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Removal of Wounded from Tank



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REMOVAL OF WOUNDED FROM TANKS

1. INTRODUCTION*

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Although it is desirable that wounded be moved only by Medical Department personnel whenever possible, knowledge on the part of armored vehicle crews of the various methods of removing casualties from the vehicles with the least disturbance of the injured part of the body will not only lessen suffering but also help to prevent traumatic shock.

This bulletin, which describes British methods of removing tank casualties through the turret, is based on initial emergency treatment and evacuation by the vehicle's crew. It is usually desirable, however, that casualties be removed from the vehicle by the exit most readily accessible and the one which will necessitate the least movement of the wounded soldier. These exits, in U.S. light tanks, are the driver's hatch and the belly trap door, or, in U.S. medium and heavy tanks, the side doors. Both exits admit a litter upon which the casualty may be placed and removed with a minimum amount of lifting and moving. However, because of damage to these exits, or for other reasons, methods of removing wounded through the turret are important.

Removal from the turret ordinarily requires some apparatus* and considerable training. The simple British method described in this article requires no new equipment. The litter straps can be

*Comment by the Office of the Surgeon General on evacuation of casualties from armored units.

kept inside the tanks, and the litter fastened to the outside of the tank. Maximum use of the litter is desirable, but tanks may not always be equipped with litters, and when the use of a litter is not practicable, the methods utilizing litter straps are obviously less fatiguing for the bearer and more comfortable for the casualty than other methods. Company aid men of other units may find considerable use for the methods of employing litter straps, as described in this bulletin.

Two factors enter into the speedy and efficient removal of wounded personnel to medical stations. First, casualties must be concentrated, and, second, ambulances must be under centralized control. Since it cannot be definitely known beforehand, where, when, or in what units the majority of armored force casualties will occur, it is desirable that ambulances be kept under central control as much as possible and that they be held at one place from which they can be dispatched to the point where they are needed most.

People are innately gregarious, especially in the face of danger, and above all when wounded and in hostile territory. Consequently, abandoning casualties, even though they are critically wounded, is detrimental to the morale of all personnel; and, conversely, the grouping of wounded at designated places, even though this may involve remaining in the tank for a short period of action, will perform the very necessary function of raising morale.*

*End of comment by the Office of the Surgeon General.

2. FIRST AID

When a soldier is wounded in a tank, his morale is higher if he knows that his companions in the tank are capable of rendering first aid and evacuating him from the tank so that he may be collected and receive further necessary treatment from the medical services. A wounded man should be extracted from the tank as early as practicable in order to reduce shock and to prevent further injury from the movement of the tank. A trained crew needs only a few minutes to apply first aid and evacuate the casualty from the tank to the ground.

First aid must be applied to the injured man immediately. This includes applying a first-aid dressing correctly, arresting bleeding, immobilizing a broken limb, administering morphine if necessary, and carefully evacuating the injured man from the tank. Records written on the casualty's forehead with grease pencil may not be sufficiently permanent; accurate particulars should be recorded on the Field Medical Card.* For example, if morphia is administered, the time and amount given should be shown. The circumstances of the injury should also be shown in order to aid in determining future policy.

*It is interesting to note that British armored vehicles carry emergency medical tags which are made out by the crew members, whereas in the U.S. Army they are made out by a member of the Medical Department.

3. METHOD OF EVACUATION

a. General

Although many methods of removing casualties from tanks have been tried, all have required apparatus which for one reason or another has not been entirely satisfactory. There have been difficulties in the training of the tank crews, in the storage of the apparatus and evacuation of the casualty from the tank to the ground, or in the increase of traumatic shock during the application of more elaborate apparatus.

The two-stretcher-sling method has several obvious advantages:

(1) The apparatus is simple and easy to produce and may be replaced quickly in the field.

(2) The slings may be stored easily by rolling them into a small bundle and stowing them away in a corner of the tank.

(3) The two-sling method causes the minimum increase in wound shock or injury, and no increase in the internal abdominal and chest pressures, whereas apparatus consisting of jacket, buckles, straps, and hoists may cause increase of injury and shock as well as increase of internal pressure.

(4) Instruction in the two-sling method is easy--usually requiring only a matter of minutes.

(5) The method is practicable even when, because of the severity of his wounds, the casualty is unable to assist.

b. Types of Armored Vehicles

The two-stretcher-sling method has been successfully tried with the following types of British and U.S. armored vehicles:

Infantry Tanks

Mark II (Matilda)
Mark III (Valentine)
Mark IV (Valentine)
Mark IV (Churchill)

Cruiser Tanks

Mark V (Covenanter)
Mark VI (Crusader)
Mark VIa (Cruiser)
Light American M2A4
Light American M3
(General Stuart)
Medium American M3
(General Lee)
Medium American M3
with British turret
(General Grant)

Light Tanks

Mark VIb
Mark VII (Tetrarch)

Armored Cars

Humber
Daimler

This simple method adheres to the principle that any method used must be capable of extracting any casualty from any type of tank.

c. Removal from the Tank(1) Classification of Injuries

Injuries are divided into wounds above the waist and the wounds below the waist. On this simple classification is based the application of the

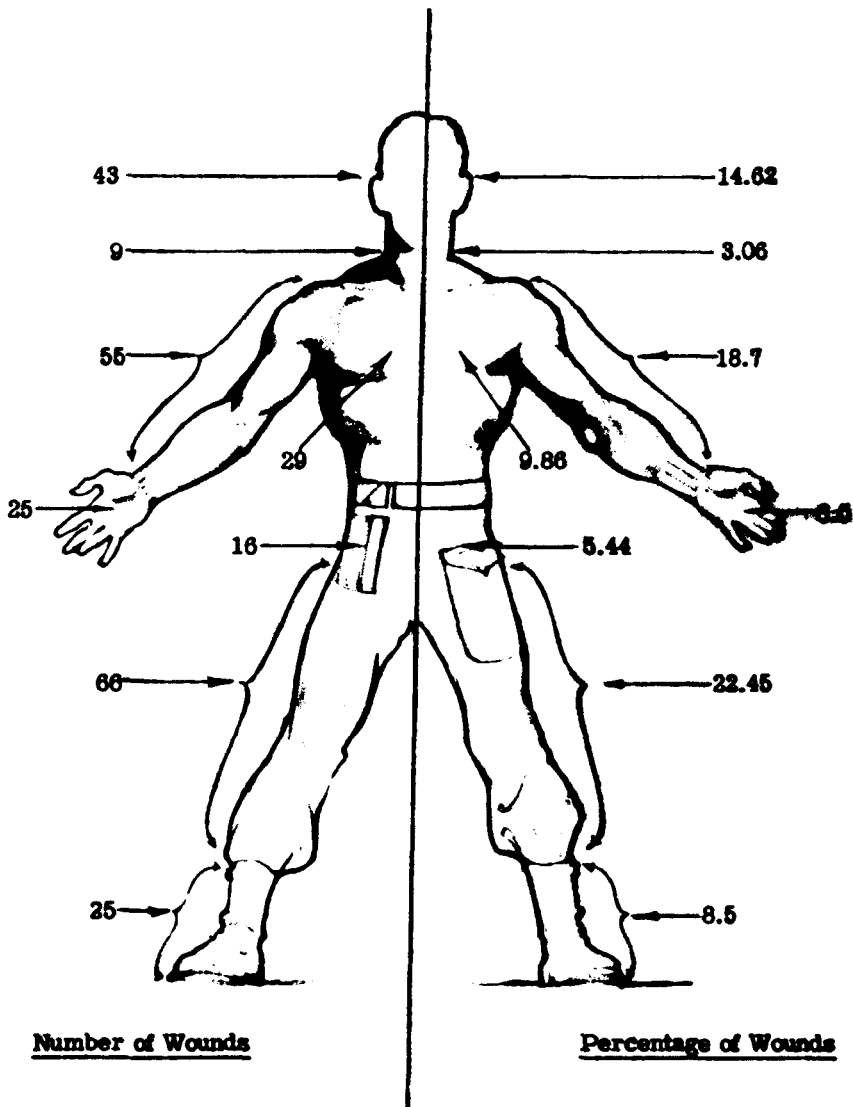


Figure 1. Wound Location Chart for Armored Units in the Middle East.

stretcher-sling method.***(a) Injury below the Waist Line**

To remove a casualty injured below the waist line, the slings are used separately. A loop is made at the end of each sling, and passed up the arms and adjusted to the shoulders and arm-pits, one on either side. The free ends of the slings are taken by two men standing outside the turret and, with a gentle, steady pull, the casualty is lifted from the main compartment. If a third man is available, he will control the movement of the injured man's body as it is being raised to the turret. When the injured man is raised sufficiently to rest outside the turret, his legs are taken clear of the

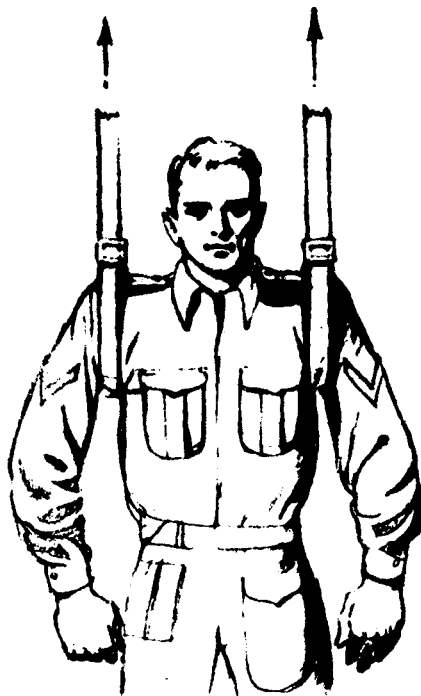


Figure 2. Adjustment of Slings for Injury below the Waist.

*Reports from the Middle East have indicated the location but have not given the types of wounds nor whether the wounds were received inside or outside the tank. Apparently, the largest number of wounds received by personnel actually in tanks have

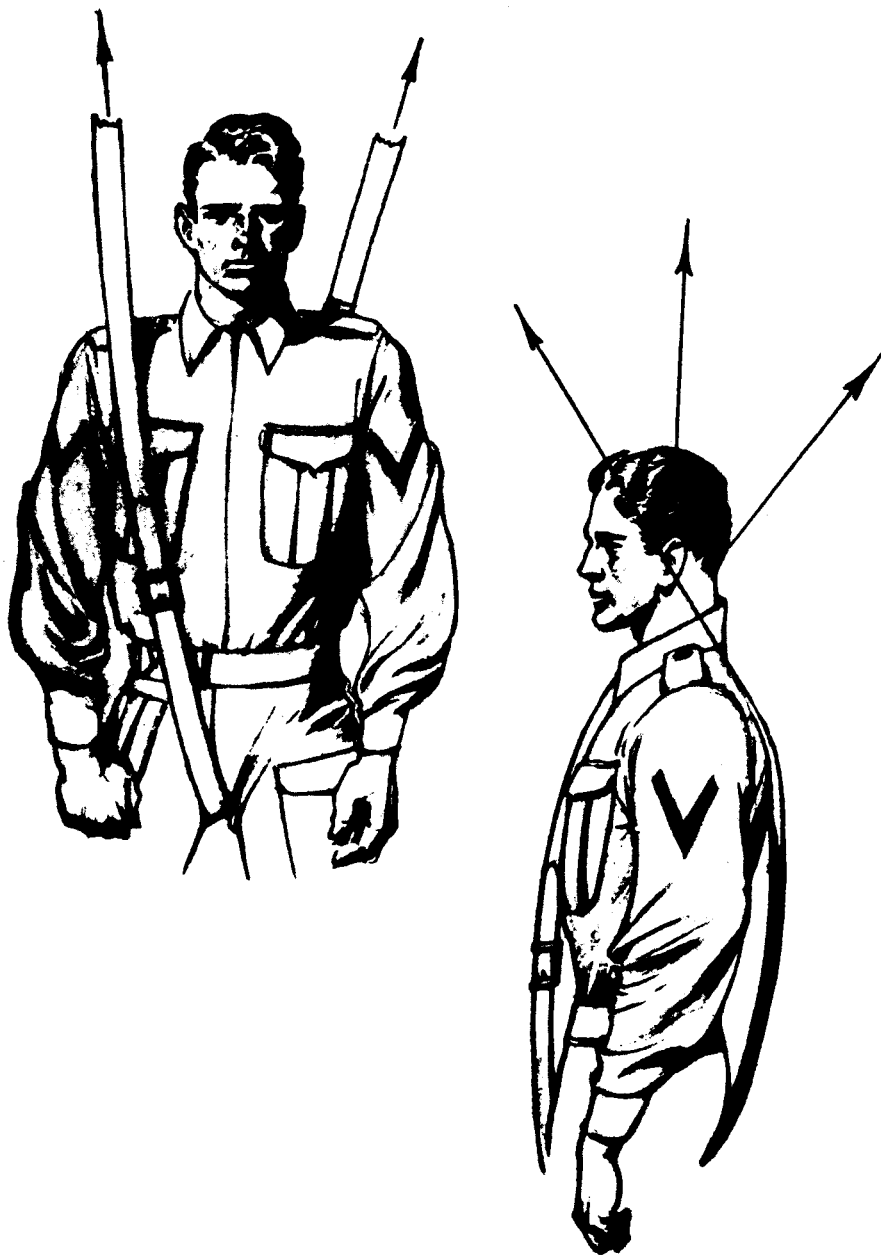


Figure 3. Adjustment of Slings for Injury Above the Waist.

turret opening and he is lowered to the ground or to a stretcher placed on the tank. Two men can complete the entire procedure, although three are desirable.

(b) Injury above the Waist

The two slings are so joined as to form one long sling. One free end is gently inserted from front to back, or vice versa, so that the sling lies between the cleft of the buttocks and under the crotch (fig. 3). This now forms a firm seat. The injured person is raised and supported in a sitting position, and the free ends of the sling are passed up to the turret opening. It is important that the casualty should come out erect, not bending forwards, backwards, or sideways. To accomplish this, one man takes a position in rear of the casualty, pulls on the sling end which passes up the front of the injured man, while the other man, from a position in front of the casualty, pulls on the sling which passes up behind the casualty. It should be noted that the free ends of the sling pass up to opposite shoulders of the injured man. By steady pulling, the casualty is hoisted clear of the turret, his legs are clear from the tank, and he is then brought to the ground.

(2) Summary of Removal Exits

(a) Light Tanks

Mark VIb--Turret

Mark VII (Tetrarch)--Turret

occurred in the lower part of the body, that is, in the thighs, legs, or feet.

(b) Infantry Tanks

Mark II (Matilda)--Driver's and gunner's hatches or turret

Mark III and IV (Valentine)--Driver's and gunner's hatches or turret

Mark IV (Churchill)--Side doors, driver's and front gunner's hatches, or turret

(c) Cruiser Tanks

Mark V (Convenanter)--Driver's and gunner's hatches or turret

Mark VI (Crusader)--Driver's and gunner's hatches or turret

Mark VIa (Cruiser)--Driver's and gunner's hatches or turret

Light American M2A4--Driver's hatch or turret

Light American M3 (General Stuart)--Driver's hatch or turret

Medium American M3 (General Lee)--Side doors, driver's and gunner's hatches, or turret

Medium American M3 with British Turret (General Grant)--Side doors, hatches or turret

(d) Armored Cars

Daimler--Side doors or turret

Humber--Side doors or turret

(3) Exceptional Cases

(a) General

The driver and front gunner are evacuated through their own hatches when these hatches can be opened, but if this is impossible, they can be manhandled into the main compartment and then evacuated. This is accomplished

by traversing the turret to get free access from the driver's or gunner's compartment, by folding back the seat rest, by removing the shells and a portion of the shell rack, and by adjusting the gunner's and commander's seats. Evacuation can then be made through the turret.

(b) Mark III and IV--Valentine

1. Injury below the Waist

In the Mark III and IV Valentine tanks, which have two openings, the driver must be moved so that his head is at one side of the tank, face upward (fig. 4). The side to which he is moved

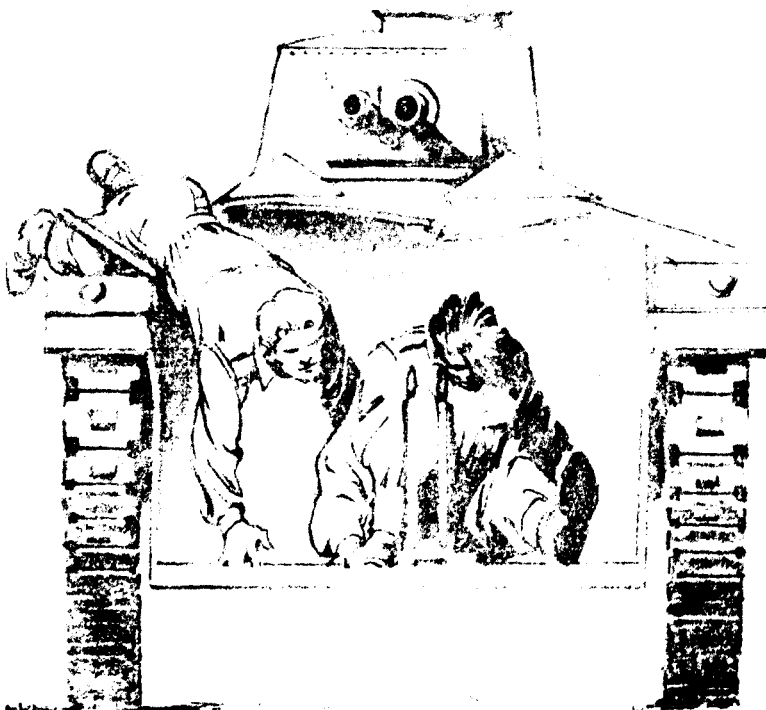


Figure 4. Manipulating the Casualty
(Valentine Tank).

will depend on his injury; that is, if his left leg is injured, he will be moved to a position where his head is at the offside of the tank. The sound limb can be manipulated over the gear and brake handles, which are between his legs in the driving positions

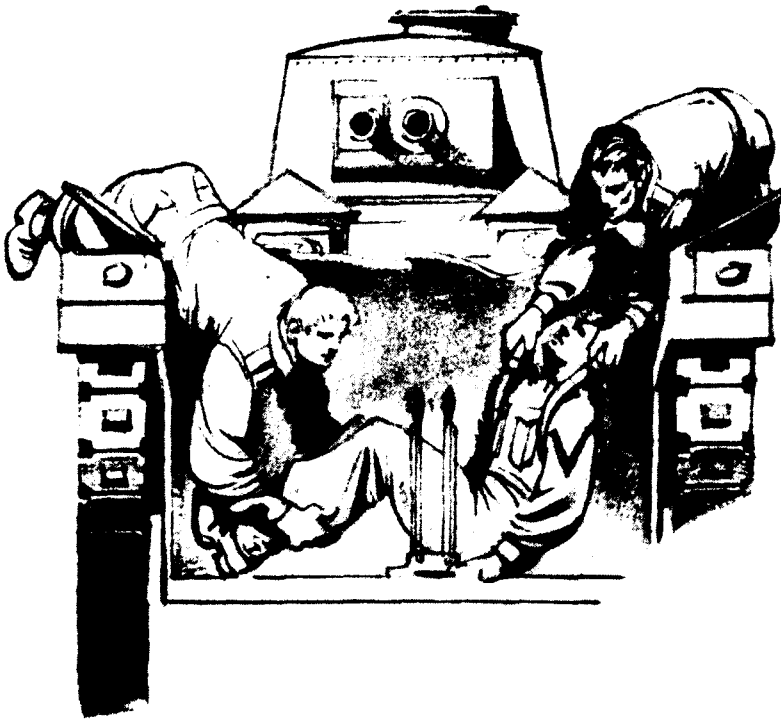


Figure 5. Lifting the Casualty (Valentine Tank)

(fig. 5), and the injured leg will require only the minimum of movement. The slings are now applied to his shoulders and he is evacuated (figs. 6 and 7).

2. Injury above the Waist

When injured on one side of his body, in the shoulder, arm or chest the casualty is manipulated with his head to the same side of the tank as his injury; that is, in the case of a right side injury, to the offside of the tank. The sling is applied to the crotch and the casualty evacuated.

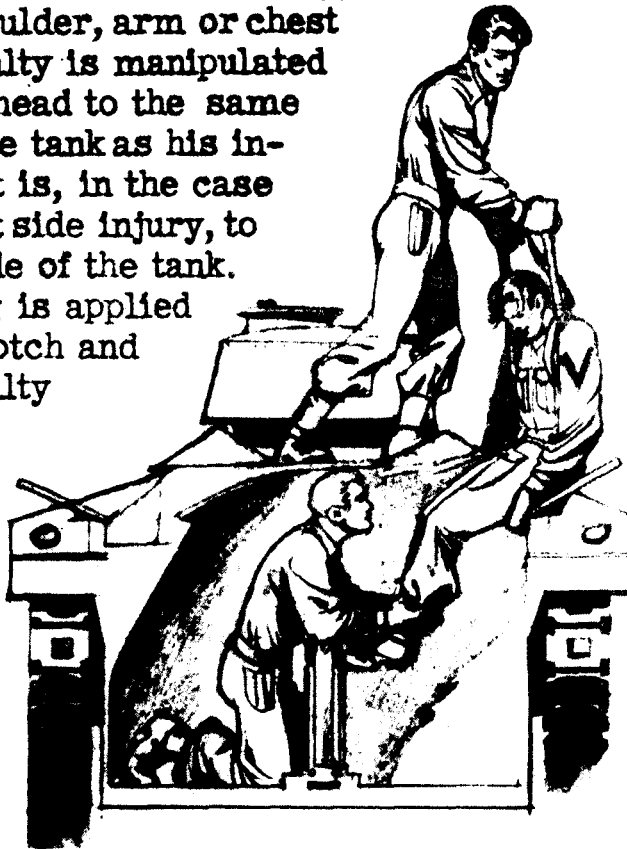


Figure 6. Removing the Casualty (Valentine Tank).

(c) Infantry Tank, Mark II-Matilda

In this tank there is one opening from the driver's seat. The procedure in placing slings is the same as for the Valentine (fig. 8). If the gun is facing forward and cannot be traversed,

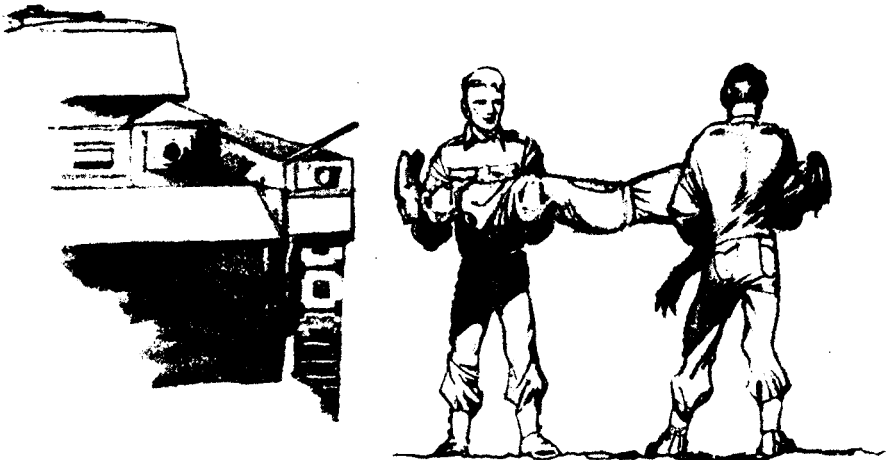


Figure 7. Carrying the Casualty.

the direction of pull will be to one side or the other of the gun. When the casualty's trunk is through the opening, he will be turned, with his back towards the side of the tank. He is steadied in this position, his legs are cleared from the opening, and he is then lowered to the ground (figs. 9, 10, 11).

(d) Infantry Tank,
Mark IV--Churchill

This tank has side doors through which the driver and front gunner may be easily manhandled. If both the side doors are damaged and cannot be opened, these two



Figure 8. Pulling Slings
(Matilda Tank).

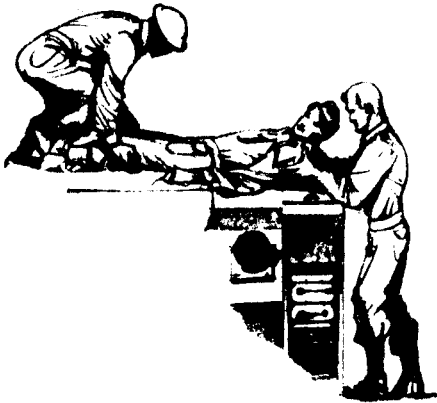


Figure 9. Removing Casualty (Matilda Tank).



Figure 10. Lowering Casualty (Matilda Tank).



Figure 11. Placing Casualty on the Ground.

crew members may be evacuated through their respective hatch openings. There is also communication between the hull compartment and the turret

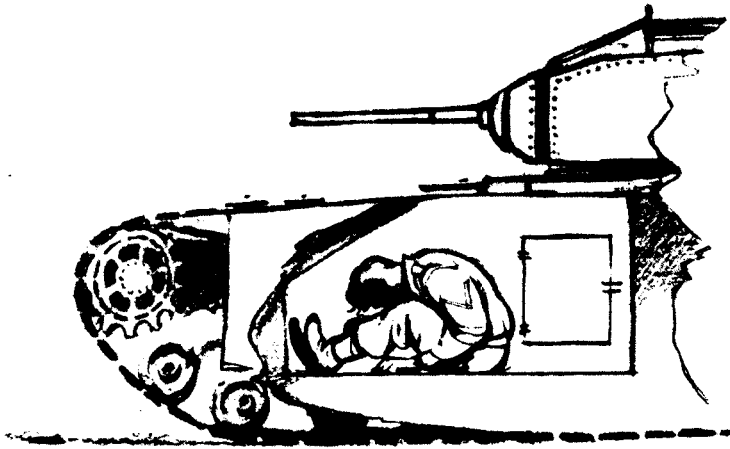


Figure 12. Casualty in Churchill or American Tank.

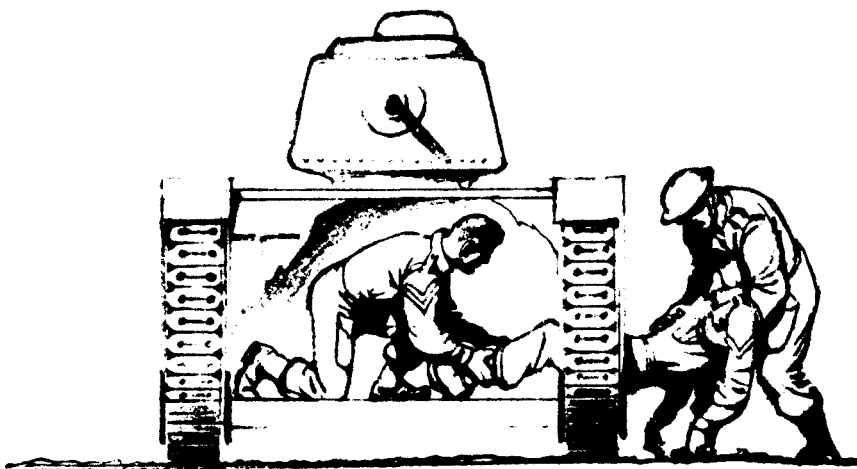


Figure 13. Side-Door Removal.

In U.S. tanks where there are one or more side entrances to the driver's or front gunner's compartment, the casualty can be manhandled through the side door as in the Churchill (figs. 12 and 13), even if he is a casualty in the upper compartment, since both compartments intercommunicate. The reverse also holds good; that is, when both side doors cannot be opened, the casualty can be manhandled to the upper compartment and evacuated through the turret from the upper fighting chamber. The driver and frontgunner may also be removed through their respective hatches.

(e) Lowering the Casualty to the Ground

In some tanks the injured man may be manhandled to the ground, but in other the slings are necessary. The slings can be used in the armpit-shoulder or groin-buttock positions, depending upon the location of the injury. The casualty is eased over the edge of the tank and is then lowered by two men using the slings. When the wounded man is close to the ground, one man takes both sling ends and holds him in position while the second man climbs off the tank and gets ready to receive the casualty. When the man on the ground receives the casualty, he steadies him against the side of the tank (fig. 13) until the other man comes down to his assistance (fig. 14). They then carry the casualty away, a man on either side, facing each other, one supporting the thigh and legs and the other supporting the trunk and the head. Since the men face one another, the casualty cannot roll off their arms, particularly while he is being lowered to the ground (fig. 16)

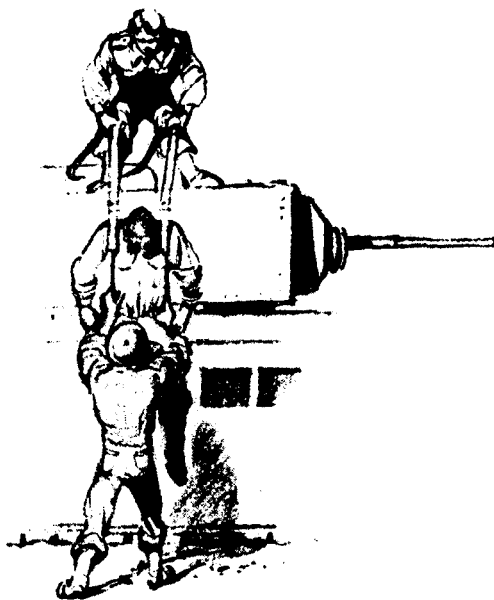


Figure 14.
Lowering the
Casualty.



Figure 15. Steadying the
Casualty.

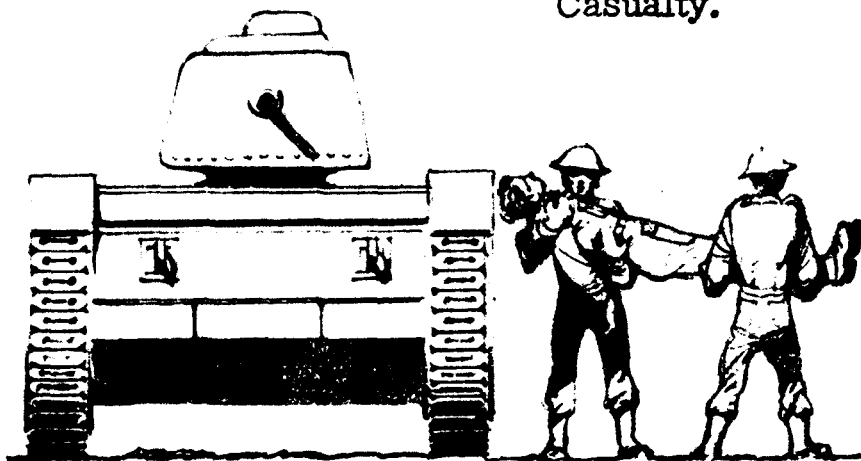


Figure 16. Carrying the Casualty Away.

4. FURTHER USES OF THE STRETCHER-SLING METHOD

a. General

In addition to the uses described, the two-sling method in the arm-pit shoulder (fig. 17) or groin-buttock adjustments (figs. 18 and 19) can be

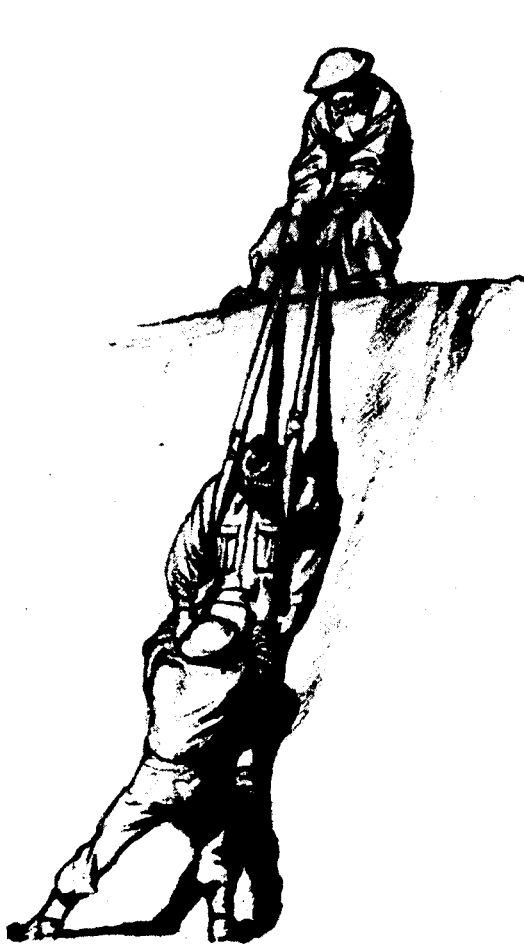


Figure 17. Lowering Casualty (Armpit Method).



Figure 18. Lowering Casualty (Groin Method).

used for moving the casualty from the ground over walls or other obstructions.

b. One-Man Carriage

(1) Lying Casualty

(a) The casualty is laid on his back on the ground, the loop made from a single sling is placed below the injured man's thighs (fig. 20), and his legs are spread-eagled. Sitting between the casualty's legs, the bearer slips his right arm and head through the loop, adjusting it tightly (fig. 21). Taking the casualty's right wrist in his left hand, the bearer pulls the casualty's right arm over



Figure 19. Lowering Casualty (Groin Method--Two-Man).

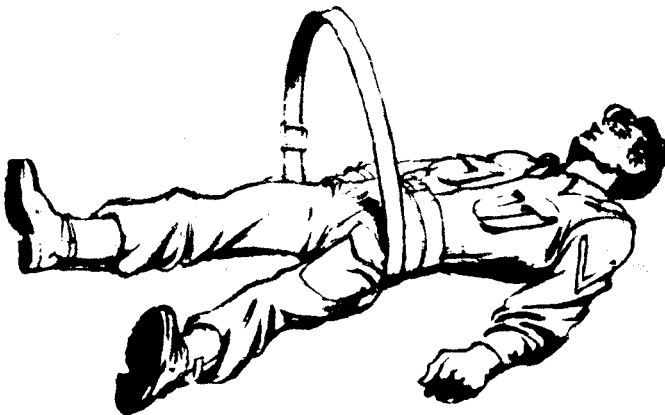


Figure 20. Placing the Sling on a Lying Casualty.



Figure 21. Adjusting the Sling.

his right shoulder, and then slips his right leg under the casualty's right knee and crooks his foot over to the inner sole of the casualty's foot (fig. 22).

The bearer now has the casualty strapped to his back with firm control of his right arm and leg. He slowly rolls over on his left side, bringing the casualty over to lie face downwards on his, the bearer's, back (fig. 23). The bearer now raises himself to the erect position with the casualty sitting in the sling, his arms over



Figure 23. Turning the Casualty.

the bearer's shoulders (figs. 24 and 25). This type of carriage is ordinarily less fatiguing to the bearer and more comfortable for the casualty than the fireman's carry or the two-man four-handed seat.



Figure 24. Raising the Casualty.

Russian Army. One continuous loop is made of two



Figure 25. Carrying the Casualty.

(b) Another method for raising and carrying a lying casualty is particularly popular in the

slings and is adjusted to the patient as shown in figure 26. The bearer then eases himself full length upon patient, face uppermost bearing most of his own weight on his feet and arms. He slips his arms through the loops, tightens the loops, grasps them firmly, and then rolls over on his face, bringing the patient with him bound to his back by the sling. Finally the bearer carefully raises himself so that he has the patient supported by the sling seat on his back (fig. 27).



Figure 26. Adjusting Slings (Russian Method).

(2) Sitting Casualty

(a) To hoist a sitting casualty into carrying position, a single sling is joined to make a continuous loop, which is passed up the casualty's legs to his buttocks (fig. 28). The bearer then kneels on his right knee, his back close to the casualty and passes his right arm and head through the loop. Next, the bearer leans backwards and tightens the sling until the casualty is held



Figure 28. Sling Adjustment on Sitting Casualty.



Figure 27. Carrying the Casualty (Russian Method).



Figure 29. Adjusting the Casualty.



Figure 30. Raising the Casualty.

close to his back. The bearer now bends forward, holding the arms of the casualty over his shoulder (fig. 29); and when well forward, with the greater part of the casualty's weight well up on his shoulders, he rises and carries the casualty away (figs. 30 and 31).



Figure 31. Carrying the Casualty.

(b) In another method of moving a sitting casualty, the two slings are joined to form one continuous loop. This loop is twisted to form two loops. The casualty's feet are slipped through the two loops and they are passed

up the casualty's legs to his thighs (fig. 32). The carrier brings the loops over his shoulder and carries the man upon his back, bearing the weight on the sling seat with a pull on the loop round his shoulders (fig. 33).

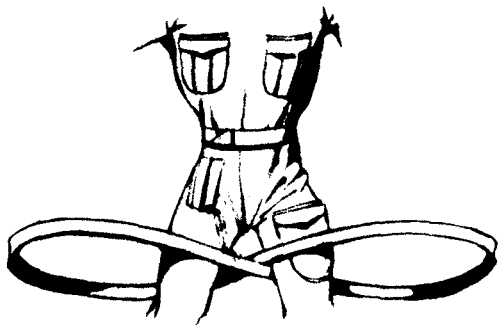


Figure 32. Adjusting Sling
(Two-Loop Method).

c. Two-Man
Carriage

Two slings are adjusted to form one continuous loop which is applied to the patient as shown in figure 34. Each man places a loop over his head and shoulder, and the patient is carried with the bearers' inside arms supporting him (fig. 35).



Figure 33. Carrying Casualty
(Two-Loop Method).

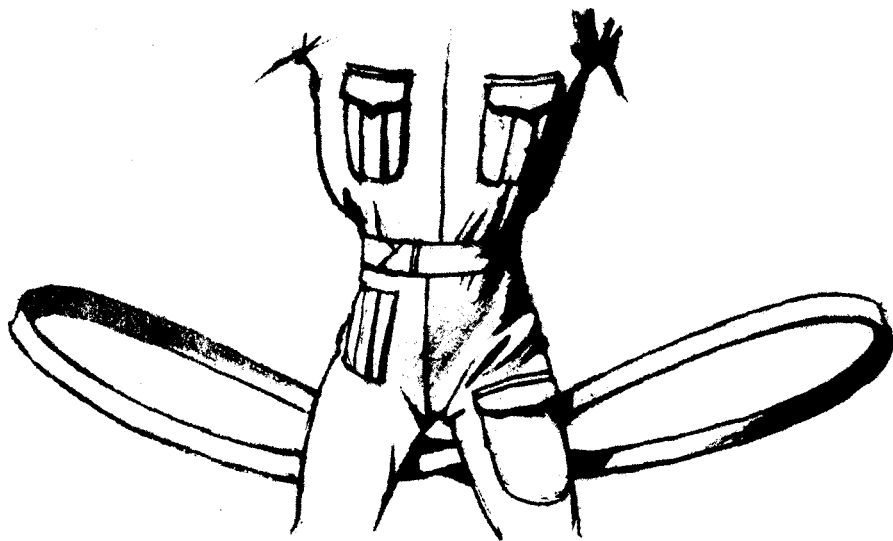


Figure 34. Adjusting the Sling
(Two-Man Method).



Figure 35. Carrying the Casualty
(Two-Man Method).