UNCLASSIFIED
~~RESTRICTED~~

THE GENERAL BOARD

United States Forces, European Theater

EVACUATION OF HUMAN CASUALTIES IN THE EUROPEAN THEATER OF OPERATIONS

MISSION: Prepare Report and Recommendations on the Procedures Used in the Evacuation of Human Casualties in the European Theater of Operations.

The General Board was established by General Orders 128, Headquarters European Theater of Operations, US Army, dated 17 June 1945, as amended by General Orders 182, dated 7 August 1945 and General Orders 312 dated 20 November 1945, Headquarters United States Forces, European Theater, to prepare a factual analysis of the strategy, tactics, and administration employed by the United States forces in the European Theater.

Property of
Office of the Chief
Military History
General Reference Branch

File: R 704.11/2

Study Number 92

~~RESTRICTED~~

UNCLASSIFIED

TABLE OF CONTENTS

SUBJECT	PAGE
Part One: First Echelon Evacuation	1
Chapter 1: First Echelon Evacuation in the Infantry Division	1
Section 1 - First Echelon Evacuation in the Infantry Regiment	1
Section 2 - First Echelon Evacuation in the Division Artillery	3
Section 3 - First Echelon Evacuation in the Combat Engineer Battalion and Special Troops of the Infantry Division	4
Bibliography	4
Chapter 2: First Echelon Evacuation in the Armored Division	5
Section 1 - First Echelon Evacuation in the Armored Infantry Elements of the Armored Division	5
Section 2 - First Echelon Evacuation of the Tank Elements of the Armored Division	5
Section 3 - First Echelon Evacuation in the Armored Division Artillery	6
Section 4 - First Echelon Evacuation in the Reconnaissance Elements of the Armored Division	6
Section 5 - First Echelon Evacuation in the Armored Engineer and Service Elements of the Armored Division	6
Bibliography	6
Chapter 3: First Echelon Evacuation in the Airborne Division	7
Section 1 - First Echelon Evacuation for Parachute Elements of an Airborne Division	7
Section 2 - First Echelon Evacuation for the Glider Elements of an Airborne Division	8
Bibliography	8
Chapter 4: First Echelon Evacuation of Non-Divisional Corps and Army Units	9
Section 1 - First Echelon Evacuation of Non-Divisional Corps and Army Combat Units	9
Section 2 - First Echelon Evacuation of Non-Divisional Corps and Army Service Units	9
Bibliography	9

SUBJECT PAGE

Chapter 5: First Echelon Evacuation for Amphibious Operations. 9

Bibliography 10

Part Two: Second Echelon Evacuation 11

Chapter 1: Second Echelon Evacuation in the Infantry Division. 11

Section 1 - The Collecting Company 11

Section 2 - The Clearing Company 12

Bibliography 12

Chapter 2: Second Echelon Evacuation in the Armored Division . 13

Section 1 - The Litter Platoon 13

Section 2 - The Ambulance Platoon 13

Section 3 - The Treatment Platoon 13

Bibliography 13

Chapter 3: Second Echelon Evacuation in the Airborne Division. 14

Section 1 - The Litter Bearer Section 14

Section 2 - The Ambulance Section 14

Section 3 - The Treatment Section 15

Section 4 - Second Echelon Evacuation in the Airborne Division when it is Employed as Ground Forces 15

Bibliography 15

Chapter 4: Second Echelon Evacuation of Non-Divisional Corps and Army Units 16

Section 1 - Second Echelon Evacuation of Non-Divisional Corps and Army Combat Units 16

Section 2 - Second Echelon Evacuation of Non-Divisional Corps and Army Service Units 16

Bibliography 16

Chapter 5: Second Echelon Evacuation in Amphibious Operations and River Crossings 16

Bibliography 17

Chapter 6: Second Echelon Evacuation in Mountainous Terrain. . 17

Bibliography 17

SUBJECT PAGE

Chapter 7: Second Echelon Evacuation in Marshy and Muddy Terrain. 17

Bibliography 18

Part Three: Third Echelon Evacuation. 18

Chapter 1: Third Echelon Evacuation of the Infantry Division . 18

Bibliography 19

Chapter 2: Third Echelon Evacuation of the Armored Division. . 19

Bibliography 20

Chapter 3: Third Echelon Evacuation of the Airborne Division . 20

Section 1 - Third Echelon Evacuation by Motor Transport . . 20

Section 2 - Third Echelon Evacuation by Air Lift 20

Bibliography 21

Chapter 4: Third Echelon Evacuation of Non-Divisional Corps and Army Troops 21

Bibliography 21

Chapter 5: Third Echelon Evacuation in Amphibious Operations and River Crossings 21

Bibliography 22

Part Four: Fourth Echelon Evacuation. 22

Chapter 1: Fourth Echelon Evacuation in Amphibious Operations. 22

Section 1 - Fourth Echelon Evacuation Prior to the Arrival of Fixed Hospitals in the Beachhead 22

Section 2 - Fourth Echelon Evacuation Subsequent to the Arrival of Fixed Hospitals in the Beachhead. . . . 23

Bibliography 24

Chapter 2: Fourth Echelon Air Evacuation 24

Section 1 - Control of Air Evacuation 24

Section 2 - Air Holding Units at the Airfields 24

Section 3 - Disposition of Casualties in the Communications Zone 25

Section 4 - Property Exchange in Air Evacuation 25

Section 5 - Role of the Medical Air Evacuation Squadron. . . 25

Section 6 - Role of the Medical Regulating Officer in the Fourth Echelon Air Evacuation 26

Bibliography 26

SUBJECT PAGE

Chapter 3: Fourth Echelon Rail Evacuation. 26

Section 1 - Hospital Train Requirements in the European Theater of Operations 26

Section 2 - Holding Units at the Forward Railhead. 27

Section 3 - Property Exchange in Fourth Echelon Rail Evacuation 27

Section 4 - Disposition of Casualties in the Communications Zone 27

Section 5 - Role of the Medical Regulating Officer in Rail Evacuation 28

Bibliography 28

Part Five: Fifth Echelon Evacuation 28

Chapter 1: Factors Influencing the Evacuation Policy in the European Theater of Operations. 28

Section 1 - The Evacuation Policy on the Continent 28

Section 2 - The Evacuation Policy in the United Kingdom. . . 29

Bibliography 29

Chapter 2: Fifth Echelon Evacuation by Hospital Ship 29

Section 1 - Requirements for Hospital Ships in the European Theater of Operations 29

Section 2 - Control of Hospital Ships 30

Bibliography 30

Chapter 3: Troopships in Fifth Echelon Evacuation. 30

Section 1 - Requirements for Space on Troopships for Fifth Echelon Evacuation in the European Theater . . . 30

Section 2 - Control of Fifth Echelon Evacuation by Troopships 30

Bibliography 31

Chapter 4: Fifth Echelon Evacuation by Air 31

Section 1 - The Availability and Dependability of Air Lift . 31

Section 2 - The Advantages and Disadvantages of Air Lift as Compared with Surface Transportation. 31

Bibliography 32

Part Six: Conclusions and Recommendations 32

THE GENERAL BOARD
UNITED STATES FORCES, EUROPEAN THEATER
APO 408

EVACUATION OF HUMAN CASUALTIES IN THE EUROPEAN THEATER OF OPERATIONS

Prepared by:

Colonel L. Holmes Ginn, Jr., 017341, MC . . Chief, Medical Section Chairman

Colonel W. E. Wilkinson, 020529, MC . . . . Deputy Chairman

Colonel George H. Donnelly, 017811, MC. . . Member

Colonel Joe Harrell, 018929, MC. . . . . Member

Principal Consultants:

Colonel Myron P. Rudolph, 06430, MC, Surgeon, Seventh US Army.

Colonel F. H. Mowrey, 019687, MC, Evacuation Officer, Office of the Chief Surgeon, European Theater of Operations, US Army.

Colonel Joseph G. Cocke, 019658, MC, Surgeon, Continental Advance Section.

Colonel Robert H. Barr, 0240710, MC, Surgeon, VII Corps.

Colonel Roosevelt Cafarelli, 022265, MC, Surgeon, XX Corps.

Colonel James H. Forsee, 018265, MC, Commanding Officer, Second Auxiliary Surgical Group.

Lieutenant Colonel Frederick J. Knoblauch, 021672, MC, Medical Regulating Officer, Ninth US Army.

THE GENERAL BOARD
United States Forces, European Theater

EVACUATION OF HUMAN CASUALTIES IN THE EUROPEAN THEATER OF OPERATIONS

PART ONE

FIRST ECHELON EVACUATION

CHAPTER 1

FIRST ECHELON EVACUATION IN THE INFANTRY DIVISION

SECTION 1

FIRST ECHELON EVACUATION IN THE INFANTRY REGIMENT

1. The Company Aid Man. Combat experience in the European Theater of Operations has served to re-emphasize the importance of the company aid man. Although the mission of the company aid man is not primarily one of evacuation, nevertheless his every action so influences the evacuation system that a discussion of this important individual is deemed appropriate at this time. The company aid man frequently performed lifesaving measures on the field of battle which permitted casualties to be evacuated that otherwise would have been fatal. The presence of the company aid man in the companies and platoons was one of the outstanding factors in promoting the morale of the rifleman. He administered first aid to the slightly wounded and directed them to the battalion aid station. He performed triage on the battlefield and prevented the unnecessary evacuation of many slightly wounded. It has been proven without question that only the highest type individual is suitable for assignment as company aid man. The infantry soldier will not accept a mediocre or inferior soldier as company aid man. A qualified aid man is held in the highest esteem by the combat soldier and is usually the most popular man in the platoon or company. He must be in good physical condition and must be thoroughly trained not only in first aid but also in the tactics of the infantry soldier. In many situations it has been desirable to have one aid man per rifle platoon instead of only two men per company. It is generally agreed that the company aid man should be rated at least a technician, grade five. Company aid men suffer a high casualty rate. Most divisions with as much as six months of severe combat suffered one hundred percent casualties among the company aid men. It is imperative that some procedure be developed for the thorough training of company aid men reinforcements in the tactics of the infantry soldier as well as in the technical aspects of first aid. It is highly desirable that he be introduced to combat gradually, possibly through the medium of the division collecting company, rather than being sent direct to the rifle company as a replacement. Changing the name from "Replacement" to "Reinforcement" does not alter the fact that the individual is going into combat as a replacement for a company aid man who was a battle casualty. It is equally as important that provision be made for rotating the company aid man to less arduous and less hazardous positions in the battalion medical section.

2. Litter Bearers of the Battalion Medical Section. The American soldier has been called upon to perform no more arduous and hazardous tasks than has been performed by the forward litter bearers and company aid men. They must be in the best possible physical condition, must be well trained in infantry tactics and they must be adept in the

practical applications of first aid. They must routinely display an unselfish devotion to duty which places their resolve to be of service to their wounded comrades above their concern for their personal safety and welfare. They must be capable of exercising good judgment at all times in order to protect themselves and carry out their mission of evacuating the wounded to the battalion aid station. They must be prepared to depend upon the protection afforded them by the red cross under certain conditions while at other times they must be prepared to depend upon concealment and cover. The red cross brassard worn upon the left arm is not adequate marking and must be augmented by red crosses on a white background painted on the steel helmet and by tabards displaying red crosses on a white background both front and back. Provisions must be made for rotating the litter bearer of the battalion medical section to other less arduous and less hazardous assignments in the battalion medical section. Forward litter bearers suffer a very high casualty rate and replacements should be afforded the opportunity to become familiar with combat in the collecting company and in the regimental medical section prior to being assigned to the battalion medical section.

a. The Carrier, Field, Collapsible. This item of equipment which was intended to ease the burden of the litter bearers was universally unpopular in the European Theater of Operations to the extent that it was not used at all and it should be deleted from tables of equipment without replacement.

b. The Truck, ¼-ton, 4x4, Equipped with Litter Racks. This vehicle was the most popular and widely used form of motor transportation available for frontline evacuation in the European Theater of Operations. It replaced hand-carry by litter bearers under many of the conditions for which the carrier, field, collapsible was designed to be used. The cross-country mobility, low silhouette, ruggedness and dependability of this vehicle were outstanding and it is believed that any attempt to design an enclosed type of ambulance for evacuation forward of the battalion aid station would result in the loss of the desirable characteristics which have made this vehicle so universally popular and useful.

c. The Car, Half-track, M3A2, Ambulance. This vehicle has been used under many conditions to augment and replace hand-carry by litter bearers. It has demonstrated certain desirable characteristics. It affords protection to the casualties in inclement weather. It protects casualties and the driver from non-armor piercing, small arms fire, and high-explosive shell and bomb fragments. It has better flotation and more cross-country mobility under certain conditions than the truck, ¼-ton, 4x4. This vehicle also has certain very definite undesirable characteristics. It is noisy and attracts attention. It is heavy and cumbersome to operate and requires a great deal of highly specialized maintenance. It bears a close resemblence to armored combat vehicles and tends to draw anti-tank fire from the enemy and at the same time it does not afford protection against armor-piercing and certain types of high-explosive anti-tank fire. It is slower than the truck, ¼-ton 4x4. The use of this vehicle for frontline evacuation under certain conditions is warranted and desirable but its limitations do not justify considering it as standard equipment for replacing and augmenting litter bearers forward of the battalion aid station.

d. The Carrier, M-29, "Weasel". This vehicle has been especially useful to replace and augment litter bearers forward of the battalion aid station in snow-covered terrain, marshy terrain and under deep muddy conditions. As in the case of the car, half-track, M3A2, ambulance, the limitations of this vehicle do not warrant considering it as standard equipment for replacing or augmenting litter bearers forward of the battalion aid station but the improvised use of this vehicle must be considered when making plans for operations under the conditions enumerated above.

e. Transportation of Litter Casualties on Skis and Toboggans. Hand-carry of litter casualties when the terrain is covered with snow and ice is extremely difficult from the standpoint of the litter bearer and is hazardous to the casualty because the litter bearer frequently stumbles and falls. Skis and toboggans have been improvised for transporting litters and when the terrain was covered with snow have materially aided the forward litter bearers. The skis and/or the runners on the toboggans must be wide enough to afford sufficient flotation on the snow but if they are too wide the contact with the snow will produce so much friction that the litter bearer will be unable to secure traction for the movement of the casualty. When using either of these forms of transportation, the decision must be made as to whether the transport and the litter bearer are to be camouflaged with white paint and white clothing or whether they should depend entirely upon the protection afforded by the red cross.

f. The Use of Litter Bearers in River Crossings. During the initial stages of the river crossings the casualties must be transported to the battalion aid station on the near bank. Experience in the European Theater of Operations has indicated that it is not practical to plan for the use of separate boats or bridges for the evacuation of casualties. Litter bearers must evacuate the casualties on the same boats that have carried the combat troops to the far bank. It is extremely difficult to evacuate casualties by hand-litter carry on foot bridges against the flow of combat reinforcements to the far bank. The battalion aid station should be moved to the far bank as soon as conditions permit.

g. The Use of Pack Animals to Augment or Replace Litter Bearers. Under certain conditions in the European Theater of Operations the use of pack animals for transporting litter casualties in mountainous terrain has been desirable. This means of transportation has been used to a limited extent. There are certain definite disadvantages. The average litter bearer in the infantry battalion medical section is not experienced in the management of animals. The animals available have not been trained to carry human casualties. Satisfactory pack equipment has not been available. When animals have been used the casualty rate among the animals has been high and replacements for the animal casualties were not available. The casualties themselves looked with disfavor upon this form of transportation, which was almost invariably carried out under cover of darkness, and it had a bad effect upon the morale of the casualties. Casualties frequently received additional injury while being transported in this manner. Although the use of pack animals saved manpower, the speed of evacuation was usually slower than hand-carry by litter bearers. This means of evacuation is not practical unless adequate equipment is provided and unless the litter bearers and animals have been thoroughly trained in the procedure.

h. Dog-drawn sleds arrived in the European Theater of Operations too late to be employed but it is believed they could have been used to good advantage on snow-covered terrain.

SECTION 2

FIRST ECHELON EVACUATION IN DIVISION ARTILLERY

3. Battery Aid Men. Battery aid men in the artillery are analogous to company aid men in the infantry, except their duties are not as arduous or as hazardous and casualties in the artillery are not nearly as heavy as in the infantry.

4. Litter Bearers. It has been the exception rather than the rule in the European Theater of Operations for casualties to be evacuated from the battery to the battalion aid station by hand litter carry. There are good communications between the firing batteries and the battalion aid

station and it has been the custom for the battalion surgeon to send either a truck, ¼-ton, 4x4, or an ambulance, 3/4-ton, 4x4, to the firing battery to evacuate a casualty to the battalion aid station.

SECTION 3

FIRST ECHELON EVACUATION IN THE COMBAT ENGINEER BATTALION AND SPECIAL TROOPS OF THE INFANTRY DIVISION

5. First Echelon Evacuation in the Combat Engineer Battalion. The numerous and varied missions assigned the engineer battalion and the fact that the employment of the battalion was so varied, depending upon the situation, precludes a fixed standing operating procedure for first echelon evacuation in this organization. It has been the experience of all the combat engineer battalions in the European Theater of Operations that a truck, ¼-ton, 4x4, equipped with litter racks, could have been used to great advantage in first echelon evacuation under many conditions. This vehicle would also provide transportation for the battalion surgeon and would enable him to supervise evacuation in the battalion. It has been necessary for the division surgeon to attach an ambulance, 3/4-ton, 4x4, to the engineer battalion from one of the division collecting companies. This ambulance was used for both first and second echelon evacuation. When elements of the engineer combat battalion were attached to regimental combat teams, they had to depend upon the unit to which they were attached for first echelon evacuation.

6. First Echelon Evacuation in the Special Troops. Adequate facilities for first echelon evacuation in the special troops of the infantry division is not provided by present tables of organization and a great deal of difficulty has been experienced by all divisions. The division headquarters habitually operates in two and sometimes three echelons and the quartermaster company usually has installations in several different locations. A minimum of two medical officers is required to supervise evacuation and the medical service in general and it has been necessary to attach two and sometimes three ambulances from the division collecting companies to provide first and second echelon evacuation.

BIBLIOGRAPHY

PART ONE, CHAPTER 1

The information contained above has been obtained by personal conferences with and by a study of the written reports by the division surgeons of the following infantry divisions:

1 Infantry Division	30 Infantry Division	80 Infantry Division
2 Infantry Division	35 Infantry Division	83 Infantry Division
3 Infantry Division	36 Infantry Division	94 Infantry Division
4 Infantry Division	42 Infantry Division	97 Infantry Division
5 Infantry Division	44 Infantry Division	100 Infantry Division
8 Infantry Division	45 Infantry Division	102 Infantry Division
9 Infantry Division	66 Infantry Division	103 Infantry Division
26 Infantry Division	69 Infantry Division	104 Infantry Division
28 Infantry Division	70 Infantry Division	106 Infantry Division
29 Infantry Division	78 Infantry Division	

CHAPTER 2

FIRST ECHELON EVACUATION IN THE ARMORED DIVISION

SECTION 1

FIRST ECHELON EVACUATION IN THE ARMORED INFANTRY ELEMENTS OF THE ARMORED DIVISION

7. The Company Aid Man. The discussion of the company aid man in the infantry regiment of the infantry division applies to the company aid man of the armored infantry. When the armored infantry fights dismounted, and it usually does, the medical service is the same as that of the infantry division. The method of employment of the armored infantry makes it even more desirable that a company aid man be provided for each armored infantry platoon.

8. Litter Bearers for the Battalion Medical Section. When the armored infantry fights dismounted, especially in a defensive or holding engagement, the requirements for litter bearers are the same as those of the battalion medical section in the infantry division. In highly mobile situations, first echelon evacuation can be performed almost entirely by the truck, ¼-ton, 4x4, equipped with litter racks. In such a situation, casualties are usually light.

9. The Car, Half-track, M3A2, Ambulance. The requirements for armored ambulances in first echelon evacuation in the armored infantry are the same as those in the infantry division. The discussions in paragraph 2c are equally applicable to the armored infantry.

SECTION 2

FIRST ECHELON EVACUATION OF THE TANK ELEMENTS OF THE ARMORED DIVISION

10. Evacuation of Casualties from Tanks. Prior to the onset of hostilities in the Mediterranean and European Theater of Operations, it was anticipated that one of the big problems which would confront the medical service in the armored division would be the evacuation of casualties from disabled tanks. Experience in the European Theater of Operations has confirmed the earlier experience in the Mediterranean Theater that this is not true. It is rare for a casualty to occur in a tank without having the tank immobilized by the agent producing the casualty. Prior to the adoption of fire prevention measures, most American tanks caught on fire when they were immobilized. If the tank was hit by an anti-tank projectile it was usually set on fire by the first hit. If the first hit did not set the tank on fire, the enemy usually fired at the tank until it did. If the tank was disabled by an anti-tank mine, the enemy frequently fired at this disabled tank and set it on fire. As a result, tank crewmen evacuated themselves from tanks as soon as the tank was hit and prior to the arrival of medical troops. Many instances have been reported of seriously wounded casualties evacuating themselves with or without the aid of their fellow crew members. First echelon evacuation of tanks therefore consisted, for the most part, of evacuating the casualty from the vicinity of the disabled tank to the battalion aid station. It was usually accomplished by the battalion surgeon sending a truck, ¼-ton, 4x4, equipped with litter racks, to the scene of the disabled tank, the location of the disabled tank having been reported by the tank platoon leader and the company commander to the battalion commander, using the command channel of the radio net. The battalion surgeon, located in the vicinity of the battalion command post, would receive the information from the officer in charge of the command post and would take the necessary action. Frequently the battalion surgeon could see the burning or

disabled tank from his battalion aid station. The truck, ¼-ton, 4x4, was considered a better vehicle for this type of evacuation because it is faster and more maneuverable and because in the confusion of battle the car, half-track, M3A2, ambulance, was frequently mistaken for a combat vehicle and was fired upon by the enemy. Considerable difficulty was experienced in evacuating tank casualties from mine fields and on occasions the medical department vehicle going to the rescue of the casualty was disabled or destroyed by mines. The car, half-track, M3A2, ambulance did provide a suitable mobile battalion aid station and was especially desirable in inclement weather, at night and when no buildings were available.

SECTION 3

FIRST ECHELON EVACUATION IN THE ARMORED DIVISION ARTILLERY

11. First echelon evacuation in the armored division artillery is the same as the first echelon evacuation in the infantry division artillery.

SECTION 4

FIRST ECHELON EVACUATION IN THE RECONNAISSANCE ELEMENTS OF THE ARMORED DIVISION

12. First Echelon Evacuation When the Reconnaissance Battalion, Squadron or Troop Operated Under Division Control. When the division reconnaissance, usually supported by engineers, operated under division control, the battalion or squadron surgeon usually acted as a task force surgeon and established a mobile or fixed aid station in support of the task force. Evacuation was normally by truck, ¼-ton, to the battalion aid station.

13. First Echelon Evacuation When the Reconnaissance Elements Were Attached to Combat Commands. Evacuation usually had to be improvised by the combat command surgeon using whatever means were available to him. This was usually accomplished by means of the truck, ¼-ton.

SECTION 5

FIRST ECHELON EVACUATION IN THE ARMORED ENGINEER AND SERVICE ELEMENTS OF THE ARMORED DIVISION

14. First Echelon Evacuation for the Armored Engineers is the same as that of the engineers for an infantry division.

15. First Echelon Evacuation for the Headquarters and Service Elements of the Armored Division is the same as that of the infantry division with the exception that the increased mobility of the armored division increases the need for additional medical department personnel, trucks, ¼-ton, and ambulances, 3/4-ton.

BIBLIOGRAPHY

PART ONE, CHAPTER 2

The information contained above has been obtained by personal conferences with and by a study of the written reports by the division surgeons of the following armored divisions:

1 Armored Division
2 Armored Division
3 Armored Division
4 Armored Division
5 Armored Division
6 Armored Division
7 Armored Division
8 Armored Division
10 Armored Division
11 Armored Division
12 Armored Division
13 Armored Division
14 Armored Division

CHAPTER 3

FIRST ECHELON EVACUATION IN THE AIRBORNE DIVISION

SECTION 1

FIRST ECHELON EVACUATION FOR PARACHUTE ELEMENTS OF AN AIRBORNE DIVISION

16. Distinctive Characteristics of First Echelon Evacuation for Parachute Troops. The basic principles of first echelon evacuation for parachute troops are the same as those for the infantry division but there are several factors which make evacuation of parachute troops worthy of a special study. Parachute troops in the European Theater of Operations have routinely been dropped behind the enemy defensive positions. They have been dropped both during the hours of darkness and during daylight. In the infantry division the company aid men go into an attack with their platoons or companies and close personal contact between the company aid man and the rifleman is maintained. In airborne operations the company aid men, litter bearers and the other enlisted men and medical department officers of the battalion medical section were loaded in the same planes with the combat troops they were to support and they were dropped at the same time. Due to the darkness, wind, interference by the enemy and other factors, there was always a marked scattering of medical department personnel on landing. Aid men and litter bearers became separated from the combat troops they were to support and medical department personnel lost contact with each other. Regaining contact was made difficult not only by lack of communications, darkness, strange terrain and the confusion of battle but also by the fact that the operation was taking place on terrain held by the enemy. The necessity for early organization of the medical service on the ground is made more urgent by the fact that casualties occur among the parachutists during the descent and at the time of landing on the ground. Another difficulty experienced by the medical troops was that of recovering medical equipment and supplies dropped by parachute. The 101 Airborne Division recovered only 30 percent of the medical supplies and equipment dropped by parachute during the operation in Holland on 17 September 1944.

17. Actual Procedure for the First Echelon Evacuation of Parachute Troops. As soon as the combat troops have effected assembly into small groups and have established a local defense for each of these small groups, the medical troops have a framework upon which to build the scheme of evacuation. Casualties in these small groups are treated and held until all of the groups in a battalion have linked up. The casualties are then evacuated by the company aid men and litter bearers to the battalion aid station where they must be held and treated pending the arrival of second echelon medical service, which is usually gliderborne. Every effort has been made to utilize captured enemy vehicles or requisitioned civilian vehicles in this phase of first echelon evacuation. At this stage of the operation every effort is made to recover medical supplies and equipment which have been dropped by parachute. Experience has shown, however, that the only supplies and equipment which can be depended upon are those carried on the person of the parachutists. The enemy

always makes a determined effort to prevent the recovery of any supplies dropped by parachute.

SECTION 2

FIRST ECHELON EVACUATION FOR THE GLIDERBORNE ELEMENTS OF AN AIRBORNE DIVISION

18. Distinctive Characteristics of First Echelon Evacuation for Gliderborne Troops. The dispersion factor among gliderborne troops is not as great as that in the parachute elements. The combat troops land in groups in the gliders instead of as individuals and the attached medical personnel can more easily maintain personal contact during and after the landing. There is a tendency for the gliders to land in groups on suitable fields instead of being widely dispersed as in the case of parachutists. Organization of local areas for defense takes place earlier and medical personnel, supplies and equipment are collected more rapidly. This decrease of dispersion tends to minimize loss of medical department personnel, supplies and equipment but there is an increase in the damage inflicted by the enemy. It is essential that trucks, ¼-ton, 4x4, equipped with litters, accompany the gliderborne troops to be used in first echelon evacuation.

19. Actual Procedure for the First Echelon Evacuation of Gliderborne Troops. The gliderborne landing usually takes place subsequent to the parachute landings; therefore the medical troops arriving by glider must be prepared not only to evacuate the casualties occuring among the gliderborne troops but to assist in the evacuation of casualties from the parachute elements. The most important factor to be kept in mind is that the gliderborne medical troops must bring in sorely needed transportation, supplies and equipment for the parachute elements as well as for themselves. Casualties are collected by litter carry and by means of the truck, ¼-ton, 4x4, are concentrated in organized areas and are given such treatment as may be possible under existing conditions. The collecting points should be selected at sites which will permit early link up with the gliderborne second echelon medical service and/or with friendly ground troops.

BIBLIOGRAPHY

PART ONE, CHAPTER 3

The information contained above has been obtained by personal conferences with and by a study of the written reports by the division surgeons of the following airborne divisions:

13 Airborne Division

(Although the 13 Airborne Division did not engage in combat, Lieutenant Colonel Bunch, the Division Surgeon, participated in the invasion of Southern France as the Surgeon of the Airborne Task Force.)

82 Airborne Division

101 Airborne Division

CHAPTER 4

FIRST ECHELON EVACUATION OF NON-DIVISIONAL CORPS AND ARMY UNITS

SECTION 1

FIRST ECHELON EVACUATION OF NON-DIVISIONAL CORPS AND ARMY COMBAT UNITS

20. Basic Principles. The basic principles of first echelon evacuation in non-divisional units are the same as those enumerated for the infantry and armored divisions. One important lesson learned in the European Theater of Operations is that the conception of "Area Medical Service" is sound. When a regimental combat team is assigned a zone of action, the regimental surgeon must be made responsible for the first echelon evacuation of any and all anti-aircraft artillery, artillery, engineer or other troops supporting the operation and located geographically in the zone of action. It has also been learned that the basic principle of providing first echelon medical service on a battalion rather than on a group or regimental basis is the best solution.

SECTION 2

FIRST ECHELON EVACUATION OF NON-DIVISIONAL CORPS AND ARMY SERVICE UNITS

21. Basic Principles. First echelon evacuation of non-divisional service units was made difficult by the absence or inadequacy of the medical section in the service battalions. It is true that most of the service battalions experienced few, if any, battle casualties but the dispersion of companies attached to battalions and the large number of personnel involved make it desirable that all service battalions operating in the army or corps area be provided with a medical detachment consisting of a medical corps officer, a dental corps officer, a medical administrative corps officer and sufficient medical department enlisted men to provide for dispensary service, to operate venereal disease prophylaxis stations and to supervise the sanitation and hygiene of personnel that may be attached to the battalion. The conception of "Area Medical Service" is not readily applicable to service units because the commander of the service unit normally does not have responsibility for the area in which the unit is geographically located.

BIBLIOGRAPHY

PART ONE, CHAPTER 4

The information contained above has been obtained by personal conferences with and by a study of the written reports by the army and corps surgeons of the following armies and corps:

First US Army	Fifteenth US Army	XIII Corps
Third US Army	VI Corps	XV Corps
Seventh US Army	VII Corps	XVI Corps
Ninth US Army	XII Corps	XX Corps

CHAPTER 5

FIRST ECHELON EVACUATION FOR AMPHIBIOUS OPERATIONS

22. Basic Principles. The basic principles for the medical service

in joint overseas operations are well covered in Field Manual 8-25. The importance of certain of these basic principles has been emphasized in operations in the European Theater of Operations.

a. Special Measures for Maintenance of the Health and Physical Conditions of the Army Ground Force Prior to the Landing. Preventive measures in the marshalling and staging areas and aboard the landing craft will prevent the evacuation of a large number of non-effectives. Living conditions in marshalling areas and on board the landing craft are such as to require vigorous action by commanders and their surgeons at battalion and company levels. Adequate facilities for sterilization of cooking utensils and mess gear must be continuously provided. If malaria is endemic, mosquito bars and chemical prophylaxis must be provided continuously. A thorough study should be made of the subject of motion sickness and adequate methods for eliminating this cause of non-effectiveness should be developed.

b. Waterproofing of Medical Supplies and Equipment. The most satisfactory scheme of waterproofing medical supplies and equipment for the first echelon medical service was by the use of 61 and 81 millimeter mortar ammunition containers.

c. Methods of Transporting Medical Supplies and Equipment. The pack carrier as provided for use in the European Theater of Operations was found to be unsatisfactory in some respects. The weight of the pack plus the weight of the normal individual equipment was more than the medical department soldiers could carry. Many individuals had to wade ashore through a considerable depth of water and some of them were drowned as a result of being unable to maintain their balance with this cumbersome load.

d. Packages and containers of medical supplies should be plainly marked on all sides with a red cross on a white background to facilitate their identification on the beach. The contents of each container should be stenciled on the container or else a standard procedure of packing should be adopted by a task force in order to permit ready identification of the package both day and night without having to unpack the container.

e. Triage on the Beach. It is imperative that a definite plan for triage be established in the first echelon medical service to prevent the unnecessary evacuation of minor casualties during the initial phase of a landing.

BIBLIOGRAPHY

PART ONE, CHAPTER 5

The information contained above has been obtained by personal conferences with and by a study of the written reports by the corps and division surgeons of the following corps and divisions:

VI Corps	3 Infantry Division	36 Infantry Division
VII Corps	4 Infantry Division	45 Infantry Division
1 Infantry Division		

PART TWO

SECOND ECHELON EVACUATION

CHAPTER 1

SECOND ECHELON EVACUATION IN THE INFANTRY DIVISION

SECTION 1

THE COLLECTING COMPANY

23. Employment of the Collecting Company in the European Theater of Operations. The employment of the infantry division collecting company has been extremely varied and recommendations for changes in the organization and employment of this company are as numerous as the individuals interviewed. It is essential that any central agency, reviewing these recommendations, consider all the recommendations as a whole rather than to limit this study to any individual or small group of recommendations. When one considers all of the various types of operations in the European Theater of Operations, it becomes apparent that there was a definite need for the collecting companies in the infantry division. Under a few exceptional circumstances the collecting company was employed as prescribed in Field Manual 8-5; that is, the litter bearers were used to evacuate the battalion aid stations to the collecting station, the station platoon operated the collecting station and the ambulances were used to evacuate the collecting station to the clearing station. It was more common for the collecting company to be attached to the regimental combat team. When this was done, the collecting company operated under the control of the regimental combat team commander and the regimental surgeon. The litter bearers were used forward of the battalion aid station more often than to the rear. It was a common practice to attach ambulances to the battalion aid station and these were used to evacuate casualties direct to the clearing station. Certain divisions routinely, and other divisions under certain conditions, considered the battalion aid station as a collecting point or ambulance loading post rather than as an aid station. When this was done, the collecting station was established and first aid treatment of the type generally supposed to be given at the battalion aid station was not given until the casualty reached the collecting station. Some battalion surgeons routinely exercised extreme care in the battalion aid station to prepare casualties for evacuation and insisted that once the casualty was placed in the ambulance he should be moved directly to the clearing station. Under these conditions, the collecting station was not established and the station platoon of the collecting company was used to reinforce the clearing station and at times was used as a holding section for the clearing station. At other times, when a regimental combat team was employed as a separate task force, the collecting company performed collecting and clearing functions. This was especially true in the initial phases of some amphibious operations. It has been recommended by some divisions that the second echelon medical service be retained as at present and that it be augmented by additional personnel and equipment. Other divisions have recommended that the collecting company be made a part of the regimental medical detachment, that the medical battalion headquarters be abolished and that the clearing company operate directly under the division surgeon. Still other divisions have recommended that the collecting company be replaced by an ambulance company and that the second echelon medical service consist only of ambulance and clearing elements. It will be seen from this discussion that the various recommendations which have been made depend upon the personality or individual characteristics of the officers making the recommendation and upon the conditions under which the division concerned has operated.

24. Advantages and Disadvantages of Retaining the Division Collecting Company.

a. Advantages. The collecting company makes the division medical service more flexible. It affords the division surgeon a reserve of litter bearers to be used for reinforcing battalion medical sections. It provides a transition echelon for training medical department officers and enlisted men for combat service with battalion medical sections. It provides a pool of medical department officers accustomed to combat conditions and readily available for reinforcing or replacing medical department officers in battalion medical sections. It provides medical department personnel and equipment for the operation of veneral prophylaxis stations and dispensaries and for other special purposes when the division or parts of the division are relieved from combat.

b. Disadvantages. Routine employment of the collecting station at times only serves to delay the evacuation of casualties out of the immediate area of combat. There is very little work for the technical personnel to perform when the division is not in combat. The personnel and equipment of the litter bearer and station platoon increases the transportation requirements of the medical battalion.

SECTION 2

THE CLEARING COMPANY

25. Employment of the Clearing Company in the European Theater of Operations. The employment of the clearing company in the infantry division varied considerably, depending upon the policies of the division surgeon, the professional qualifications of the personnel in the clearing company and the availability of field hospital platoons and auxiliary surgical teams for reinforcing the clearing company. Enthusiastic division surgeons with well qualified professional personnel in their clearing companies have recommended that the clearing company be authorized additional equipment, that it be augmented by auxiliary surgical teams and that the use of the field hospital platoon in close support of the clearing station be discontinued. At the other extreme, certain division surgeons have stated that the clearing station acted only as a first aid station and that the work performed there did not justify the existence of a clearing company. Between these two extremes, numerous other variations have existed. When the operations in the European Theater of Operations are considered as a whole, it is seen that there is a very definite need for the division clearing company and that the company has been an essential link in the chain of evacuation.

26. Functions Performed by the Clearing Company. When not engaged in combat, division surgeons have used the clearing company as a provisional hospital for short-term cases to prevent their evacuation from the division. In combat, triage has been one of the most important functions of the clearing company. When hospitalization units of field hospitals were not available, the clearing companies, sometimes reinforced by auxiliary surgical teams, have performed the function of a first priority surgical hospital. Many divisions have utilized elements of the clearing company to operate provisional special purpose hospitals for the treatment of trench foot, neuropsychiatric disorders, venereal disease, recurrent malaria and other short-termed cases. When full advantage has been taken of the capabilities of the division clearing company, the number of slightly wounded and short-termed disease cases evacuated from the division has been greatly reduced.

BIBLIOGRAPHY

PART TWO, CHAPTER 1

See bibliography to Part One, Chapter 1.

CHAPTER 2

SECOND ECHELON EVACUATION IN THE ARMORED DIVISION

SECTION 1

THE LITTER PLATOON

27. The litter bearers of the litter platoon have been used almost exclusively to reinforce the medical sections of the armored infantry battalions. When not required for this purpose, they have been used as guards and/or litter bearers in the treatment station.

SECTION 2

THE AMBULANCE PLATOON

28. The ambulances of the medical company routinely evacuated battalion aid stations directly to the treatment station. This was accomplished either by attaching the ambulances to the aid station, by the use of a modified ambulance shuttle or by use of an advanced ambulance loading post.

SECTION 3

THE TREATMENT PLATOON

29. When the division operated on a narrow front with a single main axis of communication, the treatment platoons of the active medical companies were combined into one treatment station. The treatment station was advanced or withdrawn by leap-frogging the treatment platoons of the several companies. Consolidation of the treatment platoons facilitated the employment of the hospitalization unit of the field hospital and auxiliary surgical teams and simplified the problem of the army surgeon in the evacuation of the armored division. When combat commands operated on separate axes of communications, a medical company was placed in support of the combat command and a separate treatment station was established for the combat command. In some armored divisions, the medical company was attached to the combat command rather than attaching it. The armored divisions that have operated in terrain where buildings were not available are enthusiastic in their praise of the surgical trucks. Those armored divisions that habitually established treatment stations in buildings have never attempted to make full use of the surgical trucks.

BIBLIOGRAPHY

PART TWO, CHAPTER 2

See bibliography to Part One, Chapter 2.

CHAPTER 3

SECOND ECHELON EVACUATION IN THE AIRBORNE DIVISION

SECTION 1

THE LITTER BEARER SECTION

30. Organization of the Litter Bearer Section. The organization of the second echelon litter bearers into three identical sections has proven to be sound. For the invasion of Northern France, the 82 Airborne Division combined the litter bearer and ambulance sections into four collecting detachments, all of which were gliderborne. The 101 Airborne Division in the same operation retained platoon organization of the medical company as prescribed in Table of Organization and Equipment 8-37. Table of Organization and Equipment 8-37 provides a flexible organization and in general is considered satisfactory.

31. Air Transportation for the Litter Bearer Section. It is desirable that the entire medical company be gliderborne. This permits the transportation of adequate medical supplies, equipment and transportation and minimizes the loss of equipment and supplies. It permits the integrity of the second echelon medical service to be maintained and saves the time lost by grouping when parts of the second echelon medical service are dropped by parachute. However, in all operations, glider lift has been at a premium and it has been necessary to drop some of the litter bearer section by parachute. This procedure has been found to be fairly satisfactory.

32. Employment of the Litter Bearer Section. The employment of the litter bearer section has depended upon the situation. The second echelon litter bearers have been used to reinforce and augment first echelon litter bearers. They have been used to evacuate casualties from aid stations to the treatment stations and they have been used to augment and reinforce the treatment stations. The basic principle is that they will be used in whatever manner will best expedite the collection of casualties at the treatment station.

SECTION 2

THE AMBULANCE SECTION

33. Air Transportation for the Ambulance Section. The trucks, ¼-ton, 4x4, equipped with litter racks, must be transported in gliders or, under special circumstances, in troop transports, and should be phased into the operation as early as possible. It is desirable that the ambulances and the treatment station be gliderborne in the same echelon and if possible the litter bearer section should also be in this echelon. However, the arrival of the litter bearers should not be delayed in order to enable them to accompany the ambulances.

34. Employment of the Ambulance Section. The primary mission of the ambulance section is to collect casualties from the aid station and transport them to the treatment station. The ambulances are frequently used to transport casualties from the field of battle to the treatment station. In certain instances, the ambulances have been used to transport casualties direct to the third echelon medical service when ground contact had been established and third echelon medical support had not arrived.

SECTION 3

THE TREATMENT SECTION

35. Organization of the Treatment Section. The organization of the treatment elements of the medical company into three identical treatment sections permits a great amount of flexibility and is considered sound. As in the armored division it is desirable to consolidate the treatment sections into one or two treatment (clearing) stations whenever feasible. This facilitates central control, makes re-supplying by air easier, lessens the requirement for auxiliary surgical personnel, provides better care for the casualties and facilitates third echelon evacuation when contact is made with ground forces. It must be kept in mind that the treatment station of an airborne division not only has the mission of preparing casualties for evacuation but it must also hold these casualties pending the time when their evacuation can be effected.

36. Air Transportation of the Treatment Section. The treatment section should be entirely gliderborne. Early contact with ground troops can not be relied upon and the treatment section must be reinforced with auxiliary surgical personnel. The treatment section should be phased in as early as possible. Sufficient medical supplies should be gliderborne with the treatment section to permit operation for 72 hours but definite plans should also be made for daily re-supply by air.

SECTION 4

SECOND ECHELON EVACUATION IN THE AIRBORNE DIVISION WHEN IT IS EMPLOYED AS GROUND FORCES

37. Enough consideration has not been given to the fact that an airborne division fights as an ordinary infantry division after the landing area has been secured and consolidated. It has not been possible in the European Theater of Operations for the airborne division to be withdrawn after contact was made with ground forces. Tables of organization and equipment for the airborne division are designed primarily to permit air transport of the minimum requirements in personnel and equipment for the division medical service. It has been necessary to augment the personnel and equipment of the airborne division medical service when the division fights as an infantry division. Provisions should be made in the tables of organization and equipment for this additional personnel and equipment with the stipulation that it will be moved with the seaborne or ground transported elements of the division and that it will be made available when contact is established with ground forces. It should be pointed out in this connection that on several occasions the airborne divisions in the European Theater of Operations have been thrown into the line as infantry divisions and at such times medical service suffered from a lack of personnel and equipment similiar to that of the infantry divisions.

BIBLIOGRAPHY

PART TWO, CHAPTER 3

See bibliography to Part One, Chapter 3.

CHAPTER 4

SECOND ECHELON EVACUATION OF NON-DIVISIONAL CORPS AND ARMY UNITS

SECTION 1

SECOND ECHELON EVACUATION OF NON-DIVISIONAL CORPS AND ARMY COMBAT UNITS

38. The most satisfactory method for the evacuation of non-divisional combat units was by the application of the concept of "Area Medical Service". Regimental combat teams and combat command surgeons were given the responsibility of evacuating all combat units in their respective zones of action. Usually the organic medical means available to the regimental and combat command surgeons were sufficient for this purpose. When necessary, additional means were provided by the corps and/or army surgeon. The responsibility for evacuating non-divisional combat units of the corps which were located to the rear of the regimental combat team or combat command rear boundary was given to the corps medical battalion. The responsibility for evacuating combat units to the rear of the corps rear boundary was given to army medical groups or battalions in their respective zones.

SECTION 2

SECOND ECHELON EVACUATION OF NON-DIVISIONAL CORPS AND ARMY SERVICE UNITS

39. Divisions were responsible for the evacuation of non-divisional service units located forward of the division rear boundary and the corps medical battalion was given the responsibility for evacuating units located between the division rear boundary and the corps rear boundary. Medical groups or battalions were given zones of action to the rear of the corps rear boundary and were responsible for evacuating all service units in their respective zones. This responsibility was usually delegated to medical battalions or directly to separate ambulance companies.

BIBLIOGRAPHY

PART TWO, CHAPTER 4

The information contained above has been obtained by personal conferences with and by a study of the written reports by the surgeons of the following armies and corps:

First US Army	VI Corps	XV Corps
Third US Army	VII Corps	XVI Corps
Seventh US Army	XII Corps	XX Corps
Ninth US Army	XIII Corps	

CHAPTER 5

SECOND ECHELON EVACUATION IN AMPHIBIOUS OPERATIONS AND RIVER CROSSINGS

40. It is desirable to phase clearing elements into the beachhead or bridgehead as early as the tactical situation will permit. However, it must be realized that the arrival of clearing elements into the beachhead or bridgehead accomplishes no useful purpose unless the tactical situation is such as to permit efficient operation of the clearing elements. Prior to the arrival of the clearing station, casualties must be

evacuated to clearing elements on the near bank or the near shore or in the case of amphibious operations, floating clearing stations may be established on hospital ships or landing craft standing off shore. Primary considerations are to provide early and rapid evacuation of casualties requiring definitive treatment and the provision for careful triage to prevent the evacuation of casualties which can be returned to duty by the first echelon medical service. It is essential that motor transport for the evacuation of casualties be phased into the beachhead or bridgehead early. Provisions must be made for the expeditious loading of casualties into landing craft and assault boats in order to prevent delay in the turn-around time of these craft.

BIBLIOGRAPHY

PART TWO, CHAPTER 5

The information contained above has been obtained by personal conferences with and by a study of the written reports by the surgeons of the following armies, corps and divisions:

First US Army	VII Corps	4 Infantry Division
Seventh US Army	1 Infantry Division	36 Infantry Division
VI Corps	3 Infantry Division	45 Infantry Division

CHAPTER 6

SECOND ECHELON EVACUATION IN MOUNTAINOUS TERRAIN

41. First echelon aid stations should be located as far forward as possible to reduce the litter carry. This may result in aid stations being in such locations that they can not be evacuated by the standard ambulances. Trucks, ¼-ton, 4x4, equipped with litter racks, have been advantageously used to replace litter bearers in second echelon evacuation at such aid stations. On other occasions, large numbers of litter bearers have been required to evacuate the casualties to an ambulance loading post. Speed in evacuation, the comfort of the patient and the conservation of litter bearers are the primary considerations in this type of second echelon evacuation.

BIBLIOGRAPHY

PART TWO, CHAPTER 6

The information contained above has been obtained by personal conferences with and by a study of the written reports by the surgeons of the following armies, corps and divisions:

Seventh US Army	1 Infantry Division	36 Infantry Division
II Corps	3 Infantry Division	45 Infantry Division
VI Corps	9 Infantry Division	

CHAPTER 7

SECOND ECHELON EVACUATION IN MARSHY AND MUDDY TERRAIN

42. The utilization of motor transportation to effect the speedy

comfortable evacuation of casualties has been the outstanding contribution of this war in this type of second echelon evacuation. The choice of vehicle will depend upon terrain and the type of vehicle available. The truck, ¼-ton, 4x4, is the vehicle more often available and it has operated efficiently in especially difficult terrain. At times it has been necessary to resort to the use of the carrier, M-29, (The Weasel), due to the excellent flotation of this vehicle. The car, half-track, M3A2, ambulance, has also been used to advantage but its use has been limited by its excess weight. The truck, 2½-ton, 6x6, has unusual cross-country ability and at times has been used to advantage.

BIBLIOGRAPHY

PART TWO, CHAPTER 7

The information contained above has been obtained by personal conferences with and by a study of the written reports by the surgeons of the following armies, corps and divisions:

Seventh US Army	XIX Corps	4 Infantry Division
Ninth US Army	1 Infantry Division	78 Infantry Division
VI Corps	3 Infantry Division	102 Infantry Division

PART THREE

THIRD ECHELON EVACUATION

CHAPTER 1

THIRD ECHELON EVACUATION OF THE INFANTRY DIVISION

43. The soundness of the basic doctrine "The Medical Service must be Continuous" has been clearly illustrated in the third echelon evacuation of the infantry division. The conception that the infantry division will be evacuated on call made through G-4 channels has not been practical. It has been the custom for the army surgeon through the medium of medical groups and medical battalions to place a certain number of ambulances with the division clearing station. The ambulance drivers and orderlies mess with the clearing station, perform motor maintenance there and evacuate casualties to the evacuation hospital as required. Usually the ambulance platoon leader is located at the division clearing station and he has been able to keep his company commander informed at all times of ambulance requirements. If it is at all possible, third echelon evacuation should be performed entirely during daylight hours. The hazards of blackout driving and the loss of sleep incurred by casualties and medical department personnel does not warrant evacuation during the hours of darkness except under unusual circumstances. The necessity for some central control over third echelon evacuation has been clearly demonstrated. Otherwise, certain evacuation hospitals will be overcrowded while other hospitals

will not receive their proportionate share of patients. Before this central control was established, ambulances frequently went from one hospital to another where they were unable to dispose of their casualties because of overcrowded conditions and/or surgical backlog in the hospitals. This central control has been best exercised by the army surgeon through the medium of medical groups. The allocation of bed credits to any hospital must be based on surgical backlog rather than the total number of admissions. It has been more practical to evacuate division clearing stations using individual ambulances or ambulances in small groups than by the use of relatively large ambulance convoys. It is essential that the first priority surgical hospital operating in the vicinity of the division clearing station have adequate facilities for holding non-transportable surgical casualties when the clearing station displaces forward.

BIBLIOGRAPHY

PART THREE, CHAPTER 1

The information contained above has been obtained by personal conferences with and by a study of the written reports by the surgeons of the following armies:

First US Army	Seventh US Army
Third US Army	Ninth US Army

CHAPTER 2

THIRD ECHELON EVACUATION OF THE ARMORED DIVISION

44. Third echelon evacuation for the armored division is the same as for the infantry division except that several additional difficulties are encountered. The fact that the armored division frequently operates in separate combat commands results in there being two and sometimes three clearing stations per division. This increases the requirements for first priority surgical hospitals and makes third echelon evacuation more difficult. Ambulances for third echelon evacuation must be provided at two or three clearing sites instead of one. The speed with which an armored division advances increases the requirements for ambulances and makes it more difficult to maintain communications with the clearing station. The high degree of maneuverability characteristic of the armored division makes it more difficult to predetermine the axis of evacuation. Armored divisions frequently make deep penetrations in order to operate well within the enemy rear. This sometimes results in a severance of the lines of communication and permits the enemy to intercept ambulances engaged in third echelon evacuation. The decision has to be made locally, in conformity with existing policies, as to whether the third echelon ambulances will depend upon the protection afforded by the Geneva Convention or whether they will be given an armed escort. There has been considerable discussion as to the feasibility of third echelon evacuation by air under such conditions. The uncertainty of air evacuation, due to weather, availability of landing strips, availability of planes and enemy action precludes any large scale reliance upon this type of evacuation. It has always been necessary to make plans for adequate ground evacuation.

BIBLIOGRAPHY

PART THREE, CHAPTER 2

See bibliography to Part Three, Chapter 1.

CHAPTER 3

THIRD ECHELON EVACUATION OF THE AIRBORNE DIVISION

SECTION 1

THIRD ECHELON EVACUATION BY MOTOR TRANSPORT

45. Airborne divisions in the European Theater of Operations have either landed in beachheads prior to the arrival of ground troops or they have been dropped in the enemy rear. Initially there is no contact between the airborne troops and the ground troops. Therefore, third echelon evacuation by motor transport is not possible. It is essential that close liaison be maintained between the army surgeon and the airborne division surgeon and that detailed plans be made for prompt third echelon evacuation as soon as contact with the ground forces is made. It is equally important that the army surgeon provide the airborne division surgeon with adequate means for providing his own third echelon medical service until such time as contact is established. The army surgeon must have ambulances available and push them up close behind the ground troops who are to make contact with the airborne troops in order that the impetus of this evacuation may come from the rear. The army surgeon must be prepared to evacuate the large number of casualties immediately after contact is made and consideration must be given to the possibility that these casualties may not be as well prepared for evacuation as would be expected of casualties in an infantry or armored division. Initially the axis of evacuation to the airborne division may be susceptible to interdiction or inception by the enemy. Provision must be made for the taking in of medical supplies and equipment by the first medical department transport to reach the airborne division. The airborne division must be provided with holding facilities for non-transportable casualties if it is to continue the advance. Replacements for medical department personnel in the airborne division must be provided early.

SECTION 2

THIRD ECHELON EVACUATION BY AIR LIFT

46. If contact with ground troops is delayed unduly, consideration must be given to third echelon air evacuation. This is relatively easy if facilities are available for landing transports in the area controlled by the airborne division. Loading of casualties into the transports must be expedited, however, because the air force is reluctant to permit any delay in the take-off of transports from the landing strips. The feasibility of using liaison type aircraft for third echelon evacuation depends upon the enemy's capabilities of interfering by the use of fighter aircraft or anti-aircraft weapons. Air pick-up of casualties loaded in gliders is feasible under certain conditions and has been practiced to a limited extent in the European Theater of Operations. Again it should be emphasized that the uncertainty of air evacuation does not permit full reliance upon this means of transportation in third echelon evacuation.

BIBLIOGRAPHY

PART THREE, CHAPTER 3

The information contained above has been obtained by personal conferences with and by a study of the written reports by the surgeons of the following armies and airborne divisions:

First US Army	13 Airborne Division
Seventh US Army	82 Airborne Division
Ninth US Army	101 Airborne Division

CHAPTER 4

THIRD ECHELON EVACUATION OF NON-DIVISIONAL CORPS AND ARMY TROOPS

47. Clearing companies have seldom been used by corps and armies for the establishment of army and corps clearing stations. As a rule, non-divisional corps and army troops were evacuated to division clearing stations or the second echelon medical service evacuated casualties from these troops direct to evacuation hospitals. Close liaison between army and corps surgeons and between corps and army G-4's has usually made it possible for the army surgeon to locate evacuation hospitals forward of the corps rear boundary. When army and corps clearing stations were established, medical groups were given the responsibility for the third echelon evacuation of these installations.

BIBLIOGRAPHY

PART THREE, CHAPTER 4

The information contained above has been obtained by personal conferences with and by a study of the written reports by the surgeons of the following armies and corps:

First US Army	VI Corps	XIX Corps
Third US Army	VII Corps	XX Corps
Seventh US Army	XII Corps	
Ninth US Army	XV Corps	

CHAPTER 5

THIRD ECHELON EVACUATION IN AMPHIBIOUS OPERATIONS AND RIVER CROSSINGS

48. Early phasing in of evacuation hospitals, medical groups, medical battalions and ambulance companies has done much to increase their efficiency in third echelon evacuation for these operations. Prior to the arrival of third echelon medical service into the beachhead, close coordination and generous cooperation between the army and the navy has been required. The second echelon medical service evacuated casualties to the vicinity of the high water mark, where the navy took over and evacuated them by means of returning landing craft and water ambulances. In river crossings, prior to the establishment of evacuation hospitals in the bridgehead, third echelon evacuation was performed by army motor

ambulance to evacuation hospitals on the near bank. In isolated instances, air pick-up of casualties loaded into gliders was used. Prior to the establishment of two-way bridges, it was necessary for the army surgeon to maintain close liaison with the provost marshall to effect the return of ambulances against the flow of traffic into the bridgehead. Air evacuation by the use of liaison type planes was used to a limited extent in the Remagen bridgehead operations.

BIBLIOGRAPHY

PART THREE, CHAPTER 5

See bibliography to Part Three, Chapter 1.

PART FOUR

FOURTH ECHELON EVACUATION

CHAPTER 1

FOURTH ECHELON EVACUATION IN AMPHIBIOUS OPERATIONS

SECTION 1

FOURTH ECHELON EVACUATION PRIOR TO THE ARRIVAL OF FIXED HOSPITALS IN THE BEACHHEAD

49. Build-up of the Medical Service in the Beachhead. Initially in an amphibious operation only the first echelon medical service comes ashore and there is a steady flow of casualties from the beachhead to higher echelons of medical service afloat and on the near shore. As the second echelon medical service, reinforced by surgical specialty teams, comes ashore, definitive treatment is possible, triage becomes more efficient and a small portion of casualties are held in the beachhead; but the steady flow of casualties to the near shore continues. After the arrival of the third echelon medical service with a relatively large number of beds and with convalescent facilities available, it becomes possible to establish a definite evacuation policy. Short-term cases may be held in the evacuation hospitals and returned to duty either directly or through the medium of the convalescent hospital. Non-transportable casualties may be held in first priority surgical hospitals and evacuation hospitals until they are fully prepared for evacuation to the near shore. Station hospitals, especially the mobile type, can be profitably employed at this stage to serve concentrations of communications zone troops or staging combat troops. From the above discussion it will be seen that at this point in the operation there is a decrease in the requirements for the evacuation of casualties to fourth echelon medical installations on the near shore. However, this drop in the evacuation curve is only temporary and barely permits time for the organization of the fourth echelon evacuation between third echelon installations on the far shore and fourth echelon installations on the near shore. It is at this

critical stage that adequate provisions must be made for air and water holding units on the far shore. In the European Theater of Operations, fourth echelon evacuation at this stage was accomplished by the use of troop transport aircraft, landingships tank, landingships infantry, troop transports and hospital carriers. Air evacuation is especially desirable at this time.

a. Phasing in of General Hospitals. The early arrival of general hospitals into the beachhead is desirable, however, it must be realized firstly that there is a tremendous requirement for holding units in the beachhead and secondly that considerable time and effort is required to prepare general hospital sites. If general hospitals are brought in too early, they will be used as holding units and this is not economical of personnel or equipment. Likewise, if general hospitals arrive too early, they will merely bivouac in staging areas pending the preparation of sites for their installations. Another consideration that must be kept in mind is that general hospitals require a great deal of transportation and they may be immobilized near the beach awaiting transportation while casualties are being flown over them to the near shore.

SECTION 2

FOURTH ECHELON EVACUATION SUBSEQUENT TO THE ARRIVAL OF FIXED HOSPITALS IN THE BEACHHEAD

50. Factors Influencing the Utilization of General Hospitals in the Beachhead. General hospital type care can not be provided efficiently until there has been considerable expansion of the beachhead or until the combat troops have broken out of the beachhead. A beachhead that has expanded without achieving a break-out is a very busy place and priority goes to a build-up of combat troops preparing for the break-out. Under such conditions, it is extremely difficult to establish general hospitals and operate them efficiently. After the break-out has been achieved, the decision must be made whether the general hospitals will be located in the vicinity of the beachhead or whether they will be pushed forward in close support of the combat troops. If the general hospitals are concentrated in the vicinity of the beachhead, fourth echelon evacuation becomes a problem of evacuating casualties to the group of hospitals. If rail facilities have been extensively damaged and the lines of communication become extended, it may not be economical or even possible to evacuate casualties by surface transportation to this group of hospitals. If air evacuation is used from the army area, it may be more desirable or even necessary to fly over the group of hospitals in the vicinity of the beachhead and to evacuate the casualties direct to the near shore. If the decision is made to move the general hospitals forward in close support of the armies, there may be considerable delay first on account of damaged transportation facilities and second due to the time required to prepare facilities or to repair existing facilities for general hospital sites. These difficulties and delays in establishing general hospitals do not decrease the requirements for beds on the near shore and if the general hospitals are not able to operate as such, it will be necessary to evacuate increasing numbers of casualties to the near shore for definitive treatment. The fact that considerable fixed beds have been moved from the near shore to the far shore may reduce the number of available beds on the near shore below the number required. As a result, it may be necessary to expedite the fifth echelon evacuation of casualties to the Zone of the Interior and thus adversely effect the evacuation policy.

BIBLIOGRAPHY

PART FOUR, CHAPTER 1

The information contained above has been obtained by personal conferences with and by a study of the written reports by the surgeons of the following headquarters:

Advance Section, Communications Zone European Theater of Operations
Continental Advance Section

CHAPTER 2

FOURTH ECHELON AIR EVACUATION

SECTION 1

CONTROL OF AIR EVACUATION

51. In the European Theater of Operations there was no rigid control over air evacuation. Airplanes and airfields were under the direct control of the Army Air Forces. Air evacuation was obtained by request. There was no one below the level of the Supreme Allied Commander who could order air evacuation. Fortunately there was close cooperation between the air forces and the ground forces and no serious difficulty was encountered. The wisdom of such loose control from the ground force standpoint has been questioned. It has been recommended that a certain number of aircraft and air force personnel be placed under the control of the army ground force commander to be used exclusively for air evacuation and air supply. It can be forseen that such a procedure would encounter many difficulties in regards to construction of landing strips, maintenance and care of airplanes, replacement of spare parts peculiar to the air force, replacement of flying personnel, meteorological intelligence and control of air traffic. In favor of this plan it can be stated that it would definitely be desirable to have a certain number of planes painted white, marked with a red cross and properly equipped for evacuation. Had such planes been available, they could also have been used to prevent the breakdown of the system of automatic exchange of medical supplies and equipment. The degree of air superiority enjoyed by the Allies made it unnecessary to depend upon the protection afforded by the Geneva Convention in air evacuation but when confronted by a more serious threat from enemy aircraft it might be desirable to depend upon the protection of the red cross. It is of interest to note that airplanes carrying patients were at times escorted by fighters in the Mediterranean Theater of Operations.

Section 2

AIR HOLDING UNITS AT THE AIRFIELDS

52. Medical holding units at transfer points along the main routes of evacuation are essential. This is especially true of medical air holding units. The uncertainty of air evacuation and the fact that delays are so frequent makes it necessary that more elaborate medical holding units be provided at the airfields. These holding units must be capable of retaining a relatively large number of casualties and they must be prepared to provide highly specialized medical attention. Air holding units should be located close enough to the airfield to permit rapid

transportation of the casualties to the planes but must be far enough away from the field to prevent damage by bombs when the airfield is bombed at night or through the clouds. The holding unit must be so organized, staffed and equipped as to permit rapid loading of patients on planes on short notice. Otherwise, the planes may not be able to delay their departure long enough to permit the loading of casualties. Supply facilities at the air holding units must be adequate to provide for automatic exchange of medical supplies and equipment. The air holding unit should have adequate communications with the air force, the army surgeon and the evacuation hospitals.

SECTION 3

DISPOSITION OF THE CASUALTIES IN THE COMMUNICATIONS ZONE

53. It is desirable that the general hospitals in the Communications Zone be grouped near airfields so as to permit rapid unloading of planes and to facilitate the transportation of casualties from the airfield to the hospital. If this is not possible, air holding units must be provided at the receiving airfield in the communications zone. If specialized general hospitals are being operated in the communications zone, facilities should be available at the airfield for the sorting of casualties and for directing them to the proper hospital initially.

SECTION 4

PROPERTY EXCHANGE IN AIR EVACUATION

54. In the European Theater of Operations, armies have never been able to depend upon the automatic exchange of property in air evacuation. This was especially true of such bulky and heavy items as litters, blankets and splints. Facilities should be provided either for an efficient and dependable automatic exchange in air evacuation or automatic exchange in air evacuation should be done away with entirely and a scheme set up for re-supplying the armies by other means.

SECTION 5

ROLE OF THE MEDICAL AIR EVACUATION SQUADRON

55. The medical air evacuation squadron has served a useful purpose in air evacuation. Slightly wounded and walking casualties have been evacuated by the air force without the assistance of medical personnel. However, it is desirable that medical personnel be provided to supervise the evacuation of all types of casualties. This is especially important from the standpoint of keeping accurate medical records of evacuation and of insuring that the casualties are properly received and cared for at the communications zone airfield. The medical air evacuation squadron has been routinely based at the communications zone airfield and the personnel have gone forward with planes to pick up casualties. It has been recommended that this procedure be reversed and that the medical air evacuation squadron be based at the forward fields and accompany the patients to the rear.

SECTION 6

ROLE OF THE MEDICAL REGULATING OFFICER IN FOURTH ECHELON AIR EVACUATION

56. The role played by the medical regulating officer in air evacuation has varied among the several armies. The Seventh US Army did not have a medical regulating officer. The Third US Army dealt directly with the air force but kept the medical regulating officer informed as to what was taking place. The Ninth US Army depended upon the medical regulating officer to provide and supervise all air evacuation. The First US Army employed different procedures, depending upon the situation at the time. It is recommended that the medical regulating officer be given the same control over air evacuation as is exercised over rail evacuation.

BIBLIOGRAPHY

PART FOUR, CHAPTER 2

The information contained above has been obtained by personal conferences with and by a study of the written reports by the following:

Surgeons: First US Army
Third US Army
Seventh US Army
Ninth US Army
Surgeon, Advance Section, Communications Zone
Surgeon, Continental Advance Section

Medical Regulating Officer, Office of the Chief Surgeon, European Theater of Operations.

CHAPTER 3

FOURTH ECHELON RAIL EVACUATION

SECTION 1

HOSPITAL TRAIN REQUIREMENTS IN THE EUROPEAN THEATER OF OPERATIONS

57. The hospital train requirements during the operations on the Continent in the European Theater of Operations varied greatly from time to time. The isolation of the battlefield by the tactical air force prior to the invasion of France destroyed practically all of the railroad bridges. A considerable amount of damage had been done to rolling stock on the Continent prior to and immediately after the invasion. These two factors required importation of large amounts of heavy bridging material, machinery and rolling stock. Port facilities were required for the unloading of this material and such port facilities were not immediately available. The tremendous amount of tonnage involved in moving this equipment from the United Kingdom to the Continent resulted in it having a low priority for movement. As a result of all this, rail transportation was not used to any extent until the front became stabilized along the Siegfried Line in early winter. Initially hospital trains were improvised out of French rolling stock and later hospital trains were moved across the Channel from the United Kingdom. No definite logistical basis can be given for computing the hospital train requirements for a theater of operations. The length of the line of communication, the condition of the railways, the availability of locomotive power, the turn-around-time, and the estimate of casualties to be expected from a partic-

ular operation are all factors that cannot be predicted for planning purposes. It has been found that the nearest approach to a basis for computing requirements is one train per division. During the summer months, the necessity for hospital trains is considerably alleviated by the use of air evacuation. With the onset of winter, with its short days and bad flying weather, the need for hospital trains was greatly increased. The use of the "Red Ball Motor Express" was a more or less satisfactory solution to the problem of transporting supplies but evacuation of casualties by motor ambulance over extended lines of communication was entirely unsatisfactory. Patients' injuries and diseases are aggravated by long ambulance rides. Facilities are not available in ambulances for feeding patients and latrine facilities are not available for the patients. Adequate surgical and nursing care can not be provided enroute. Long trips that can not be completed during daylight hours are made increasingly hazardous for the patient due to black-out or semi-black-out driving at night. The control of individual ambulances or ambulance convoys is difficult and they frequently become lost and/or delayed enroute. Long ambulance rides are extremely uncomfortable to the patient. Ambulance transportation over great distance is not economical of medical department personnel or ambulances.

SECTION 2

HOLDING UNITS AT THE FORWARD RAILHEAD

58. The uncertainty as to the exact time of arrival of hospital trains makes it necessary that medical holding units be established at the railhead. The collection of casualties in railhead holding units also expedites the loading of hospital trains and reduces the turn-around time of the hospital train. Hospital trains usually are unable to proceed as far forward as the evacuation hospital and this makes the rail holding unit an absolute necessity.

SECTION 3

PROPERTY EXCHANGE IN FOURTH ECHELON RAIL EVACUATION

59. The automatic exchange of medical department supplies and equipment was more satisfactory in rail evacuation than in air evacuation but there were many difficulties encountered. The communications zone medical supply depot was usually located at some distance from the unloading point of the hospital train. This necessitated truck transportation of supplies from the depot to the detraining point and the train had to be shifted in the marshalling yards to pick up the medical supplies. This increased the turn-around time of the hospital train and on many occasions the train departed for the front without supplies rather than be delayed.

SECTION 4

DISPOSITION OF CASUALTIES IN THE COMMUNICATIONS ZONE

60. The inability of one general hospital to care for one full trainload of patients was one of the factors resulting in the grouping of general hospitals. General hospitals should be grouped so that they are readily accessible to railheads and airfields. When certain general hospitals are designated for the specialized care of certain types of casualties, facilities should be available at the

detraining point for sorting the casualties and transporting them to the proper hospital. Hospital centers should not be located near principal marshalling yards or railroad terminals due to the danger of bombing but they should not be so far away as to necessitate excessive ambulance hauls.

SECTION 5

ROLE OF THE MEDICAL REGULATING OFFICER IN RAIL EVACUATION

61. Rail evacuation was controlled to a great extent in the European Theater of Operations by the Theater Medical Regulating Officer in the Office of the Chief Surgeon. During the latter phase of the operations, a medical regulating officer was assigned to the regulating station of the Advance Section, Communications Zone and operated directly under the control of the Advance Section. It was found that satisfactory results were obtained only when the regulating officer worked in very close contact with the Office of the Theater Chief Surgeon rather than solely as a regulating officer with the regulating station. However, as the medical regulating officers in the regulating stations supporting the armies became more experienced, some decentralization of this control was effected. The control of rail evacuation by the medical regulating officer as outlined in field service regulations is sound but the table of organization of the regulating station should be changed to provide a field grade medical officer, preferably a lieutenant colonel, as medical regulating officer.

BIBLIOGRAPHY

PART FOUR, CHAPTER 3

See bibliography to Part Four, Chapter 2.

PART FIVE

FIFTH ECHELON EVACUATION

CHAPTER 1

FACTORS INFLUENCING THE EVACUATION POLICY IN THE EUROPEAN THEATER OF OPERATIONS

SECTION 1

THE EVACUATION POLICY ON THE CONTINENT

62. The evacuation policy on the Continent was determined by two factors, namely the requirements for mobile beds on the Continent and the availability of fixed hospital beds on the Continent. Initially in the amphibious operation, all casualties that could be transported

were evacuated to the near shore in order to free mobile beds. As the medical service was built up in the beachhead, better triage was performed and convalescent facilities were established to permit the return to duty of short-termed cases without having to evacuate them to the United Kingdom. After the arrival of general hospitals on the Continent, it was planned to establish a 120-day evacuation policy and to eventually provide complete definitive care on the Continent and to evacuate cases requiring more than 120 days for recuperation to the Zone of the Interior. As has been pointed out before, the delay in setting up general hospitals on the Continent plus the fact that air evacuation returned an unexpectedly large number of casualties to the United Kingdom brought about a change in this planned evacuation policy. The delay in setting up general hospitals on the Continent resulted in a dangerously low reserve of fixed hospital beds in the European Theater of Operations. Consequently the 120-day evacuation policy for return to the Zone of the Interior had to be reduced to 90 days.

SECTION 2

THE EVACUATION POLICY IN THE UNITED KINGDOM

63. The delay in establishing general hospitals on the Continent resulted in the evacuation to the United Kingdom of a high percentage of the casualties incurred on the Continent which required definitive treatment. It had been planned to close out at an early date those general hospitals in the United Kingdom not required for the definitive care of casualties occuring among the troops in the United Kingdom. The continued flow of casualties from the Continent prevented the closing out of these general hospitals and as a result the evacuation policy in the United Kingdom had to be reduced to 90 days in order to provide adequate fixed hospital beds.

BIBLIOGRAPHY

PART FIVE, CHAPTER 1

The information contained above has been obtained by personal conferences with and by a study of the written reports by:

Colonel F. H. Mowrey, MC, Evacuation Officer, Office of the Chief Surgeon, European Theater of Operations.

CHAPTER 2

FIFTH ECHELON EVACUATION BY HOSPITAL SHIP

SECTION 1

REQUIREMENTS FOR HOSPITAL SHIPS IN THE EUROPEAN THEATER OF OPERATIONS

64. It would be ideal if all fifth echelon surface evacuation could be performed by hospital ship. However, this would not be economical of shipping. When the plans were made for fifth echelon evacuation from the European Theater of Operations, it was realized that a large amount of space would be available for casualties on troop transports and passenger carrying aircraft returning to the Zone of the Interior from the European Theater of Operations. There was also an extreme shortage of

hospital ships. The tremendous requirements for shipping space to transport troops, supplies and equipment to the theaters of operations prevented the construction or conversion of adequate numbers of hospital ships. For these reasons, sufficient hospital ships were never available for the evacuation of casualties from the European Theater of Operations.

SECTION 2

CONTROL OF HOSPITAL SHIPS

65. Due to the global aspects of World War II and to the interdependence of the Americans and British upon one another, the control of hospital ships was vested in the Combined Chiefs of Staff in order to permit their allocation to the several theaters to meet the most urgent requirements. Such high level control of hospital ships was necessary but was unsatisfactory from the standpoint of each of the several theater surgeons.

BIBLIOGRAPHY

PART FIVE, CHAPTER 2

The information contained above has been obtained by personal conferences with and by a study of the written reports by the Evacuation Officers in the Office of the Chief Surgeon of the Mediterranean Theater of Operations and the European Theater of Operations.

CHAPTER 3

TROOPSHIPS IN FIFTH ECHELON EVACUATION

SECTION 1

REQUIREMENTS FOR SPACE ON TROOPSHIPS FOR FIFTH ECHELON EVACUATION IN THE EUROPEAN THEATER OF OPERATIONS

66. Troopships returning to the Zone of the Interior from the European Theater of Operations were the most dependable of the facilities available to the Theater Surgeon for fifth echelon evacuation. However, the availability of such facilities was not as certain as would have been the case if sufficient hospital ships had been available to permit the allocation of hospital ships to meet all the requirements of the Theater Surgeon. In planning for fifth echelon evacuation it was necessary for the Theater Surgeon to assume that this was the only dependable means of evacuation. Such air lift and hospital ship beds as might become available were highly appreciated but could not be definitely depended upon when drawing up the evacuation plan.

SECTION 2

CONTROL OF FIFTH ECHELON EVACUATION BY TROOPSHIPS

67. The Theater Surgeon could not exercise direct control over fifth echelon evacuation by troopship for several reasons. The large, converted luxury liners, such as the Queen Mary, could not tie-up at

docks but were forced to debark passengers and embark casualties by means of "lighters" in the River Clyde. The uncertainty of the exact time of arrival of these ships and the necessity for their quick turn-around made it difficult to prepare schedules for hospital trains from England to Scotland. These large ships required a considerable amount of labor after the debarkation of passengers before they could be prepared to receive litter casualties. It was necessary to provide medical department personnel from the theater of operations to accompany these casualties to the Zone of the Interior. The same problems were encountered to a lesser degree in the use of the smaller troop transports which were able to tie-up at docks in such ports as Liverpool. After the Allied troops became firmly established on the Continent of Europe, the large liners continued to embark casualties in the River Clyde but there was considerable uncertainty as to whether the medium size or smaller transports would debark at ports in the United Kingdom or at Continental ports. This further complicated the evacuation of casualties from hospital centers on the Continent and in the United Kingdom to ports. Plans were made to discontinue the use of the United Kingdom as a base, except for the large troop transports, prior to the winter of 1944 and 1945. However, the delay in securing and reconstructing ports on the Continent of Europe resulted in a change in this plan and ships were frequently diverted from Continental ports to ports in the United Kingdom and/or from ports in the United Kingdom to ports on the Continent.

BIBLIOGRAPHY

PART FIVE, CHAPTER 3

The information contained above has been obtained by personal conferences with and by a study of the written reports of Evacuation Officers in The Office of the Chief Surgeon, European Theater of Operations, and the Office of the Deputy Chief Surgeon, United Kingdom Base.

CHAPTER 4

FIFTH ECHELON EVACUATION BY AIR

SECTION 1

THE AVAILABILITY AND DEPENDABILITY OF AIR LIFT

68. The weather, the availability of aircraft and the availibility of airfields introduce a marked degree of uncertainty which adversely influenced the plans for fifth echelon evacuation by air. The air lift which was available played a great part in the over all scheme of fifth echelon evacuation and a serious shortage of beds in the theater would have occurred if this air lift had not been available.

SECTION 2

THE ADVANTAGES AND DISADVANTAGES OF AIR LIFT AS COMPARED WITH SURFACE TRANSPORTATION

69 Advantages of Air Lift. Air lift provided a speedy form of fifth echelon evacuation but speed in this echelon of evacuation is not as essential as it is in the lower echelons. Air lift augmented

surface transportation and prevented a serious overcrowding of hospitals in the theater. There was space in the vicinity of airfields for the establishment of hospital centers. This considerably reduced the requirements for hospital trains and ambulances in the evacuation of casualties from the hospital center to the point of embarkation. The hazards incident to sea warfare were avoided.

70. Disadvantages of Air Lift. The availability of air lift could not be depended upon to any degree of certainty. The number of casualties that could be transported by air was relatively small. Air transportation is not economical in the use of medical department personnel required to accompany the casualties. The casualties were subjected to the hazards incident to trans-oceanic flying.

BIBLIOGRAPHY

PART FIVE, CHAPTER 4

The information contained above has been obtained by personal conferences with and by a study of the written reports by:

Colonel F. H. Mowrey, MC, Evacuation Officer, Office of the Chief Surgeon, European Theater of Operations.

PART SIX

CONCLUSIONS AND RECOMMENDATIONS

71. The importance of the company aid man in administering first aid and as one of the principal factors in promoting morale in front-line companies has been underestimated. These men should be carefully selected and thoroughly trained not only in first aid but also in the tactics of the infantry soldier. Company aid men suffer a high casualty rate and adequate provisions must be made for providing trained reinforcements without delay.

72. Litter bearers must be in excellent physical condition and must possess a reasonable amount of intelligence. They must be organized and trained to work in groups and must be thoroughly familiar with the tactics of the infantry soldier.

73. The truck, ¼-ton, 4x4, equipped with litter racks, was the most popular and most widely used form of motor transportation for replacing or supplementing litter bearers forward of the battalion aid station. It has replaced the carrier, field, collapsible, and the latter should be deleted from tables of equipment.

74. Armored ambulances were not required in the European Theater of Operations for their armor per se. The car, half-track, M3A2, ambulance and the carrier, M-29, were used on many occasions but their use was predicated on the better flotation and the increased cross-country mobility afforded by these vehicles.

75. Skis and toboggans afforded considerable savings of manpower in the evacuation of casualties over snow-covered terrain.

76. The evacuation of litter casualties by pack animals is extremely difficult and requires considerable training of both the animals and their attendants.

77. Dog-drawn sleds should be made available in theaters of operations with snow-covered terrain.

78. Company aid men with tank companies should be provided with trucks, ¼-ton, 4x4, equipped with litter racks, to be used for their own transportation and also for the evacuation of casualties occuring in tanks.

79. Evacuation of casualties from tanks is primarily a problem for the tank crew rather than for the medical department. All tank crewmen should be trained to evacuate themselves and other members of the crew from disabled and burning tanks.

80. The first echelon medical service with airborne troops should accompany their respective battalions in an airborne operation. If the combat troops are dropped by parachute, the medical section should be also. If the combat troops are transported by glider, the battalion medical section should accompany them in these gliders.

81. The second echelon medical service for airborne troops should be gliderborne and should be self-sustaining for a period of 72 hours.

82. Medical supplies for airborne troops should be carried by medical department individuals or should be gliderborne. Supplies dropped by parachute are difficult to recover.

83. The conception of "Area Medical Service" is sound and should be employed whenever the troops being furnished medical service are responsible for an area.

84. The maintenance of the health and physical condition of troops in marshalling and staging areas prior to launching an amphibious operation is a very difficult problem and requires energetic action by the surgeons of all echelons.

85. Medical supplies and equipment for amphibious operations were very satisfactorily waterproofed and transported by the use of 61 and 81 millimeter mortar ammunition containers.

86. The pack carrier was not entirely satisfactory in amphibious operations because the weight of the pack interfered with an individual who tried to walk or swim in water.

87. The collecting company in the infantry division should be retained because of the flexibility it affords in second echelon medical service. The collecting company should remain a part of the medical battalion but division surgeons must insure that it is used to the maximum extent at all times in support of battalion and regimental sections.

88. The clearing company in the infantry division has filled a very definite need and should be retained in the medical battalion. A three platoon company is desirable and will be necessary if the size of the infantry division is increased.

89. The medical company in the armored division was quite satisfactory for all the needs of the armored division.

90. The medical company in the airborne division, when reinforced by a first priority surgical hospital, meets the minimum requirements of the division in airborne operations but is inadequate when the airborne division fights as ground troops. Additional ambulances should

be provided to accompany that part of the division which moves overland or by water.

91. In the initial stage of amphibious operations, the primary consideration is that of evacuating casualties from the far shore to the near shore. As soon as the tactical situation permits, clearing and hospital facilities should be provided and triage put into effect.

92. Third echelon evacuation of divisions must be continuous and it should not be required that the division call for evacuation. This evacuation can be performed best during daylight hours.

93. A first priority surgical hospital is required in the vicinity of division clearing stations to take care of non-transportable casualties. This unit must be provided with holding facilities to enable the unit to follow the division in an advance.

94. Liaison type aircraft and gliders may be used effectively in the third echelon evacuation of divisions under special circumstances.

95. Each army corps should be provided with a medical battalion consisting of a headquarters and headquarters detachment, medical battalion; two medical collecting companies, separate; and one medical clearing company, separate.

96. Medical holding units are required at each transfer point along the axis of evacuation.

97. Air evacuation provides many advantages over other forms of evacuation and its use should be continued and expanded.

98. The disposition of casualties at airfields and railroad centers in the Communications Zone presents a difficult problem and adequate provisions for prompt triage should be provided.

99. Automatic exchange of medical department property was not practicable in air evacuation in the European Theater of Operations.

100. The medical air evacuation squadron is just as essential as the personnel of a hospital train.

101. The medical regulating officer in the regulating station should be a field grade medical corps officer and should control all forms of evacuation and the medical holding units.

102. Hospital trains are necessary due to the undependability of air evacuation and due to the impracticability of long distance evacuation by motor ambulances. Hospital trains should be provided with sufficient medical department personnel to enable them to adequately care for casualties over a period of several days.

103. General hospitals should be so located that they can provide the type of treatment for which they were designed. The use of general hospitals as evacuation hospitals or medical holding units is uneconomical and undesirable.

104. Hospital ships provide a much more satisfactory means for the transportation of casualties by water than the improvised use of landing craft and troop transports. Hospital ships should be provided in sufficient numbers for this purpose.