

been lost, until the volume of the circulation can be made up in other ways. A somewhat similar procedure has been recently advocated for the purpose of maintaining the blood pressure in cases in which the vaso-motor centre has been exhausted by shock—the pressure being applied to the abdomen and extremities by inflating a pneumatic rubber suit.¹

The principal indication for transfusion is severe hemorrhage. It may be said that in most cases the introduction of salt solution under the skin will be sufficient. Occasionally, where the absorption of such an injection does not take place or where every instant of time is of value, the intravenous route is to be selected. Rarely, if ever, will there be enough advantage in the use of blood to overbalance its greater dangers and difficulties, and the greater delay in administering it.

The repeated intravenous injection of small quantities (5–25 c.c.) of defibrinated lamb's blood has been advocated by Bier² for the purpose of bringing about the reactions described in a previous paragraph in cases of old, chronic tuberculosis. Some of his cases were encouraging.

Ralph C. Larrabee.

¹ Brit. Med. and Surg. Journ., March 5th, 1903.
² Bier: Münch. med. Wochenschr., 1901, Bd. XLVIII., S. 569.

TRANSPORTATION OF THE DISABLED ON LAND.

—The first systematized methods for the care of the wounded in battle and their removal from the field date from 1792, when Baron Larrey, chief surgeon of the French army under Napoleon I., established his system of *ambulances volantes*, or flying field hospitals. Shortly after, in 1800, Percy, another distinguished surgeon of that army, organized companies of *brancardiers*, or stretcher-bearers, whose duty it was to remove the wounded from the battlefield to a place of safety, where they could receive proper care.

Since that period increasing attention has been paid to this subject, until at the present day more or less elaborate systems of military hospitals, and means for transporting the sick and wounded to these hospitals are maintained by all civilized armies.

It should be explained in this connection that in foreign armies by the term "ambulance" is understood the entire movable field hospital, including medical and surgical supplies, the means of transportation, the animals and harness, and the personnel of the hospital officers and men of the sanitary force. In our army the term is restricted to the *ambulance wagon*, in which the sick and wounded are carried. The term ambulance corps in the United States Army comprehends the ambulance wagons, litters and other appliances for transporting the disabled; the baggage and subsistence wagons; the harness and animals, as well as the officers and men who are charged with their control and management. In this article the terms will be used in the same sense in which they are understood in the United States.

In our service the means of transportation, which usually accompany a moving command, are its ambulances

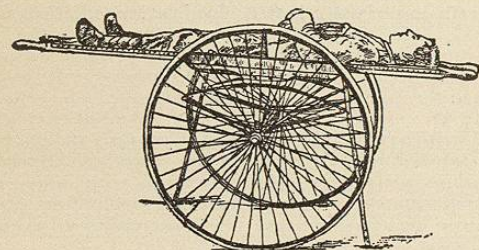


FIG. 4748.—British Wheeled Litter, Loaded.

and hand litters. At times, owing to the character of the country in which the troops are operating, as in regions without roads, the ambulances cannot be employed; in such cases other means must be resorted to. When, owing to excessive casualties or other exigencies,

sufficient ambulances are not available, army wagons, wagons or carts of the country, saddle, pack, and draught animals may supplement the ambulances. When rail or water transportation is available and practicable, railroad

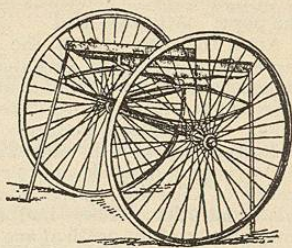


FIG. 4749.—British Wheeled Litter, without Litter.

trains and boats are employed, especially when large numbers of sick and wounded are to be removed to a considerable distance, as in the service of evacuation. It is a military principle that the operating force should not be embarrassed by the care of its sick and wounded any longer than necessary; this enables the field hospitals, which always accompany the moving army, to travel light, makes room for the wounded from an impending engagement, and diminishes the danger of infecting the well by those already diseased. Besides, base and general hospitals being more or less permanent institutions, are better supplied with the necessities and comforts for the care of the sick than would be possible in a hospital which accompanies a moving force.

Ordinarily patients from the battlefield will have to be carried on litters to the dressing station, from which point they are again carried by litters to the ambulance stations; here they are loaded into the ambulances for removal to the field hospitals. Other specially devised means that are used for the transportation of the disabled in the military service are the wheeled litter, caacolet, single or double-horse (or mule) litter, and the travois.

The hand litter has already been described in this work in the article on *Army Hospital Corps* by Major Bushnell, and will not be considered here.

The Wheeled Litter.—The wheeled litter is simply a litter mounted upon wheels, usually two in number, designed to be propelled by a single bearer. Numerous different patterns of such appliances have been devised, varying in design with the character of the service required of them. In some forms the bed for supporting the patient is removable, permitting of its use as a hand litter; in others, it is fixed permanently to the carriage; some are made to fold into a compact bundle to permit of ready packing or shipment; in another form, the litter is mounted between two bicycles, which are joined to the litter frame and to each other by interlocking bars; tricycles arranged "fore and aft" with reference to the litter have also been adapted to form the carriage. The simplest and most practical form consists of two light wheels and an axle, supporting a frame for the litter with a device for holding it in the horizontal position when at rest without the bearer's help. This device consists of two hinged bars of proper length fastened to each end of the frame or carriage, which are swung up and secured by suitable fastenings when the litter is in motion. Usually litters of this class are covered with a removable hood and are mounted upon springs. An excellent type was used by the British military surgeons in the recent war in South Africa, and is shown in Figs. 4748 and 4749. The wheels have steel spokes and rims, rubber tires, and ball bearings; the bed is made to take the British regulation litter, and is mounted upon elliptical springs; the litter is securely held in place upon the bed by means of two buttons with tightening screws. The great object of this carriage is said by its designer, Major McCormack, R.A.M.C., to have been "to obtain mobility, strength, and lightness combined with efficiency and a ready and easy means of transport for sick and wounded, no matter where a patient has to be transported from." Nevertheless, wheeled litters have but a limited range of usefulness. They were extensively tried during our Civil War for the purpose of removing the wounded from the battlefield, but did not meet with favor from our surgeons; they proved to be practically

useless over the rough ground upon which battles were fought. In moving patients from one part of a hospital to another, and in villages and towns where ambulance systems do not exist, their utility is undoubted; but in the military service their sphere of usefulness will be largely confined to work in and about hospitals, and in loading and unloading trains; they will here prove economical of men and comfortable to patients.

Horse-litters.—One form of horse-litter is the *caacolet*, which consists of a pack saddle, from each side of which

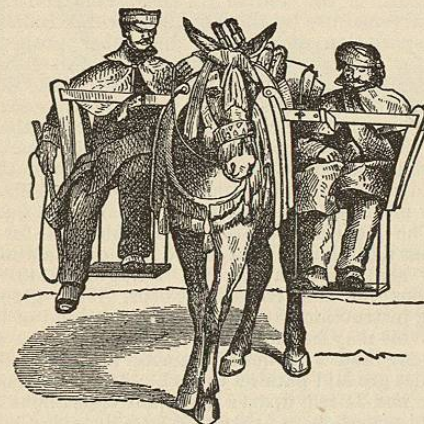


FIG. 4750.—British Crimean Caacolet. (After Weir.)

is suspended a seat or chair; in this seat the patient is carried in the sitting posture. This form of litter was extensively used by the English in the Crimean war, and by the French in Algeria and Mexico, apparently with satisfactory results. In our service trials were made during the Civil War with this form of litter, but the consensus of opinion of our medical officers, who had experience in its use, was decidedly against this method of transportation for sick and wounded. No doubt this unfavorable opinion was largely due to inability to secure properly trained animals, and perhaps also to the fact that other more satisfactory means were available.

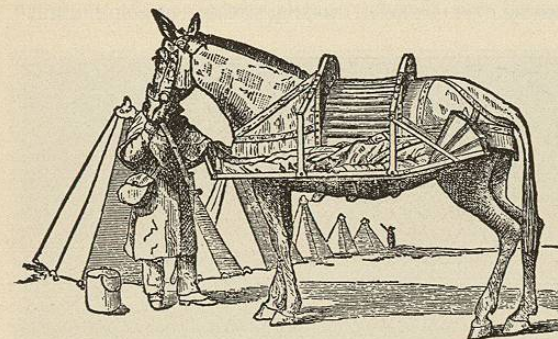


FIG. 4751.—British Crimean Mule Litter. (After Weir.)

Its sphere of utility should properly be confined to work over country that is inadmissible to wheeled transportation. Its successful employment requires strong, docile and well-trained animals, and a comparatively open country; it cannot be employed on a narrow trail running through a heavily wooded region. Fig. 4750 represents the caacolet used by the British in the Crimea.

During the same war the British also made successful use of a mule-litter in which a litter is slung horizontally from each side of a pack-saddle. Like the caacolet, this form of litter has not been favorably considered by our medical officers, and the same objections hold good with reference to it. An additional objection is its weight,

which, with its pack-saddle and bedding, is placed at one hundred and sixty-seven pounds; this, added to the weight of two patients, makes a formidable load for the average-sized horse or mule. Fig. 4751 illustrates the arrangement and general appearance of this kind of horse-litter.

In another form of horse-litter a single patient is carried in the recumbent or semirecumbent position upon the back of the animal, either upon a specially devised saddle and litter, or upon an improvised arrangement made by securing the ordinary hand-litter to a pack or riding saddle. An example of the former is the McElderry single mule-litter (Figs. 4752 and 4753), devised by the late Major Henry McElderry, Surgeon, U.S.A., with a view to its employment in operations against the Modoc Indians in the lava beds of California. In this, the frame is hinged, allowing its adjustment at different angles; the hinges also permit it to be folded compactly

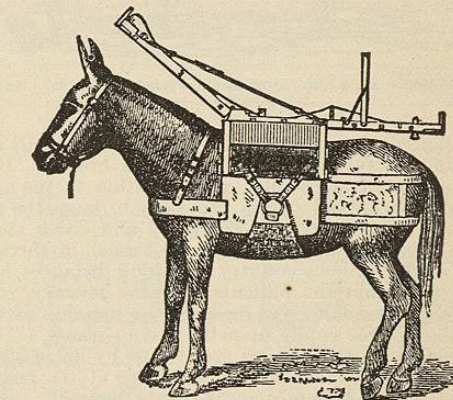


FIG. 4752.—McElderry's Single Mule-litter.

together for facility in its transportation. The saddle to which it is attached when in use is that known as the Mexican *aparejo*, now universally used in pack-trains. Some of the advantages claimed for it by its inventor are that "it is especially adapted for use in broken and mountainous country; long narrow and winding defiles, abounding in sudden and abrupt angles; and in places and under circumstances generally where no other kind of litter could be employed. A wounded man can be transported on this litter with entire safety on the back of any steady pack-mule or horse, taken indiscriminately out of the pack-train; the animal not requiring any special training before he will pack it, otherwise than that already received in the pack-train."

In the improvised form two stout wooden traverses are strongly lashed to the pommel of a riding or pack-sad-

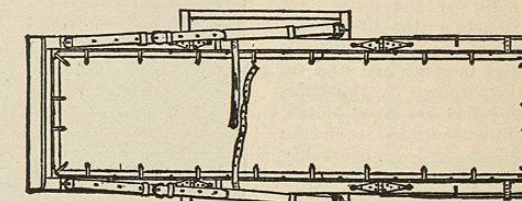


FIG. 4753.—Plan of McElderry's Single Mule Litter.

dle, preferably a pack-saddle; upon the outer ends of these traverses two wooden poles or bars are fastened in a longitudinal direction and parallel to each other, forming a framework upon which the litter rests and to which it is securely bound by ropes or other lashings.

The patient is carried in the recumbent posture with head toward the head of the animal. In this form of transportation but little lateral oscillation is experienced, though the jolting must be considerable. It is espe-

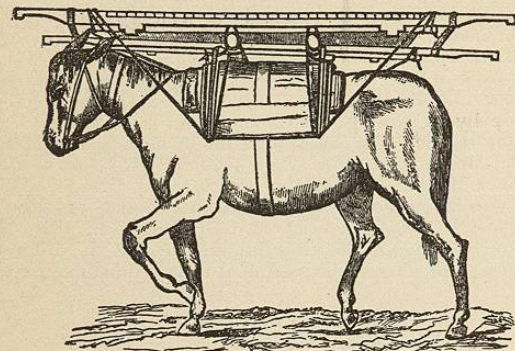


FIG. 4754.—Single Mule Litter used by the French in Mexico. (After Gouchet.)

cially adapted to mountainous regions where trails are narrow and the surface of the ground is broken. It is not economical of attendants, as in addition to the man who leads the animal one is necessary to keep the patient from slipping off in going up and down steep places. This method was used by the French in Mexico, through a mountainous country over long distances, and it is reported that the patients bore the journey very well, though complaint was made of the pressure of the forward bow of the saddle upon the patient's back. This was remedied by shifting his position or by using some kind of padding to increase the thickness of the bed at that point. Fig. 4754 represents the method then used. This adaptation is admirable in principle, and can usually be improvised from materials at hand.

The transport of sick and wounded by means of the two-horse-litter has commended itself to our military surgeons, and has been frequently employed in campaigns against Indians in the United States and in operations in the Philippine Islands. In this method a litter is suspended between two horses or mules in tandem; it is easily extemporized where suitable materials are at hand. In its construction two stout poles about sixteen feet and a half in length are required, and two cross pieces, about three feet long, which serve as traverses to keep the poles apart. The traverses forming the ends of the litter bed are fastened five feet from the front and rear ends of the poles; between them a piece of canvas, a blanket, or other suitable material is stretched and securely fastened to the sides of the poles and cross pieces. Sick and wounded men can be safely and comfortably carried over long distances by this form of litter. The objections to it are that two animals, and at least two attendants, are required for one patient, and that it cannot be employed upon narrow paths with short turns and steep declivities. At one time (1861) horse-litters of this pattern were regularly issued in our army to "posts whence they may be required for service on ground not admitting the employment of two-wheeled carriages." In these the poles

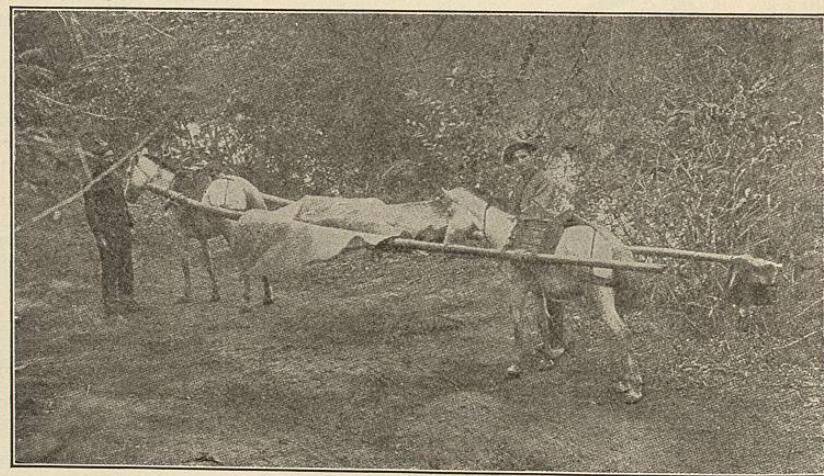


FIG. 4755.—Improvised Two-horse Litter, as used in Philippine Islands.

were hinged to permit their packing on pack-animals; the complete litter with straps and girths weighing 88 pounds. These litters are still recognized as means of transport; paragraph 1614, Army Regulations, 1901, authorizes their issue upon recommendation of the chief surgeon, though the writer is not aware that they have been so issued in recent years. In the improvised form they have been recently employed in the Philippine Islands (see Fig. 4755).

Another form of horse-litter, more economical of men and animals, is the Indian travois. This contrivance was in universal use by the North American Indians for the transportation of supplies and other property as well as for carrying their disabled. In this form the front ends of the litter poles are fastened to the sides of the animal like the shafts of a wagon; the rear ends drag upon the ground. One pole is slightly shorter than the other, in order that in passing an obstacle the shock may be received successively by each end and the motion be equably distributed. The travois is now recognized as a regular means of transport for the disabled in our service. The Medical Department Regulations for 1902 direct that ambulances Nos. 1 and 5 in each ambulance company shall carry a travois. Paragraph 148, Drill Regulations for the Hospital Corps, 1902, gives the following instructions for improvising this kind of litter:

"A travois may be improvised by cutting poles about 16 feet long and 2 inches in diameter at the small end. These poles are laid parallel to each other, large ends to the front, and 2½ feet apart; the small ends about 3 feet apart, and one of them projecting 8 or 10 inches beyond the other. The poles are connected by a cross bar about 6 feet from the front ends and another about 6 feet back of the first, each notched at its ends and securely lashed at the notches to the poles. Between the cross pieces the litter bed, 6 feet long, is filled in with canvas, blanket, etc., securely fastened to the poles and cross bars, or with rope, lariat, rawhide strips, etc., stretching obliquely from pole to pole in many turns, crossing each other to form the basis for a light mattress or improvised bed; or a litter may be made fast between the poles to answer the same purpose. The front ends of the poles are then securely fastened to the saddle of the animal. A breast strap and traces should, if possible, be improvised and fitted to the horse. On the march the bearers should be ready to lift the rear ends of the travois when passing over obstacles, crossing streams, or going uphill."

Colonels Greenleaf and Cleary, of the Medical Department of the United States Army, have each devised a travois which can be used either as a hand-litter or as a horse-litter. In both the shafts are made detachable,

being attached to the side poles of the litter proper by means of collars and pins; both can be rolled up, making them easy to transport in wagons or upon pack-animals. Lieutenant-Colonel Havard, Deputy Surgeon General,

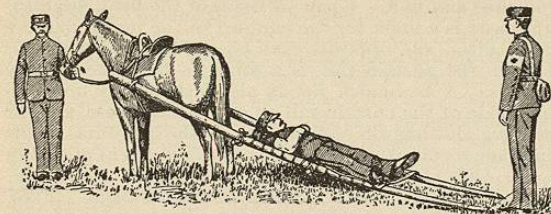


FIG. 4756.—Improvised Travois.

U.S.A., has more recently suggested that this form of litter could be further perfected by making the rear ends of the poles rest upon a narrow two-wheeled truck instead of dragging upon the ground.

The travois, in the absence of ambulances or other wagons, has proved to be a very satisfactory method of transportation by animals. It is comfortable, safe, easily improvised, and can be employed over rough and mountainous country where other methods of animal transportation are not feasible, as well as over level country. Upon a fairly level road the two-horse litter is probably preferable, and in the case of a fractured limb, there is less liability of disturbance of the fragments, as in this mode of transport the patient is carried in a horizontal position. For general utility and especially where economy in men and animals has to be considered, the travois will be found superior. Medical officers who have had experience with them look upon them with favor, and Havard has wisely suggested that two, to be carried by pack-mules to the front, be provided for each regiment in the field under circumstances where ambulances are not available. Fig. 4756 shows an improvised travois in its simplest form. In all these forms of litters intended to be drawn or carried by animals mules are generally to be preferred to horses, in that they are patient, more quickly trained, surer-footed, and accustomed to carry burdens.

Devices intended for attachment to the saddle, with the object of supporting a sick or wounded man upon a



FIG. 4757.—The Improved Army Ambulance, Pattern of 1900.

horse, have been suggested at various times; but on trial all such arrangements have been found to be impracticable. If necessary to support a disabled man on a horse, a comrade mounted behind him will answer the purpose, or a lean-back made of a blanket roll, a bag stuffed with grass, or a sapling bent into an arch over the cantle of the saddle, may be secured to the saddle and the patient bound to it.

The Ambulance.—The requirements of a good military

ambulance are that it shall be of sufficient structural strength, due regard being had to lightness, to withstand the rough usage to which it is liable in active service; so constructed as to permit its turning in a space equal to its length; it should be able to travel over rough, sandy, or muddy roads; comfortable to its occupants when partially as well as when fully loaded; capable of carrying patients both in the recumbent and in the sitting position; it should have provisions for carrying small quantities of dressings, food, stimulants, water, and patients' effects, without intruding upon its carrying capacity for patients; also so designed as to permit rapid loading and unloading. The present pattern of the United States Army ambulance (Fig. 4757, pattern of 1900), known as a Munson's modification, has been evolved from the older types and fulfils these requirements. It is an excellent wagon and possesses features that are found in no other military ambulance. It is a four-wheeled vehicle intended to be drawn by either two or four horses; the body is 9 feet long and 4 feet 7½ inches

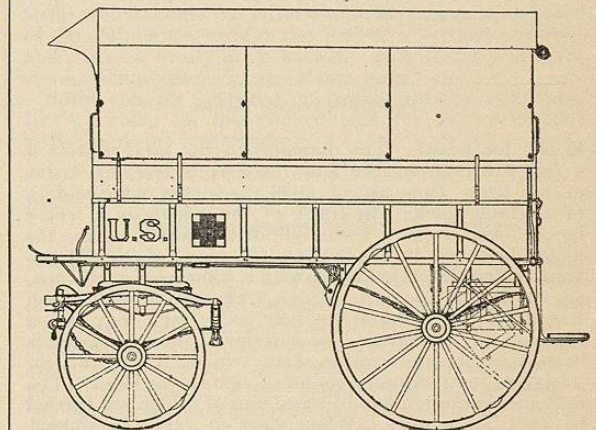


FIG. 4758.—Side View of Improved Army Ambulance.

wide, outside measurements; the height of the floor is 3 feet 8 inches above the ground. The space for patients is 7½ feet long and 4 feet 4½ inches wide; in front of this space is the driver's seat, wide enough for three occupants; under the driver's seat is a box 4 feet long, 10 inches wide and 16 inches high, for storing extra parts and other articles. The body is covered by a wooden roof supported by wooden bows; the height of the roof in its centre is 5 feet from the floor; the sides and rear end are provided with curtains, which can be rolled up; a division curtain, which also is made to roll up, extends across the wagon just back of the driver's seat; all curtains are made of pantasote; the roof is likewise covered with this material. At the rear is attached a step 2 feet above the ground; the rear of the body is closed by a tail-gate. The body is swung on the axles by both side and cross springs, and an auxiliary spring is placed just above the rear axle, which comes into play only when the load-weight exceeds

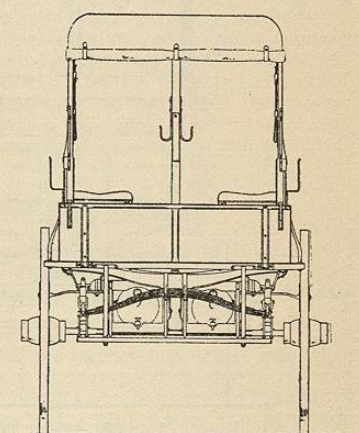


FIG. 4759.—Rear View.

400 pounds. The ambulance is provided with an efficient foot brake, operated by the driver; the brake lever passes through the centre of the footboard and is furnished with a ratchet which engages in a rack

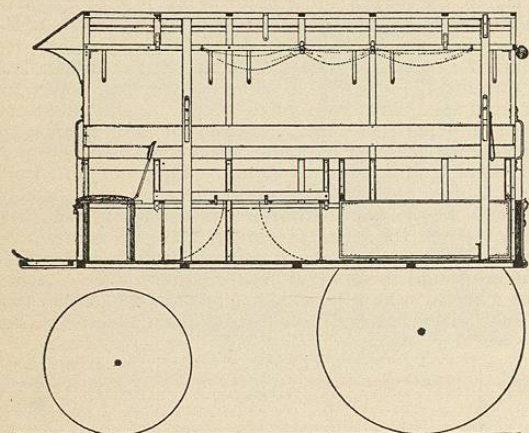


Fig. 4760.—Vertical Section.

in the footboard. The diameter of the hind wheels is 4 feet 2 inches, of the front wheels 3 feet, exclusive of the tires; tires are of steel, 2 1/4 inches wide and 1 1/8 of an inch thick; the track of the vehicle is 5 feet 2 inches over rims. Two cylindrical water tanks, 15 1/4 inches long, 10 1/4 inches in diameter, made of No. 22 galvanized iron, each provided with a compression bibcock, are suspended in stout wooden frames from underneath the body, just behind the rear axle; each tank has a capacity of 40 litres. The interior of the ambulance is fitted with four removable seats, two on a side, which, when not used as such, are hung against the sides. The cots are regulation hand-litters, four of which are carried by each ambulance. When used to carry recumbent cases two litters rest upon the floor; the other two are suspended by hooks and straps from the litter-supporting posts and the curtain rails respectively, 27 inches above the floor. The use of the hand-litter, instead of a special cot, allows the patient to be loaded into the ambulance without being transferred from the litter, upon

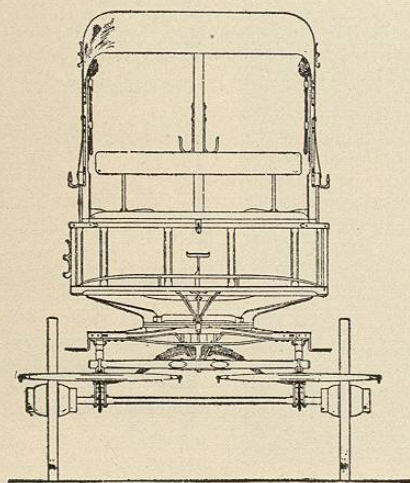


Fig. 4761.—Front View.

which he is carried to the wagon. The litter-supporting posts are wooden uprights, 3 inches square, placed 73 inches apart; the front post is placed 1 foot behind the driver's seat, and is stationary, being secured to the roof

and floor; the one at the rear is hinged at the top; when the upper berths (litters) are not to be used, it is strapped to the roof. When the upper berths are to be used, it is unstrapped, swung into a vertical position, and its lower end is secured to the floor by means of an iron shoe and bolt. Upon each side of the litter-supporting posts is a hook for the support of the inside handles of the litter, and opposite each hook, fastened to the inside of the curtain rail, is a strap to hold the outside handles. A hammock net is also fastened by hooks to the inside of the curtain rail on each side; these are for carrying clothing or equipments of the patients. This ambulance will carry patients either recumbent or sitting up, or both classes of patients together, viz., 12 sitting, or 2 recumbent and 6 sitting, or 4 recumbent. Figs. 4758, 4759, 4760, and 4761, show the general plan of construction of this vehicle.

In most of the European armies ambulances are accompanied by light carts, which carry dressings, drugs, foods, etc.; in our service these articles are carried by each ambulance as follows:

CONTENTS OF AMBULANCE BOX OF HOSPITAL STORES.

(In metal box, packed in rectangular galvanized-iron boiler with lid, enclosed in iron fire grate, carried under body of ambulance.)

Arrowroot	.....pounds,	2
Beef, soluble liquid, or extract, in 100 c.c. containers,	containers,	6
Brandy, in 500 c.c. bottle	.....bottle,	1
Can opener	.....number,	1
Chocolate, sweetened	.....pounds,	3
Condensed milk, unsweetened, in commercial tin	.....tins,	6
Malted milk	.....pounds,	2
Matches, safety in waterproof tin	.....boxes,	2
Pepper, black, ground, in dredge with screw cap	.....ounce,	1
Salt, in dredge with screw cap	.....ounces,	3
Sugar, white, granulated	.....pounds,	3
Tea, black or green	.....pound,	1/2

CONTENTS OF AMBULANCE BOX OF SURGICAL DRESSINGS.

(In metal box, packed in rectangular water boiler with lid, enclosed in iron fire grate, carried under body of ambulance.)

Antiseptic tablets, 125 in 125 c.c. bottle	.....bottle,	1
Bandages, plaster of Paris, two-inch	.....number,	6
Bandages, roll, sterilized, gauze, two one-half-inch	.....number,	24
Chloroformum, in 125-c.c. bottle	.....bottle,	1
Cotton, absorbent, in 30-gm. package	.....packages,	12
First-aid packets	.....number,	24
Gauze, iodoform, sterilized, 0.5 metre in package, packages,	20	
Gauze, plain, sterilized, two 0.5 metre pieces in package	.....packages,	20
Morphinae sulphas, 8-mgm. hypodermic tablets	.....tubes,	8
Plins, safety	.....dozen,	4
Plaster, adhesive, in roll 30 cm. wide	.....number,	2
Strychninae sulphas, 1-mgm. hypodermic tablet	.....tubes,	8

SPARE PARTS AND ADDITIONAL ARTICLES CARRIED BY EACH AMBULANCE.

Axle grease	.....pot,	1
Boilers, galvanized iron, with lid	.....number,	2
Bolt, king, extra	.....number,	1
Brush, horse	.....number,	1
Bucket, galvanized iron	.....number,	1
Color, camp	.....number,	1
Comb, curry	.....number,	1
Dressings, surgical, in metal box	.....box,	1
Grates, fire, iron	.....number,	2
Guidon, ambulance	.....number,	1
Hatchet	.....number,	1
Hospital stores in metal box	.....box,	1
Lamps, ambulance	.....number,	2
Lanterns, extra, one white, one red, in space under seat	.....number,	2
Lantern wicks, extra	.....number,	6
Link, split	.....number,	1
Litters, hand	.....number,	4
Oil, mineral, in space under seat	.....tin,	1
Tanks, water	.....number,	2
Whip	.....number,	1
Wrench, monkey	.....number,	1

NOTE.—In addition to the above, ambulances Nos. 1 and 5 will carry an extra pole and a traivols.

The allowance of ambulances for troops in active service in the United States Army is estimated upon a basis of one ambulance to 400 men of the effective force. Three ambulance companies, usually one company to each brigade, are ordinarily attached to each division of normal strength; nine ambulances is the number pre-

scribed for each company. For a battery of artillery, detachment of infantry, or squadron of cavalry, operating independently one ambulance is allowed. The strength of the armies of the United States in time of war is not fixed either by statute or by regulation; hence a division may be composed of a variable number of troops. Usually it has consisted of three brigades of two or three regiments to the brigade, varying accordingly between 12,000 and 18,000 men; upon a basis of one ambulance to 400 men, the division ambulance corps should contain 30 to 45 ambulance wagons. Harvard recommends as a basis 3 ambulances to 1,000 combatants, and in his scheme of organization provides for 12 ambulances to each ambulance company, assuming the strength of the division at about 11,000 men. Reynolds recommends 15 to each company,—the division strength being assumed at about 13,000 men. It is difficult to estimate even approximately how much ambulance transportation should be provided for wounded after a battle of magnitude between forces equally well-armed with modern firearms. Recent experiences have shown that the ratio of wounded to the strength engaged is not far from 12 per cent. With a division of 12,000 to 18,000 men this would give 1,440 to 2,160 wounded; probably one-third of this number would not require ambulance transportation, while about 1 in 12 would be so seriously wounded as to make their immediate transportation beyond the dressing station inadvisable; excluding these, there would remain 880 wounded for a division of 12,000, and 1,320 for a division of 18,000, for whom ambulance transportation would be required. The present model of regulation ambulance would probably average 8 men per trip, and with the field hospitals situated near enough to permit each ambulance to make 4 trips, 28 to 40 ambulances would be needed for a division of the strengths mentioned. It must not be understood that the allowance laid down by Medical Department regulations is inflexible; it simply serves as a basis, and may be changed as the exigencies may require.

The following regulations for ambulance drill are those prescribed for the present pattern of ambulance, as laid down in the "Drill Regulations and Outlines of First Aid for the Hospital Corps, United States Army, 1902":

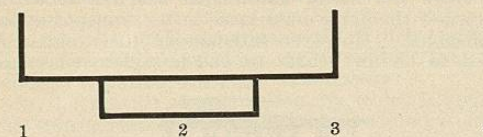
AMBULANCE DRILL.—The litters are said to be packed when they are strapped and placed upon the brackets. The seats are said to be prepared when they are horizontal, supported by the legs; and packed when they are hooked against the sides of the wagon.

To take posts at ambulance.

Being in line:

1. At ambulance; 2. Posts.

The designated squad marches in a column of files to the ambulance; when No. 1 takes post on the left, No. 2 in the centre, and No. 3 on the right of the rear of the ambulance and close to it, No. 4 on the right of No. 3.



In the case of a litter lowered in rear of ambulance preparatory to loading, head of patient toward it, at the command posts, each number faces about and proceeds directly to his post.

This is the invariable position of the squad at ambulance posts; it may be taken from any position (the litter, if any, being grounded or lowered), and when disarranged, from whatever cause, the squad may be reassembled by these commands for service at the ambulance.

The ambulance having seats packed and the squad being at ambulance posts:

1. Prepare; 2. SEATS.

Nos. 1 and 3 raise the curtain, if necessary, and open the tail-gate; Nos. 2 and 3 enter the ambulance, No. 2

facing the front and No. 3 the rear seat of their respective sides. Each man seizes the lower edge of the seat about six inches from the ends with both hands and lifts it; he lowers the legs and adjusts them to the floor and tries the seat for firmness before leaving it. He then prepares in like manner the opposite seat. No. 3 unfastens the litter-supporting post and swings it to the front of the ambulance, where it is grasped by No. 2, who lifts it to its place and straps it. Nos. 3 and 2 now resume their positions at ambulance posts.

The ambulance having seats prepared, and the squad being at ambulance posts:

1. Pack; 2. SEATS.

Nos. 1 and 3 raise the curtain, if necessary, and open the tail-gate; Nos. 2 and 3 enter the ambulance and face the front and rear seats of their respective sides; each man releases the legs and secures them against the seats, then, seizing the front of the seat with both hands, lowers it to the side of the ambulance, and then makes in like manner the opposite seats. No. 2 then unfastens the strap which holds the litter-supporting post to the roof of the ambulance, swings the post to a vertical position, and places it firmly in its socket. Nos. 3 and 2 now resume their positions at ambulance posts.

Seats can be prepared or packed on one side only, leaving room on the packed side for two recumbent patients by the commands:

Prepare (or pack) seats, right (or left).

The litter being lifted at the commands:

1. Take post to load ambulance; 2. MARCH.

the squad proceed to the ambulance. No. 4, starting ahead in double time, lays the arms and accoutrements of the patient (which he carries) on the ground by the right rear wheel; he then raises the curtain, if necessary, opens the tail-gate, observes the condition of the ambulance, and (resuming his post at the litter) reports it to the squad leader. Upon approaching the ambulance the litter is wheeled about so that the head of the patient is toward the rear of the ambulance and two paces from it, when the litter is halted and lowered. If it be necessary to prepare the ambulance before loading, the squad takes posts at ambulance, No. 4 remaining in charge of the patient; if ready for the reception of the lower litter (or berth) the commands are given:

1. Prepare to load; 2. LOAD.

(a) At the first command No. 2 faces about, No. 3 steps around his left handle and takes post at the patient's left shoulder; No. 1 takes post opposite No. 3; all facing the litter stoop, No. 2 grasping his handles, and Nos. 1 and 3 their respective poles; No. 4 watches the patient and otherwise renders any needful assistance. At load, the bearers slowly raise the litter to the level of the floor of the ambulance and advance to it, being careful to keep the litter in a horizontal position; the legs are placed on the floor by Nos. 1 and 3, and the litter pushed in by No. 2, assisted by the others. When this is accomplished, Nos. 1, 2, and 3 are in position at ambulance posts. No. 4 places the arms and accoutrements of the patient (if any) under the litter, and then takes his position on the right; Nos. 1 and 3 close the tail-gate and, if necessary, lower the curtain. The squad may then be faced to the left or about and marched in any desired direction.

(b) 1. For upper berth, prepare to load; 2. LOAD. At the first command the bearers face about and Nos. 2 and 3 stoop and grasp their respective handles.

At load the litter is lifted and advanced to the rear of the ambulance, when Nos. 1 and 4 face the litter and grasp their respective poles opposite the patient's shoulders; No. 3 relinquishes hold of the front handles, mounts the step (see Fig. 4762, loading upper berth, No. 1) and enters, when he resumes hold of the handles, as in passing obstacles. The litter is raised and passed into the ambulance, care being taken to keep the litter in a