile in the home camps, the camps in the United States, the condition of the division hospitals became changed to meet changed conditions among the troops. The sudden ending of the campaigns in Cuba and Porto Rico rendered further preparation for battlefield service unnecessary. The division hospitals were therefore fitted up as stationary hospitals for the care of the sick. Regimental medical officers were returned to their regiments, while acting assistant surgeons were assigned to duty in the wards; trained female nurses were employed on contract; tent wards were framed, floored, and furnished with many articles of comfort which could not be carried with a field hospital in the presence of an enemy. In the camps regimental hospitals of ten beds each were established for the treatment of slight ailments until cured, and for the care of serious cases until their

transfer to the division hospital was effected. This system was continued until the return of the volunteer regiments to their homes for muster out.

The troops forming the army of occupation in Cuba and Porto Rico were distributed at various military stations, at each of which a post hospital was organized as in the medical service of the army in the United States in times of peace.

In the Philippine Islands a field-hospital organization based on that of the civil war was organized as soon as the men and materials were landed from the transports. The delay involved in accumulating near Manila a military force sufficient for a successful attack on the city gave time for the medical department to have its supplies available and its hospital corps men efficient. The wounded in the engagement were comfortably provided for by 7 P.M. of the day of the advance on Manila. After the occupation of the city, regimental hospitals were established near the quarters of each regiment, while the field-hospital equipment was utilized as the nucleus of what became afterward a large general hospital.

During the subsequent insurrection, lightly equipped field hospitals followed the troops to care for the wounded and put them in proper condition for transportation by rail to Manila. Later, when the advance reached San Fernando, a field division hospital was established at that place, to which the wounded from the columns pursuing the enemy were brought by rail. Later still, when the troops moved in comparatively small commands after detached bodies of the insurgents, small field hospitals accompanied the expeditionary forces to bring the wounded back to San Fernando, or to the station on the railway constituting a temporary base. Ambulances sent from the United States proved to be too heavy for the soft muddy roads in the field of operations. Recourse was therefore had to light native wagons, carromatas, and to litters carried by hired coolies, with an intelligent hospital corps man in charge of each litter. Our medical officers were prompt to adapt their methods to the conditions confronting them and the facilities at command.

In the armies of all civilized nations special provision is now made for the care of the sick during campaigns, for the prompt removal of the wounded from the battlefield, and for their transportation with despatch and in comfort to well-appointed hospitals distant from the field of hostile operations. This provision includes field hospitals, with litter bearers and ambulances operating between the hospitals and the front. The establishment of collecting stations and ambulance stations is required by Regulations, the former at some sheltered point near the fighting line, the latter in a more distant and less exposed position. Battlefield conditions vary exceedingly, chiefly owing to topographical features. Hence no regulation distance between these establishments can be adhered to. In some armies four men of each company of the line are trained as litter bearers, to aid the wounded of their own company or regiment to the collecting or first-aid stations, where they transfer them to the care of the hospital corps. In other armies the bearer companies of the hospital corps are responsible for the care and transportation of the wounded from the front to the ambulance stations, to the exclusion of all assistance from the men engaged with the enemy. In reading accounts of medical organization for battlefield service a distinction must be made between the terms *company bearers* and *bearer companies*. The former applies to the few men in the fighting line of each company who are detached as temporary aids to the medical department, the latter to the men of the hospital corps who have been specially trained for this very purpose. There is no question as to which is the better method. To detach a percentage of the fighting force for hospital corps duty at a time when the whole strength of the line of battle may be required against the enemy is a dangerously expensive way of providing the medical department with the necessary number of litter bearers.

The field medical service of the German army was perfected during the war of 1870. Its regimental ser-

vice is well defined, consisting of two medical officers to each battalion of about one thousand men, with a hospital assistant and two company bearers for each company and a medical supply wagon for each regiment of three battalions. Their field of duty in battle is between the skirmish line and the collecting stations. Besides the special aid on the fighting line the Germans have a bearer company of about two hundred and fifty men to each division and a similar company as a reserve to each corps. To thirty-six thousand troops forming a corps of two divisions they have, therefore, about seven hundred and fifty men for bearer duty; but the field hospitals of the corps are manned by about six hundred enlisted men, so that, exclusive of company bearers loaned from the line, the strength of the hospital corps on the field is equal to 3.75 per cent. of the fighting force. Each bearer company has attached to it eight ambulance and five store and baggage wagons. For each division six field hospitals are provided, each of which has a capacity of two hundred beds and may be divided into two sections. The enlisted force attached to each, including the drivers of eight or nine store and baggage wagons, consists of about fifty men.

In the French army there are, first, a regimental service to give aid to the troops in camp, on the march, and during an engagement; second, an ambulance hospital system to supplement the regimental service during marches and in camps, to receive the wounded from the battlefield and to prepare them for further transportation; and, third, a system of field hospitals to relieve the ambulance hospitals, to continue the preparation of the wounded for transportation to the rear, to treat the sick and wounded on the spot, and, occasionally, to reinforce the ambulance hospitals on the battlefield.

The regimental service consists of the medical staff with a hospital orderly for each company, a force of company bearers, and a wagon for the transportation of medical supplies. The bearers consist of a sergeant from the regiment, a corporal from each battalion, and four privates from each company. The hospital orderlies care for the sick when the command is on the march or in camp. During action they are at the collecting stations, to which the wounded are brought by the regimental bearers. When a battle is imminent the latter report to the surgeon for duty; after the action is over they return to the ranks.

The ambulance hospital of each division has a large medical staff, with thirty hospital orderlies and ninety-eight litter bearers, while the train is manned by two officers and eighty-eight men, sixty-four of whom are teamsters and the others orderlies, workmen, blacksmiths, saddlers, etc. This hospital is divided into two sections.

The field hospitals have no ambulances, their wheeled transportation consisting only of heavy wagons for supplies. The number of these hospitals attached to an army is determined by the Minister of War.

During the campaign against Napoleon the medical officers of the British army were well aware of the advantages accruing to the wounded from the methods introduced by Barons Larrey and Percy, and made many appeals to the government to be permitted to organize companies of ambulance corps men and litter bearers; but these were uniformly disapproved, as the Duke of Wellington objected to having the movements of his troops hampered by these wagons. Wounded Frenchmen were succored while the din of battle was yet in their ears, while their British opponents had to lie exposed, not only during the continuance of the struggle, but during the long watches of the night, until arrangements were perfected for their removal. The available wagons of the supply department and such as could be hired or impressed into service were brought up along with the bandmen, camp followers, and hired laborers to give the long-delayed aid and transport the sufferers to the hospitals. The stretchers used in loading consisted of a canvas bed between two pikes or poles, with no cross pieces to keep them apart. The long-continued wars of this period improved the organization and internal

economy of the British field hospitals, but effected no immediately beneficial change in their methods of transportation. Nor was anything done until the outbreak of the Crimean War, when a hospital conveyance corps was hastily organized and shipped with the troops. This was so decided a failure that the work of transporting the wounded had to be transferred to the subsistence department. The wagons of the conveyance corps were too heavy; no provision was made for repair in case of accidents; and the men were old, broken-down, and often dissipated soldiers weeded out of the regimental ranks rather than selected on account of special fitness for important duties. A medical staff corps was then organized, but this failed on account of its being composed of hired civilians. In 1873 a hospital corps of enlisted men was authorized. During the military operations of recent years in many parts of the empire, British medical officers have had opportunities of improving their methods, and have so profited by them that much commendation has been bestowed upon the army medical department for its efficiency during the war now in progress in South Africa. Sir William MacCormack and Mr. Frederick Treves, who were sent by the British government to the seat of war as consultants, have testified to the successful organization and efficient work of the department from the first aid stations with the troops actually engaged to the general hospitals at the base of supplies. Officers, enlisted men, newspaper reporters, and, in fact, all who have written of this subject have borne testimony to the bravery and efficiency of medical officers and men and the abundance of their supplies. Lord Methuen, after the battle of Modder River, called attention to the splendid hospital arrangements, stating that on the afternoon of the day after the battle all his wounded were on their way to Cape Town.

An infantry division of the British army comprises two brigades, with three attached field batteries and a company of engineers. Each brigade consists of four battalions, or about four thousand men. Each battalion, artillery division, and engineer company has assigned to it a medical officer, who accompanies it into action with his orderly, to give first aid to the wounded, while the regimental bearers are ready to carry the first cases to the collecting or dressing stations.

To each brigade is attached one bearer company consisting of three officers, one sergeant-major, twelve sergeants and corporals, one bugler, and forty-four privates of the royal army medical corps, with thirty-eight men of the army service corps for transport duties. The men of the bearer company relieve the regimental bearers and bring the wounded to an advanced ambulance post, where there are wagons to carry them to the dressing station. This station is organized in some building out of the line of fire, or if no building is available the operating tent is pitched. The major of the bearer company, with one other medical officer, four non-commissioned officers, and four privates, one of whom is a cook, are on duty here, to examine and dress wounds, administer medical comforts, and place the wounded in ambulances to be carried to the field hospital.

Twelve field hospitals are attached to the corps of three divisions and attached troops, numbering in all about thirty-four thousand fighting men. Each is equipped for one hundred beds, but is so organized that sections of twenty-five beds may be unpacked and used separately. The personnel of each is four medical officers, one quartermaster, one sergeant-major, eleven sergeants and corporals, and twenty-three privates of the medical corps, with a sergeant and nineteen privates of the army service corps. As these hospitals have to accompany the troops, the wounded are sent as soon as possible to a post on the lines of communication. For service in the bearer companies and field hospitals an enlisted strength is provided equal to four per cent. of the fighting force. This percentage does not include the temporary services of the regimental bearers.

The lines of communication in the present campaign in South Africa are long. For the wounded who are

unable to bear the fatigue of a long journey to the base of supplies, stationary hospitals have been provided along the line of rail. Each of these is equipped for one hundred beds in two sections of fifty beds. The personnel is similar to that of the field hospital, but without the army service men. Buildings are used when available, otherwise tents to form a camp are forwarded from the base.

General hospitals at the base of supplies have each accommodations for twenty officers and five hundred wounded men. Four of these were mobilized and sent with the first troops to Africa. Suitable buildings are selected. The staff of each consists of a colonel and seven officers, including a quartermaster, with eleven civilian surgeons, a woman superintendent and eight nursing sisters, two warrant officers, twenty-six sergeants and corporals, and one hundred and fifteen privates of the medical corps. Supplies of medical stores are established at the base and advanced depots are thrown forward to positions where the field hospitals and bearer companies can draw on them. Systematically equipped hospital trains bring the sick and wounded from the field and stationary hospitals to the base. Hospital steamers carry those invalidated to England.

These brief sketches of the field-hospital organization of the German, French, and British armies, supplementing what has been said concerning our own experiences in this line of military service, will enable the reader to appreciate the great advance that has been made since the time of the Napoleonic wars. Field-hospital organization is now so well understood that with a medical and hospital corps of sufficient numerical strength for the needs of the command, with liberal appropriations for the purchase of equipment and supplies, and with full control over its transportation, there need be and would be no failure on the part of the medical department to care for the wounded under the most severe strain of the trying times of war.

Charles Smart.

ARMY HOSPITAL CORPS.—For many years, during and after the revolution, the selection of the personnel of hospitals was left to the surgeons in charge. The stewards and ward masters, nurses and cooks were either detailed soldiers or civilians at the option of the surgeon.

The Army Regulations of 1821 for the first time distinctly provided that cooks and nurses in hospitals should be taken from the privates of the army, although such had doubtless been the usual practice before that date. During the civil war civilians, both men and women, were largely employed as nurses, especially in the general hospitals. They may also have been employed to a limited extent in the war with Mexico. With these exceptions, hospital attendants were obtained, from 1821 until the organization of the hospital corps in 1887, wholly by the detail of soldiers of the line, an arrangement which was always unsatisfactory, for it was difficult to secure the best men of the command for such duty, and the length of the detail being uncertain and promotion practically unknown, there was little to stimulate the ambition of the attendant.

The employment of civilians as hospital stewards for post and regiments, as well as for general hospitals, was still authorized in 1821; but as in the Indian wars which resulted from the spread of civilization westward, the activity of the army was transferred to the frontier, it no doubt became increasingly difficult to hire suitable civilians, while experience showed that it was desirable that the incumbent of this position should be amenable to military discipline and held to a definite term of service.

It therefore soon became the rule that hospital stewards should be detailed from the line, as is shown by the fact that in 1833 an order from the War Department gave authority for the enlistment of a hospital steward at posts where a suitable man could not be obtained from the command. But even though specially enlisted as hospital steward he was still mustered with a company

and regarded as a detailed soldier of the line, and in 1842 the adjutant-general decided that in case of emergency he could be required to perform military duty as such. Since the hospital steward could be returned to the line at any time at the caprice of the commanding officer, the necessity of securing for him a more permanent status was felt, and Congress in 1856 authorized the appointment of hospital stewards from the enlisted men of the army who should be permanently attached to the medical and hospital department. Commanding officers were, however, still permitted to detail, upon the recommendation of the medical officer, a soldier to act as hospital steward for field duty or at stations where there was no hospital steward. These men were at first known as acting hospital stewards. After 1864 they were called hospital stewards of the second class if detailed for duty at posts of more than four companies, and hospital stewards of the third class if at posts of four or less companies.

In 1862 the employment of civilians as cooks and nurses in the general hospitals having been authorized, the surgeon-general published regulations for the "Hospital Corps, U. S. Army," which was to be composed of civilians hired under contract for the period of one year, unless sooner discharged. Except in name this organization bears no resemblance to the present hospital corps, which was created by the act of Congress, March 1, 1887. This act required that hospital stewards should have served at least twelve months as acting hospital stewards, and have passed a satisfactory examination under the authority of the surgeon-general. It provided that privates of the hospital corps should be enlisted or transferred from the line, that acting hospital stewards should be appointed by the detail of suitable privates, and that the corps thus created should be permanently attached to the medical department, and should not be included in the effective strength of the army.

The number of men allowed in each grade was not fixed by this act. In 1896 the number of hospital stewards was limited by act of Congress to one hundred, which number constituted the allowance until the outbreak of the war with Spain, when an increase of one hundred hospital stewards was authorized for the war only. The number of hospital stewards was accordingly increased to two hundred, of whom one hundred and seventy still remained in service on March 31, 1900. By Act of Congress of May 26, 1900, the maximum allowance of hospital stewards was permanently fixed at two hundred.

There is no definite allowance of acting hospital stewards and privates, their number being regulated solely by the needs of the service.

The size of the hospital corps and the ratio of non-commissioned officers to privates will depend not only upon the actual size of the army, but upon the conditions existing at the time as respects active operations and the size of the commands in which the army is divided.

The high percentage of non-commissioned officers before the war with Spain was due to the large number of small posts, each of which was provided with a hospital steward, but required only a small detachment of privates. That the relative number of non-commissioned officers is less at the present time is due partly to the large number of privates stationed at general hospitals, at which the number of non-commissioned officers needed is comparatively small, and partly to the difficulty of securing a sufficient number of acting hospital stewards and the limitation by law of the number of hospital stewards.

For an army in active service or under the conditions which obtained in the Philippines, an allowance of hospital corps men, including non-commissioned officers, of at least four per cent. of the combatant strength is necessary. The chief surgeon of the Department of the Pacific (Philippine Islands) has estimated that acting hospital stewards in the proportion of one-half of one per cent. and privates in the proportion of three and one-half per cent. of the strength of the army should be provided for

his department. Hospital stewards are not included in this estimate.

Army Regulations provide that there shall be a hospital steward and three privates of the hospital corps at every military post, four privates if the garrison consists of two companies, and an additional private for each additional two companies. If the garrison consists of six companies, there will be two hospital stewards and an additional hospital steward for every additional six companies. At every post of two companies there will also be an acting hospital steward.

The needs of foreign service have made it necessary of late to diminish this allowance of non-commissioned officers at posts within the United States. In view of the increased size of the companies at the present time, the Secretary of War has authorized an allowance of four privates of the hospital corps for one-company posts, five for two-company posts, and one additional private for every two additional companies. In the Volunteers, as at present organized, each regiment has three hospital stewards who are regimental non-commissioned officers. There being no provision of law for a Volunteer hospital corps, one acting hospital steward and twelve privates of the hospital corps, all of whom belong to the regular army, are assigned to each regiment. Regular regiments serving without the United States are allowed one hospital steward, three acting hospital stewards, and twelve privates. On March 31, 1898, there were in service 100 hospital stewards, 103 acting hospital stewards, and 520 privates, a total of 723 men. The following table shows the strength and the distribution of the hospital corps on March 31, 1900:

STRENGTH AND DISTRIBUTION OF THE HOSPITAL CORPS, MARCH 31, 1900.

	Hospital stewards.	Acting hospital stewards.	Privates.	Total.
United States	92	110	1,905	1,207
Cuba	21	47	327	395
Porto Rico	4	19	93	116
Hawaii	2	3	22	27
Philippines and en route	47*	167	1,934	2,148
Atlantic transports	8	15	..
Pacific transports	8	25	148
Hospital ships	4	7	81	..
Total strength	170	369	3,502	4,041

* Seventy-four hospital stewards of Volunteers are also on duty in the Philippines.

The hospital steward is of the same grade of rank as ordnance sergeants, post quartermaster sergeants, chief musicians, principal musicians, first-class sergeants of the signal corps, chief trumpeters and saddler sergeants, and is only ranked among non-commissioned officers by the regimental sergeants major and quartermaster sergeants.

The duties of hospital stewards, as defined in the manual for the medical department, are to look after and distribute hospital stores and supplies, care for hospital property, compound and administer medicine, supervise the preparation and serving of food, maintain discipline in hospitals, watch over their general police, prepare reports and returns, supervise the duties of members of the hospital corps in the hospital and in the field, and perform such other duties as may by proper authority be required of them.

No other non-commissioned officer requires so much special knowledge for the proper discharge of his duties, or has such a variety of duties to perform, as the hospital steward. Like the first sergeant of a company the hospital steward must be a good disciplinarian, drill master, and general supervisor of the duties of the men under his control. He prepares or supervises the preparation of the numerous reports, returns, and other official papers, some of them voluminous and complicated, which must be made not only to the surgeon-general, but to the adjutant-general, the quartermaster-general, the chief of