

contingencies probable during their absence, or without an order from superior authority, which is equivalent to such knowledge. Usually the wagon trains of the supply departments, after unloading at the front, may be secured for the removal of the wounded to the base or to railway communication with it, where accommodations for their treatment or special means of transportation to other points have been provided. If more wagons are required than have been furnished by the departments, an effort should be made to obtain them by further issues to the troops.

If the division is operating as an independent command the hospital follows the rear of the marching column; but if it is a part of a larger command, the order of march may direct a temporary partition of the hospital train. It may be imperative, from the military point of view, to have the various divisions of the army well closed up and unbroken by baggage or other heavy wagons. The ambulances are then permitted to follow in the immediate rear of the command to which they belong; while the heavier transport wagons of the hospital fall into position with the regimental baggage, ordnance, subsistence, and forage wagons, in rear of the whole fighting force except the rear guard, or the command specially detailed for their protection. In this column the hospital wagons are generally accorded the lead. One of the ambulance officers is assigned to duty with the portion of the train thus detached. This separation is usually temporary, the completion of the day's march bringing the wagons into camp shortly after the troops and their ambulances have reached it, the time of their arrival depending on the length of the marching column and the character of the roads, the weather, etc. Occasionally, however, the conditions of the campaign may continue the detachment of these wagons for a longer period.

On the march the ambulances constitute the division field hospital. Following in rear of the troops, it picks up those who have fallen out of the column from accident or the development of disease. Usually each of these men has been examined by his regimental medical officer and furnished with a card of authorization to await the passage of the ambulances. One of the officers on duty with the ambulances receives the cards, admits the patients, and procures such articles as may be needed for their immediate treatment. This admission by card is needful to save the energies of the hospital surgeons and preserve the ambulance transportation for the more urgent cases. The regimental officer knows the men of his command, and can arrive at an accurate estimation of the conditions in a given case in less time than the hospital surgeons, who have no previous knowledge, and who must conduct their examinations while on the move. If the troops are raw and undisciplined, men may drop out of the ranks in large numbers without the sanction of the regimental surgeons, and besiege the ambulances for admission. There is no time, while being pushed forward by the troops in rear, to make a discriminating examination, and these applicants are permitted to enter the ambulances. At the next halt for rest a few of the unwarranted entries may be weeded out, if the time of the officers is not wholly occupied in examining other candidates for admission; but ultimately, if the march is long, the roads bad, or the weather oppressive, every seat is in use, and the surgeons are importuned for the accommodation which they can furnish only by discriminating between one fagged-out man and another. The preliminary examination by the regimental surgeon, and admission to hospital on his authority, prevent this strain on the energies of the ambulances.

The march has its sufferers as well as the battlefield, and these must be carried along and cared for; but simple exhaustion must be met by the general principle of halting the column at intervals for rest. If the military necessity requires a forced march, the commanding general must accept the loss of men which his line will suffer as the price of the position which he secures. The ambulances are an hospital, not a means of transportation for a jaded army. The sick and injured are to be

carried, not the merely exhausted, who by a short period of rest will be recruited and enabled to push forward to the end of their march.

At the conclusion of the day's journey, when not immediately in front of the enemy, the hospital camps in some suitable place in rear and not distant from the command. While awaiting the arrival of the baggage wagons the sick are examined and treated. Such as are considered fit for duty are directed to report to their regiments. A notification should be sent to regimental surgeons in the cases of men admitted during the march without their knowledge, and retained as unfit for duty at its conclusion, that these men may be accounted for on the regimental reports. In the mean time the surgeon in charge indicates to the hospital attendants who have been detailed as pioneers the position which he desires the tents to occupy. Wood and water are procured, and the kitchen, and such other fires as the season and climate may require, are lighted in front of the position to be occupied by the tents.

On the arrival of the heavy wagons, the pioneers unload and pitch as much of the hospital canvas as may be required for the accommodation of the sick, and subsequently the tents of the officers. The nurses unload and fit into the raised canvas such cots, bedding, and other articles as may be necessary, and thereafter the litter bearers transfer the sick from the ambulance wagons.

The cooks obtain their kitchen utensils, and furnish tea and coffee by the time the sick are in their cots. Later in the evening dinner is prepared. Pending the preparation of this meal the ambulances and wagons are parked in rear of the tents and the horses fed, watered, and groomed, while the litter bearers pitch their shelters between the wagon park and the hospital tents, and the pioneers trench around the wards to keep their floors dry in case of possible rain. When rain is probable the tent ropes should be relaxed, lest their contraction dislodge the pegs and endanger the stability of the canvas.

In the establishment of camp each man, by drill and experience, knows his particular duty, and, by doing it heartily, the whole is accomplished with ease and rapidity. Less than an hour suffices to transform a deserted field into an hospital settlement as orderly and perfect in its appointments as if it had existed there for weeks. With dinner the labors of the day are at an end, save for the camp guard over the wagons and horses, the hospital guard, and the special work of the doctor and nurse in particular cases.

Under certain conditions it is better to make the sick pass the night in the ambulance wagons than to pitch canvas for their shelter. Thus, when the camp ground is reached late at night and an early start is anticipated, if the evening is wet and discomfort would attend the transfer of the sick to the tents, or even if the roads are miry and it is undesirable to have the hospital canvas made so much heavier by the rain, the patients may be made to pass the night in the ambulances, these vehicles thus constituting the division field hospital in camp, as well as on the march. Under such conditions, if the number of sick is larger than can be accommodated in the ambulances, tents may be pitched for the slighter cases, while those of a more serious character remain undisturbed under the ambulance covers.

When *reveille* is sounded, the teamsters groom, feed, and water their horses or mules, the litter bearers pack up their blankets and shelters, and fill the ambulance kegs with fresh water; breakfast is eaten; the sick are examined, and medicines prescribed and provided for their use during the day, after which they are transferred to the ambulances, while their recent quarters and bedding are packed up and placed in the wagons, which have by this time reported for their loads. When the troops fall in, the ambulances are in line, ready to move off in rear of their command; but the transport wagons remain in camp until all the troops have passed, and then join the column of the supply train. Thus another day's march is commenced.

With veteran soldiers long marches may be made without a man presenting himself at the ambulances, but with raw troops the sick and worn-out accumulate from day to day, until it becomes necessary to make other provision for them. The medical director or chief surgeon of the army or corps arranges for the relief of the hospital by sending the cases to the base of supplies, in such transportation as he may be able to procure from the chief quartermaster. The duty of the hospital surgeons in this event is to select the cases for the rearward journey, retaining those whose disability is of a temporary character. The surgeon in charge provides them with rations for their journey, and such medicines, medical stores, and attendants as may be necessary.

In the absence of transportation, the sick may have to be left in quarters extemporized for their occupancy in some village or settlement, or, if need be, a portion of the field-hospital equipment may be left temporarily with them.

But the march leads to an encounter with the enemy. A severe engagement is not a matter of precipitation. Large masses of men move slowly. The position of the enemy is known with more or less accuracy for days before the battle is fought. If the army is on the defensive, the lines are established with care and deliberation; if on the offensive, the position of the enemy has to be felt before the dispositions can be made for the attack. This gives more or less time, which must be utilized by the surgeon in charge in preparing for the coming event.

First, as to the selection of a position. The medical director or chief surgeon of the corps or division, who has ridden along the formed or forming line of battle, indicates to the surgeon in charge, personally or by messenger, some notable point centrally situated in rear of the line, as a suitable location. The officer in command of the ambulance company, on his return from a survey of the lines and the roads leading therefrom, may be the bearer of this order. The particular locality in this neighborhood is selected by the surgeon in charge, with due consideration to proximity to water and fuel, dryness of site, facility of communication with main roads leading to front and rear, availability of neighboring buildings as hospital accessories, and shelter from artillery fire, although this last has usually been considered in the instructions of the medical director or chief surgeon.

It is better that the hospital should not be too near the front. Nothing is so depressing to the wounded, already more or less prostrated by their injuries, than exposure to fire while under the hospital flag, as it is suggestive of a disaster to the line of battle, with possible capture and deprivation of the kindly attention of friends, and of the home nursing on which they had calculated for the period of their convalescence. Even in the best-disciplined establishments the effect is sometimes demoralizing. The hospital cannot be moved to the rear, under these conditions, without detriment to the interest of the wounded already brought in; while those on the field have to be left for so much longer before obtaining the shelter and care which the hospital establishment was intended to provide. A distance of two or three miles from the front will prevent the unnecessary occurrence of accidents of this nature; while if the roads are good, there will be little delay in the transport of the wounded.

If the line of battle is driven back, the exposure of the hospital is an unavoidable result, unless anticipated by prompt action on the part of those in charge. A rearward move under the circumstances is not effected at the expense of the wounded on the field, as they are without the lines, and dependent for succor on the hospital arrangements of the other side.

The neighborhood of a farmhouse, country seat, or other occupied, or recently occupied, dwelling presents many advantages. It is a landmark, and will not so readily be missed by wounded soldiers seeking the hospital on foot. It will be in direct communication with

the roads, and water and fuel will be found near it; while if it and its vicinity become exposed to artillery fire, it offers a point of advantage for the display of the hospital flag. For these reasons our surgeons, during the civil war, preferred the vicinity of a notable dwelling as a site for their field hospitals, although, at least during the later periods, they seldom made use of its rooms as hospital wards, except as adjuncts, when an unusual influx of wounded necessitated some provision for shelter outside of their hospital canvas. Experience taught them that only by providing their own shelter, and thus rendering themselves independent of fortuitous circumstances, could they at all times and in all places be prepared to give adequate shelter to their wounded.

When the site is selected, or even prior to the decision as to the specific locality, the ambulances proceed to the front and report at the points considered suitable for ambulance depots. The litter bearers report to the medical officers on duty with regiments to bring the wounded from the first-aid stations to the ambulance depots. These first-aid stations are established by regimental medical officers as near as possible to the firing line while securing at the same time protection from infantry fire. The character of the ground determines their position. Advantage is taken of the shelter of a wall or rising ground. Oftentimes, as when the troops are fighting behind breastworks, the safest place for the first-aid station is on the firing line itself.

Meanwhile, in rear at the hospital site, the pioneers, nurses, cooks, and teamsters proceed with the routine work of unloading, pitching, and furnishing the tents, building fires and preparing beef soup, tea and coffee, while certain of these men, with the hospital stewards, pitch the operating tents or flies, and furnish them with their tables, instruments, and appliances under the direction of the operating surgeons.

The musicians and drum corps may be utilized as temporary aids to the medical department at the ambulance depots and hospital. A certain number detailed by name may, by a standing order, be made to report to the surgeon in charge as soon as their commands are deployed into line. This will bring them to the hospital in time to aid the pioneers in pitching the tents and preparing the hospital camp for the reception of the wounded. Thereafter they may be employed according to their individual capacities, the main body, however, being assigned to duty as the police party of the camp. Some medical officers have reported against the use of drum corps details for hospital purposes, on the ground that they are troublesome and unmanageable; but as others have credited them with valuable services, variations in the executive ability of those in charge are suggested in explanation rather than dissimilarity in the character of details from the same class of men.

Injuries of the hand or flesh wounds, attended with little hemorrhage or shock, are usually the first cases to reach the hospital. They have received primary dressings at the first-aid station or ambulance depot, and have made the journey thence on foot, anxious to get away from the scene of danger. Their wounds are examined and recorded, and each is assigned to the ward of a certain ward-master, who is thereafter held responsible for his comfort. Blankets, overcoats, and shelter tents are frequently thrown away in the rapid movements which sometimes prelude a battle; but if the soldier is in possession of these articles when wounded, they generally reach the hospital with him. The shelter tents belonging to these first-comers are pitched at regular intervals in rear of the hospital tents, forming the ward to which they have been assigned. The pioneers attend to this work, trenching the ground, weather-guarding the shelters, and providing some material, such as hay, straw, freshly cut grass, leafy twigs, wood shavings, etc., as a mattress. If no material available for bedding can be found in the immediate vicinity, one of the now empty transport wagons may be despatched to some point where a supply may be obtained, and if no such point is known a detachment of the drum corps may be sent out under responsible

leadership as foragers. During inclement weather these slighter cases may be housed in the hospital tents until their special camp is prepared. When thus systematically camped, the wants of the wounded are not likely to be overlooked, as each ward-master has his duties aggregated and defined.

But in the mean time the ambulances arrive from the field, and the whole staff of the hospital becomes at once actively engaged. Should the news from the front indicate that the tents will be insufficient for the accommodation of the wounded, the flies are removed and pitched as extensions of the wards, and the bedsacks filled with such suitable material as may have been collected in the neighborhood. If the extension of the wards by means of the flies is insufficient for the shelter of the incoming wounded, recourse may be had to the accommodation offered by the neighboring dwelling or its outhouses; but with the hospital establishment organized as stated, this will be needful only on exceptional occasions.

Should the enemy retire under pressure of the attack, it is not necessary for the hospital to follow the consequent advance of the command. The ambulances will have to make a longer journey to reach it; but it will be better for them and for the recently wounded to undertake this than for the whole establishment to make a forward move. Should the advance in pursuit carry the lines so far from the hospital as seriously to impair the usefulness of the latter, a forward move may be ordered, provided the wounded and sick can be carried in the ambulances and other wagons at the disposal of the surgeon in charge; but if the wounded cannot be thus transported, the orders should direct the hospital to be ready to move at a given hour, by which time all operations are expected to be performed and the wounded to be in condition to undertake a rearward journey in wagons specially provided for their transportation.

The surgeon in charge superintends the loading of these wagons, and provides for the comfort of the wounded by supplying the medical officer who is detailed from his regimental duties to accompany them with such articles of food and medicine as may be needful. He may have to part with some of his mattresses, bedsacks, and blankets in fitting out this train; but, if need be, a call may be made by telegraph to have them replaced from the purveying depot at the base of supplies.

Should the orders transmitted by the medical director require a forward movement of the hospital establishment, while no provision is made for the removal in the opposite direction of the wounded already accumulated, rations must be drawn from the general supply train and left with them, together with the necessary supply of medicines, stimulants, dressings, etc., required for the probable period of their stay and subsequent journey. Under these circumstances much of the hospital material may have to be left behind for the time being, under charge of an ambulance officer, with the wagons needful to insure its return to the hospital on the departure of the wounded to the base of supplies. The hospital may thus be temporarily disabled; but the greater its disability, the less is the likelihood of its being again called into serious action without time being afforded for recuperation; for the disability from this cause is proportioned to the loss inflicted on the command to which it is attached. If the command has suffered considerably, it will probably be placed in reserve for a few days, by which time the hospital material will have returned to the front.

But should a fiercely contested battle be fought, giving ten or twelve hundred wounded to each of the division hospitals, the lines become so broken and the troops so exhausted that time must elapse before either party is in condition for a renewal of the contest; ammunition, food, forage, and perhaps clothing wagons, have to be ordered up for use. The resumption of hostilities is a gradual process preceded by feints and manœuvres to develop the antagonist's strength, gain position, or await reinforcements. The existence of the hospital on the ground selected at the beginning of the battle may thus be prolonged, and ample time may be afforded the surgical staff

for the completion of its labors; but the uncertainty which is inherent in all battlefield conditions renders it important that every effort should be made to have the wounded in condition for removal at the earliest possible moment. As soon, therefore, as the battle has ceased, certain medical officers who have hitherto been on duty at the front are directed to report to the surgeon in charge for assignment to temporary duty at the hospital, where the progress of the operative work is correspondingly hastened; or, the extra surgical help may be derived from the base or general hospitals, especially if telegraphic and railroad connections have been kept up. The aid required under these circumstances is skilled surgical assistance, to enable the hospital to complete its field operations. It is provided, as has been seen, with the needful shelters, supplies, and appliances for a large aggregation of wounded, and with the surgical aid requisite for the operative work, provided time is afforded in which to accomplish it; but as this important element is not always available, surgical aid from the front or rear is always of value.

Should the troops in the line of battle be driven back, and the hospital establishment become exposed, the surgeon in charge must take prompt measures to prevent its capture by the enemy. All the wounded who have been brought in should be removed, with the hospital material, to a suitable site in the rear of the position newly assumed by the troops. The wounded left upon the field must be cared for by the medical department of the opposing force, but such as have reached the shelters prepared by friends should not be given up without the strongest efforts on the part of those in charge to save them. If there is, unfortunately, no time to effect the removal of all, such as must be permitted to fall into the hands of the enemy should be left with as comfortable surroundings as if they were still within the lines. Hospital canvas, bedsteads and bedding, medical and surgical supplies, and food must be left with them, and such medical attendance as their number may require should be detailed to remain with and surrender them. Shelter and furniture thus lost to the hospital should be renewed by immediate requisition on the supply depots.

If the disaster is so serious that none of the wounded can be removed, the surgeon in charge should endeavor to preserve the hospital organization by withdrawing the ambulances, wagons, surplus stores, and personnel not specially detailed to remain with the wounded. When the hospital establishment is thus disabled, an immediate renewal of hostilities necessitates the occupation of the available buildings in the neighborhood of the new site; but this utilization of pre-existing shelter would have been necessary if, without the repulse, the wounded had by their number called for increased accommodation. The graver cases are received and bedded in the dwellings or their outhouses, and the slighter cases camp in their canvas shelters as before. Food, medicines, surgical appliances, etc., are furnished from the wagons which have been saved, and the operating staff is reorganized if it has suffered loss.

If the disaster involves the capture of the transportation and supplies, while more or less of the officers and men have escaped, to undertake the duty of aiding the wounded who may fall in the skirmishes of a subsequent retreat, a work is presented to these members of the hospital establishment which will be accomplished with an efficiency depending, *ceteris paribus*, on their previous discipline. Notwithstanding breaks in their ranks, their training holds them together as a machine constituted for a specific purpose. Wagons for the transport of the wounded, and of supplies obtained from the hospitals or purveying depots, may often be obtained from the army trains. The light headquarters' wagons were, on several occasions during our civil war, transferred to the hospitals, to form the nucleus of an extemporized ambulance system, and the work of collecting, treating, and providing for the wounded has thus gone on with more or less of precision and efficiency.

When the army goes into winter quarters, and occa-

sionally during sieges, the character of the division field hospital may undergo a material change. As there is no immediate prospect of a move, the sick and wounded need not be sent away unless they have accumulated beyond the capacity of the hospital to accommodate them. Commanding officers approve of retaining the sick and wounded in the field hospital while in somewhat permanent camps; as the return of their men on recovery is insured; they become interested, therefore, in these field hospitals, and further the efforts of the medical officers in improving their condition. Under such circumstances lumber can usually be obtained, and the tents may be pitched upon frames, and be floored and weather-boarded as high as the eaves; shelves, tables, and benches may be put in as fixtures and furniture, and the ward be warmed by an open brick fireplace built at one end. Stoves are unmanageable under canvas, and extemporized underground furnaces and fires are dangerous. If the ground is damp, plank pathways are laid for access to all parts of the hospital camp and its grounds, which should be enclosed by a fence and thoroughly policed. As thus finished, the hospital presents an air of permanence and stability; but if kept in proper drill, a few hours' notice only is required to have it packed up and waiting its place in the column of march.

Ambulance wagons and litter bearers were first brought into use during the wars which followed the French Revolution. Prior to that time there was no first aid for the wounded in battle. Medical men, nurses, and medical and surgical supplies were not permitted to come to the front. They were regarded as impedimenta and retained with the baggage train about three miles in rear of the fighting line. Here during a battle care was taken of such of the wounded as were able to reach the place. Officers of high rank were carried to the rear by their men; but wounded soldiers unable to assist themselves had to lie upon the field until the battle was lost or won. If defeated, the army withdrew, leaving the disabled to fall into the hands of the enemy; if victorious, arrangements were made to have them brought to hospitals extemporized in the nearest village or town. Servants, bandsmen, and camp followers were sent to the front with all the needful or available wagons hastily impressed into the service for hospital duty. In 1792, D. J. Larrey, a young surgeon who had recently joined the Army of the Rhine, was greatly impressed with the inefficiency of the arrangements for the care of the wounded. He thought that those unfortunates who were dying from shock, exposure, or needless loss of blood should be reached and assisted during the progress of the battle. He held that an exposure of twenty-four hours, uncared for, on the field was a most undesirable preliminary to amputation in cases of gunshot fracture. His disapproval of the regulation method was strengthened when, some time later, he saw the wounded abandoned because before the arrangements for their removal were completed the military conditions necessitated a hasty retreat. With the consent of the commanding general he procured some light wagons and organized an *ambulance volante* or flying hospital intended to bring succor to the wounded and to remove them from the field. The first service of this ambulance company was so thorough a demonstration of its value that Baron Larrey was sent to Paris to organize similar flying hospitals for all the divisions of the French army. He joined Napoleon in his Egyptian campaign, and thereafter superintended the operations of the ambulances in the field until active hostilities ceased after the defeat at Waterloo.

Another French surgeon, Baron P. F. Percy, endeavored to solve the problem of prompt aid to the wounded on the field of battle. As the hospital trains were not allowed on the field on account of the uncertainty of the issue, the risk of their capture, and the certainty that they would be in the way during some part of the action, Percy conceived the idea of conveying to the front the essentials of surgical aid without blocking roads or impeding military movements. The surgical wagons which he constructed to effect this were modelled

on those of the light artillery. Each was drawn by six horses and carried eight surgeons and their orderlies, with instruments, litters, and supplies. When a sheltered spot near the fighting line was reached, the surgeons gave professional aid to the wounded who came to them, while the litters attached to the wagon were put to excellent use by the orderlies and men temporarily spared from the combatant ranks. This system contributed as much as Baron Larrey's ambulances to the immediate comfort and surgical safety of the wounded, but it left them on the field until the usual arrangements were made for their removal. Baron Percy recognized this inferiority of his method, and, having adopted Larrey's ambulances, he devoted his energies to the organization of a corps of litter bearers to operate in connection with the ambulances. This system was formally adopted for the Imperial Armies in 1813.

Up to the year 1821 the Army Regulations of this country were silent on the subject of medical organization for field service. The Regulations published in 1808 entitled, "The act for establishing rules and articles for the government of the armies of the United States, with regulations respecting the same," made no reference to the subject. The first official mention of medical transportation occurs in an enumeration of the duties of regimental surgeons in the "Military Laws and Rules and Regulations for the Army of the United States" issued in November, 1814. The medical officer was directed to attend at the commencement of a march and designate such men as should be permitted to ride or have their knapsacks transported in the wagons. Inasmuch as no special wagons were indicated the available baggage wagons were no doubt meant. The same regulations provided that "a two-horse wagon shall be allowed to each regimental hospital in which shall be conveyed a medical chest of two hundred or three hundred weight, and three other chests under lock and key for blankets and bedsacks, cooking utensils, and hospital stores."

In 1821, however, the Regulations compiled by General Scott prescribed the methods of furnishing aid on the battlefield, in language clear as to its provisions and yet so elastic in its requirements as to leave the medical department free to exercise discretionary powers. The medical director was authorized to establish field or movable hospitals, or ambulances as they were called in the revised edition of 1825, in advantageous positions behind the line of battle, with smaller sections organized in like manner to follow detached columns and even to give succor on the skirmish line. The Quartermaster's Department was directed to provide the wagons after consultation with the medical director, but these wagons were to remain under the command of an officer of that department.

During the period of uninterrupted peace which occurred at this time, War Department officials became absorbed in current work relating to the movements of small detachments of troops in the Western Territories. War on the great scale dropped from their consideration, and in consequence the 1821 provisions for battlefield service were omitted from the Regulations published in 1834, 1835, and 1841. The only provision for assistance to the disabled in these official publications shows the narrowness of mind resulting from official routine during those years. "For the accommodation of the sick and disabled a wagon will be attached to the rear-guard when necessary and practicable, and a surgeon will attend to give assistance and to see that no improper persons are suffered to avail themselves of the accommodation." The war with Mexico came upon us so suddenly that in a hasty reissue of the Regulations in 1847 there was no time to elaborate and incorporate a medical system for field service, and the medical department was left to do the best it could, trammelled, however, by its dependence for transportation on the Quartermaster's Department. System was evolved in the progress of the war, and the results were embodied in 1857 in the next issue of the Regulations. But in these there was a great lapse from the provisions of 1821. The latter made the medical