DA FORM 1 JAN 56 543 (3 PART)

PREVIOUS EDITIONS OF THIS FORM ARE OBSOLETE

REQUEST FOR RECORDS (Charge Out) 335	DATE OF REQUEST 30 Sept 1968	DATE RECORDS MUST BE RETURNED (To be completed by office of record)	NO. A 11080314

1. OFFICE OF RECORD

a. NAME: MRS. P. B. VIVETTE

b. ADDRESS: HISTORIANS' BRANCH, THU

2. RECORDS REQUESTED (Give File classification, Subject, Date, and Other Identifying Information, or if Military Personnel Records are requested, give Name, Grade, Service Number, Purpose for which records are to be used and check box(es) below)

Annual Report, Office of the Surgeon, FIRST U. S. ARMY, 1944

HD:319.1-2

	ALL		201 FILE		HISTORICAL 201		CURRENT 201		ENLISTED RECORD
	EFFICIENCY FILE		CURRENT EFFICIENCY		HISTORICAL EFFICIENCY		CLASSIFICATION RECORDS		

3. PERSON REQUESTING RECORDS

a. DURATION OF TIME RECORDS NEEDED (Estimate)	b. LAST NAME - FIRST NAME - MIDDLE INITIAL (Authorized Person)	c. EXTENSION
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4. SEARCHER'S REPORT

a. UNABLE TO IDENTIFY	b. RECORDS CURRENTLY CHARGED TO (Last name, first name, middle initial)		e. DATE
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6. FOLLOW-UP ACTION

DATE OF TRACER OR CALL	REMARKS	SUSPENSE DATE EXTENDED TO	CLERKS' INITIALS

7. RECEIPT IS ACKNOWLEDGED OF ☐ CLASSIFIED ☐ UNCLASSIFIED MATERIAL IDENTIFIED ABOVE

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is not adequate. The steps taken in reference to the control and prevent of Malaria are so well discussed by the Army Medical Consultant that repet here would be superfluous. Suffice it to say that all cases of Malaria tre in Army hospitals were protected by mosquito bars, and that no primary cases of Malaria occurred. Anopheline mosquitoes were seen at Carentan in Normandy but in no great number.

In planning for Venereal Disease Control the great factor was the policy laid down by Supreme Headquarters, namely, that licensed houses of prostitution would everywhere in the Army Zone be placed off limits and that the Provost Marshal would enforce this quarantine. There have been times when this phase of vice control has been winked at by individual Provost Marshals but the barest hint from the Venereal Disease Control Officer or the Medical Inspector of notifying headquarters of such dereliction has quickly overcome such lethargy.

The question of publicity in the prevention of Venereal Disease has been dealt with in the Venereal Disease Control Officer's report. The policy of the Medical Inspector has been that all posters, etc., should lean toward the dignified and away from army facetiousness.

Respiratory Diseases: Common respiratory disease got away to a rather bad start in the first part of the year. In the United Kingdom there had been a rather widespread respiratory epidemic which had begun to wane in January. With the advent of warmer weather, the rate fell from 365.4 in January to 81.4 in May. As long as the troops were living in the open, the rate stayed down but with the approach of colder weather and the men moved from tents to buildings, the rate began to rise again and then level off. In spite of constant warning, line officers will disregard ventilation and head to foot sleeping and violations of sanitary orders are the constant concern of the Medical Inspectors of corps and divisions. Pneumonia primary and atypical pneumonia have not been a great problem. From a rate of 4.4 in February, primary pneumonia decreased to 0.5 in August and rose to 2.3 in December. The total rate for the year of atypical pneumonia was 1.2.

The influenza epidemic in the United Kingdom gave First U. S. Army a rate of 16.8 in January which has diminished rapidly and has never given trouble since.

Epidemic Jaundice was present in troops who came from the Mediterranean Theater but the rate has gradually decreased and there have been no new outbreaks. See Part I Table Communicable Diseases Annex.

Intestinal Diseases: Common Diarrhoea have presented a peculiar picture in that during the summer, if one could call the weather experienced in France, summer, when the rate normally would be higher it was on the contrary extremely low. The converse was true and the month of December saw a rate of 18.7, the highest since the month of February. The principle reason for this December rate was an epidemic of mild cases of Diarrhoea which were accompanied by upper respiratory symptoms. Laboratory examinations of all these patients' stools were most difficult to obtain due to the short time the individuals were ill.

The reason for these outbreaks of Dam..... as undoubtedly the let-down in sanitation of messes. Constant effort on the part of Medical Inspectors to impress upon the unit commanders the importance of mess discipline in sanitary methods has been the concern of all corps Medical Inspectors.

One case of Paratyphoid Fever occurred in a patient who inadvertently drank well-water which he did not bother to treat with Halazone tablets.

Infectious Hepatitis gave some trouble in the United Kingdom. Here again, the divisions from the Mediterranean Theater furnished the cases. With the advent of warm weather, the frequency of these cases diminished and there has been no large outbreak of the disease since.

Of the communicable diseases, other than the respiratory ones, no one disease has given much trouble.

We were forewarned by the Medical Intelligence Officer of the Chief Surgeon's Office that there were epidemics of Diphtheria and Scarlet Fever among the civilian population on the Continent. This information has been found to be true. Civil Affairs has cooperated to the highest degree in isolating and treating these cases. Some trouble was experienced with medical officers who preferred to trust clinical examinations instead of the laboratory type, thus some cases of Diphtheria arrived at evacuation hospitals having been unrecognized for several days. Fortunately most of the military personnel has been immunized and no epidemic has occurred.

The rates for Measles, Scarlet Fever and Poliomyelitis have been very low.

Epidemic Meningitis has not presented a serious problem. All cases have been given Sulfadiazine immediately after the medical officer has become suspicious that the case might be epidemic Meningitis andall contacts are given two grains of the drug.

<u>Cold Injury</u>: This problem was anticipated by the First U. S. Army Surgeon and a warning directive was published to all commanders on 1 October. Medical officers were advised to recommend to their commanders, the daily change of socks, massage of feet and the wearing of waterproof footgear. The terrain and the weather were ideal for the production of this condition. Great difficulty was experienced by all units in getting waterproof footgear. Meetings were held by the Army Surgeon with the Corps and Division Surgeons and definite plans agreed upon which are as follows: first, the policy of frequent rotation of troops; second, the use of warming tents in each company; third, the washing and drying of socks and the re-issue of clean, dry socks with the rations; fourth, the massage of the feet daily and the drying of the feet; fifth, the lining of floor of foxholes with rocks and brush; sixth, the wearing of waterproof footgear.

In spite of all the efforts made by the Army Surgeon's Office, the rate rose to 162.2 in the month of December. This month, however, included the Battle of the German Breakthrough - a battle fought in deep snow and intense cold. Frostbite became more frequent. There were, too, thaws which made the terrain ideal for the production of Trench foot.

III. MEDICAL CONSULTANT.

Operation of the Medical Service. The operational aspect of the medical service divides itself naturally into two (2) phases, the planning phase from 1 January 1944 to 5 June 1944 and the operational phase from 6 June 1944 to 31 December 1944.

During the planning phase, First U. S. Army hospitals were engaged in planning and training for the events to come. They were not open for the reception of patients and hence the medical services did not function as such. During this period prior to the Continental operations, plans were made for the professional care of medical cases and for the use of the medical laboratory. Professional policies were established and conferences were held by the medical consultant with the chiefs of the medical services of the evacuation and convalescent hospitals. These policies have been subsequently altered from time to time as the military situation dictated. Personnel were shifted about in an attempt to utilize professional talent in the best possible way and to strengthen the medical services. Key medical officers were sent to schools for courses of instruction in various subjects. The necessary supplies and equipment were procured.

From D-Day to 21 June, the evacuation policy was twenty-four (24) hours. During this period, therefore, only those patients whose condition did not permit evacuation were held in the evacuation hospitals; when their condition permitted, they were evacuated.

On 22 June, when the evacuation policy became ten (10) days, the professional policies with reference to the care of medical cases was altered in conformity therewith. Patients with short term illnesses could now be kept and treated in evacuation hospitals and either be returned to duty or transferred to the 4th Convalescent Hospital for a short period before return to duty. Cases of recurrent malaria were constituting a problem at this time and in order to conserve man-power "uncomplicated malaria" was defined and it was directed that such patients be treated in the evacuation hospitals and returned to duty therefrom or transferred to the 4th Convalescent Hospital. "Complicated malaria" cases were evacuated as soon as transportable. Professional policies for the handling of other medical cases were established with a view to retaining in the Army area all those patients who would be fit for duty in ten (10) days. In general, this involved the defining of simple as opposed to complicated cases.

On 24 July, the 16th Field Hospital was designated as the hospital for the reception of cases of the following: uncomplicated malaria, chickenpox, mumps, measles, German measles, scarlet fever and dysentery. This centralized method of handling these cases was adopted due to the necessity of keeping all beds possible in the evacuation hospitals for surgical casualties. Evacuation hospital commanders were made responsible for keeping in their hospitals all patients with the above diseases who were too ill to be transferred. It was also directed that all patients with meningitis, diphtheria or pneumonia be held and treated in evacuation hospitals and not transported to the 16th Field Hospital in order to avoid delay in treatment and the hazards of further transporting. Professional policies with regard to the handling of medical cases remained as before.

On 30 July, the 16th Field Hospital reverted to Third U. S. Army control. The 91st Medical Gas Treatment Battalion was designated to take over the functions performed by the 16th Field Hospital. One company of the battalion was designated to care for certain surgical conditions, a second company to care for cases of malaria and the third company to care for the communicable diseases as noted above. A mobile x-ray unit and laboratory chests were procured for use by the battalion and other necessary equipment, such as cots, mosquito bars, laboratory supplies, drugs, etc., were also procured. Cases of communicable diseases were isolated in pyramidal tents and the unit instituted the necessary precautions and technique for the handling of such cases. This battalion has continued to function in approximately this manner throughout the rest of the year.

Following the breakthrough at St Lo and during the pursuit across northern France, the evacuation hospitals and the convalescent hospital were not employed at all times. At these times, the field hospitals took over the functions of the evacuation hospitals.

When the situation became more stable and the battle of Germany began, the evacuation and convalescent hospitals and the 91st Medical Gas Treatment Battalion functioned as they did prior to the pursuit phase but for the most part were housed in buildings.

At the time of the German breakthrough in mid-December and thereafter to 31 December, a total evacuation policy was effective. During this period, therefore, all transportable patients were evacuated out of the Army area. The 91st Medical Gas Treatment Battalion, however, continued to receive cases of malaria and communicable disease.

General Remarks. From a study of the casualty figures from other theaters and medical intelligence publications, it was estimated that approximately 30-40% of admissions to Army hospitals would be for medical causes, exclusive of NP cases. Fortunately, experience has shown this estimate to be too high. The table below gives, for Army hospitals, the total admissions, medical admissions and percent that were medical admissions by weeks for the period from D-Day to 29 December 1944.

WEEK ENDING	TOTAL ADMITTED	MEDICAL	% MEDICAL
16 June	5402	613	11.3
23 June	6604	751	11.4
30 June	5413	1182	21.8
7 July	7973	1292	16.2
14 July	11028	1168	10.6
21 July	7713	1398	18.1
28 July	9858	1447	14.7
4 August	13530	1838	13.6
11 August	9850	1365	13.9
18 August	6019	1503	25.0
25 August	2333	936	40.1
1 September	2623	703	26.8
8 September	2407	678	28.2
15 September	3162	949	30.0

Cont'd

WEEK ENDING	TOTAL ADMITTED	MEDICAL	% MEDICAL
22 September	6646	1240	18.7
29 September	3611	1411	39.1
6 October	4610	1623	35.2
13 October	5759	1594	27.7
20 October	4229	1384	32.7
27 October	2678	1296	48.4
3 November	2915	1407	48.3
10 November	4517	1800	37.5
17 November	6787	2925	43.1
24 November	9078	2111	23.3
1 December	6834	1483	21.7
8 December	5357	1645	30.7
15 December	8430	2045	24.3
22 December	9096	1852	20.4
29 December	7404	1792	24.2
TOTAL	182,156	41,451	22.7

Include

(SOURCE: ETOUSA MD FORM 310)

From a study of the above figures, it will be seen that the number and percent of medically sick has been less than might well have been expected. There has been a gradual rise in the number of patients with disease treated in Army hospitals. The increase in percent of medical cases in most instances is a false one since at those times battle casualties fell off while disease casualties remained more constant. Prior to the breakthrough at St Lo and until the advent of cold weather and more stabilized warfare, malaria accounted for the largest number of medical admissions. Coincident with the drop in malaria, respiratory disease cases have increased and taken on a more important role.

The following table presents the total number of reportable diseases admitted to First U. S. Army hospitals from D-Day to 29 December 1944. (Source: ETOUSA MD Form 310).

Total Admissions	182,156
Total Disease	41,431
Percent Disease	22.7
Common Respiratory Disease	2,958
Diphtheria	23
Influenza	82
Measles	10
Measles, German	15
Meningococcal meningitis	41
Mumps	135
Pneumonia, primary	76
Pneumonia, atypical	266
Pneumonia, secondary	14

Cont'd

Scarlet Fever	17
Septic Sore Throat	2
Tuberculosis (All Forms)	18
Vincent's Angina	31
Common Diarrhea	1,114
Dysentery, Bacillary	24
Dysentery, Amebic	15
Dysentery, Unclassified	58
Paratyphoid	1
Malaria	3,425
Hepatitis, Infectious	69
Kerato-conjunctivitis	2
Poliomyelitis	3
Rheumatic Fever	8
Scabies	205
P.U.O.	659
Gonorrhea	728
Syphilis	421
Other V?	8

By far, the largest problem, medically, has been that of the treatment of malaria since it constituted the cause of the greatest number of admissions.

Preventive Measures. While the First U. S. Army was still in England during the winter of 1944, a steadily increasing number of cases of recurrent malaria were reported from the 1st and 9th Infantry Divisions, the 2nd Armored Division, the 82nd Airborne Division and the 1st Engineer Special Brigade. All of these units had been in service in malarial regions and had been on suppressive atabrine therapy until arrival in the U.K. The cases of malaria that occurred were all recurrent cases. With the continental operation soon to take place, it was essential that measures be taken to reduce the number of non-effectives from malaria. Accordingly, on the advice of the Surgeon, First U. S. Army, the Commanding General, on 19 May 1944, directed the Commanding Generals of the units mentioned above to place all personnel with a history of malaria in the past twelve (12) months on atabrine suppressive therapy. The atabrine was to be taken in doses of one-tenth (1/10) grain with the evening meal, every day except Sunday, and was to be continued indefinitely. In the table below is shown the weekly admissions to Army hospitals of cases of malaria.

Week Ending	Cases of Malaria
16 June	54
23 June	147
30 June	231
7 July	270
14 July	293
21 July	260
28 July	319
4 August	259

Cont'd

Week Ending	Cases of Malaria
11 August	246
18 August	231
25 August	104
1 September	102
8 September	119
15 September	132
22 September	137
29 September	85
6 October	89
13 October	79
20 October	65
27 October	46
3 November	49
10 November	46
17 November	56
24 November	55
1 December	34
8 December	31
15 December	19
22 December	36
29 December	35

From the above, it will be seen that the highest incidence of malaria was in July and August 1944. Since then, there has been a constant falling off of cases until by the end of the year, it became of little importance.

Because of the presence of the anopheles mosquito in the area occupied by First U. S. Army in July (Normandy), the question of new cases occurring from our own reservoir came up for consideration. This question was discussed with the Chief of Preventive Medicine, ETOUSA, and the Chief Medical Consultant, ETOUSA. Both expressed the opinion that there was no danger of the spread of malaria in the part of France concerned. Nevertheless, all patients with malaria were screened and were put on atabrine when returned to their units. Investigation showed that all patients who developed malaria had been in malarious regions and the vast majority were recurrent cases. A few "new" cases were reported. These also proved to be individuals who had been in malarious regions and on atabrine suppressive therapy while in such regions. It is believed that they became parasitized but did not develop the clinical disease because of the atabrine. In Normandy, however, under the rigorous conditions of the St Lo campaign and not on atabrine, they developed the clinical disease. The vast majority of the cases are truly recurrent. Theoretically, these recurrences should not have occurred as these individuals were ordered put on atabrine as mentioned above. A large number of these patients have been interviewed and, with very few exceptions, they had not been on atabrine previous to coming down with clinical malaria. Various reasons were given by officers and men patients for not taking the drug. Many of them said atabrine was not available under combat conditions when separated from their units. Others objected to the drug on the basis it disagreed with them and caused various unpleasant symptoms and, therefore, they did not take

it. It is believed that there would have been few recurrent cases had all personnel with a history of malaria been provided with atabrine at all times and indoctrinated with the necessity for taking it.

The decline in the incidence of malaria after July and August is believed due to the following factors:

(1) Depletion of the reservoir of parasitized individuals as the result of death or evacuation from the Army area for various reasons.

(2) Loss by First U. S. Army of units having parasitized personnel.

(3) The policy of two (2) full weeks of vigorous quinine therapy which was inaugurated on 30 July.

(4) Atabrine suppressive therapy.

(5) Climatic conditions.

Treatment of malaria. On 22 June 1944, the evacuation policy became ten (10) days, and in order to conserve manpower and keep in the Army area as many patients as possible, malaria was divided into two (2) groups, "uncomplicated" and "complicated". "Complicated" cases of malaria were defined as:

(1) Patients with cerebral malaria.

(2) Those with a history of three (3) or more relapses who showed any of the following:

(a) Persistently palpable spleen.

(b) Failure to regain accustomed weight.

(c) Persistent anemia.

(d) General lowering of resistance and physical status.

All patients with complicated malaria were treated until transportable and then evacuated. Simple, uncomplicated cases were initially treated in the evacuation hospital in conformity with Air Ltr No. 73, File 710, Office of the Chief Surgeon, ETO, 20 May 1944, with the following modifications: after 7-10 days of treatment, these patients were discharged to duty (if physically fit) and therapy continued by the unit surgeon. As stated in paragraph 1 above, the 16th Field Hospital and, later, the 91st Medical Gas Treatment Battalion were designated for the treatment of uncomplicated malaria and it then became possible to give all such patients a full two (2) weeks course of treatment with quinine and a period in the convalescent hospital before return to duty on suppressive atabrine therapy.

Communicable diseases. The incidence of the communicable diseases have been surprisingly low and these diseases have not constituted a great problem. The period of contagion has been redefined for each disease based on scientific

data and not on custom, thereby saving many hospital days and considerable manpower.

Diphtheria. Every patient with a membrane in the respiratory passages is considered as diphtheria and treated as such without waiting for cultures or studies of smears. Initially, patients were treated with anti-toxin alone in large doses. More recently, however, penicillin has been used in conjunction with anti-toxin. It is too early to form an opinion as to the beneficial results of penicillin therapy and too few cases have been so treated. The importance of early treatment and adequate treatment have been stressed. Diphtheria patients are considered non-transportable. They are kept in the evacuation hospital until clinically and bacteriologically well and are then evacuated as litter patients to the Communication Zone. Two deaths have occurred from diphtheria, both the result of faulty diagnosis. The first patient was diagnosed as having a peritonsillar abscess and was evacuated to the U.K. where he subsequently died of diphtheria. The second patient was diagnosed as having a Vincent's Throat and was treated with Napharsen and peroxide gargles. As the result of these two deaths, a further directive was issued to make medical officers more "diphtheria" conscious.

Meningococcus Meningitis. Patients suspected of having meningococcal infections have been treated with intravenous sodium sulfadiazine by the first medical officer suspecting the diagnosis. Subsequent study and treatment is carried out in the evacuation hospital and such patients are regarded as non-transportable. Penicillin has been used both intramuscularly and intrathecally where indicated. The results have been uniformly good. Only one (1) death has occurred. This patient was diagnosed late and, though adequately treated when the diagnosis was made, he died. The autopsy showed a considerable area of encephalitis as well as meningitis.

Mumps, measles, German measles and chicken-pox have not been a problem. They have been treated in Army medical installations unless complicated.

Scarlet Fever. Only seventeen (17) cases occurred. These were treated with sulfadiazine and, in a few instances, with penicillin. No deaths and no complications or sequelae have been noted.

Respiratory diseases. These have at no time constituted a real problem. The number of cases of C.N.D. and of pneumonia increased with the advent of stabilized warfare and colder weather. However, the actual numbers have always been less than might reasonably have been expected. There have been about ½ times as many cases of atypical as of lobar pneumonia. Patients with pneumonia have been considered as non-transportable beyond the evacuation hospital. Bacterial pneumonias have been treated with sulfadiazine and with penicillin when the clinical situation indicated with good results.

Diarrheal Diseases. The common diarrheas have been constantly present but in small numbers. There has never been an epidemic of these diseases. There was some increase during the summer months and again in December associated with an increase in respiratory disease. A few cases of bacillary dysentery have occurred but these have all been of the mild types. A few cases of amebic dysentery have been reported; all of these have been recurrences of infections acquired

elsewhere. One case of paratyphoid (Shottmulleri) occurred in December. The soldier who acquired this disease had been in a severely damaged German town for some time and drank tap water without treating it with Halazone tablets. He also supplemented his diet with local food products. The common diarrheas have been treated expectantly; the bacillary dysenteries with sulfadiazine and/or sulfaguanidine with good results.

Infectious Hepatitis. It was reasonable to expect that there would be many cases of this disease but there have been only sixty-nine (69) and they have presented no special problem. They have been treated in the accepted manner and evacuated to the rear when transportable. There have been no deaths and all cases have been mild.

One important function of the medical service is to return as many men to duty as possible. This is particularly true of the medical services. Of the 41,431 medical cases admitted during the period, 13,125 or 31.7% were returned to duty from Army hospitals in the Army area.

Summary. In conclusion, it can be stated that the incidence of disease has been less than might reasonably have been expected; the health of the command has been good and, except for malaria, there have been no epidemics or special medical problems.

IV. MEDICAL SUPPLY.

The turn of the year found the Medical Service of First U. S. Army deep in its task of equipping units arriving from the United States and the North African Theater and being assigned to the command. The task was great since all units were arriving in the United Kingdom without equipment in accordance with the War Department policy of pre-scheduled shipments.

Looking ahead into the New Year, with its contemplated momentous events, the appearance of the labors grew in magnitude. All units must be completely equipped to perform their portion of a great combined airborne and amphibious operation against the strongly prepared fixed defenses along the coast of France and detailed arrangements must be made for the proper maintenance of these units during and after the establishment of the bridgehead.

Exhaustive studies of existing Tables of Equipment and Medical Department Unit Equipment Lists, already begun late in 1943, were intensified. Experience data from other theaters, plus the Army Surgeon's casualty estimates had already brought the conclusion that equipment authorized, particularly for hospital units, were considered inadequate to furnish necessary medical service for an Army during the initial phase of operations, when not directly supported by Communication Zone medical installations on the continent.

After considerable study based upon comments and recommendations from hospital commanders, division surgeons, and other professional personnel who had served in North Africa and Sicily and the opinions of the consultants to the Army Surgeon, lists of items by types of units and service, required in excess of authorized allowances, were prepared. In view of the stock availability of many desired items and the need to prepare special projects for shipment from the U. S. States the problem of justifying these items to each service was a difficult

The various staff sections in the headquarters were in the main, greatly sympathetic to the needs of the Medical Service, leaving the problem of convincing the theater services. A series of conferences followed between representatives of First U. S. Army and Headquarters, European Theater of Operations. After great discussion, the majority of items requested in excess of authorized allowances were approved, and where theater stocks were insufficient to meet the demand, projects were instituted. (See appendix A).

For the most part, medical items so requested were filled from stocks available in the theater. The complete understanding and close cooperation between the Medical Supply Division of the Office of the Chief Surgeon, European Theater of Operations and of the Office of the Surgeon, First U. S. Army, contributed more than any other single factor to the ultimate equipping of units with their authorized equipment, plus excess equipment. The Medical Supply Division of the Office of the Chief Surgeon, European Theater of Operations, carried out its enormous share of the task while in the throes of reorganization. The debt owed to the personnel of that office for their seemingly limitless capacity for work cannot be calculated.

It is true that some items did not become available until the 11th hour. The case of blank forms immediately comes to mind. Delivery on these items was accomplished so late that it was necessary for personnel of the Army Surgeon's Office to make marshalling area deliveries to assault units by jeep. It is also true that certain items either did not become available or became available too late to be issued to units phased in early. However, when D-Day arrived, the units of the command were equipped better than ever before in the history of the United States Army, and the Army Surgeon was confident that nothing was lacking to prevent them from accomplishing the mission they were about to perform.

Concurrent with the task of equipping the units of the command was another of tantamount importance. To maintain properly the continental forces medically, requirements had to be determined. A combined airborne and amphibious operation against formidible prepared defences, and the accompanying high casualty rate presented problems far exceeding anything previously encountered. There were no experience tables to turn to; no norm by which to judge. It was impractical to establish maintenance in terms of pounds per man per day in view of expected highest casualty rates when forces were smallest. The only solution was to approach the medical supply problem on an anticipated casualty basis.

Standard War Department and European Theater of Operation maintenance units were examined minutely and were found deficient in various critical items and superfluous in other items. To supplement such units, a list of essential items was compiled. This included items which were either not included in the basic units or included but not in sufficient quantity. This list was submitted to the Chief Surgeon for the purpose of building such units to supplement the standard types. Considerable professional controversy ensued, resulting in a series of conferences between representatives of the Army Surgeon's Office and the Office of the Chief Surgeon. Certain deletions or reductions were agreed upon and a supplemental list was accepted which proved to be the backbone of sup during the early assault phase. (See appendix B). The basic or standard units were used to furnish the bulk of maintenance supplies. Divisional Assault Uni (Surgical and Medical portions) were phased in earliest since their tonnage

European Theater of Operations and War Department maintenance units were phased in as lift permitted. In addition, certain individual items of great importance and abnormal consumption were phased in for daily shipment. They included plaster of paris bandage, wadding sheet, Cocoa and Nescafe units and medicinal gases.

The planned policy of evacuating casualties to the United Kingdom by boat and, later, by air as air strips became available, proposed a tremendous attrition of evacuated items, ie, blankets, litters and splints. This presented a tremendous problem with the limited tonnage allocated to the Medical Department. Some means had to be devised to get the litters and blankets to the continent over and above scheduled tonnage. Arrangements were made with the United States Navy to place aboard each LST for the first three hundred trips, a specified unit of supply. This unit included 100 litters, 320 blankets, 4 splint sets, 5 boxes of surgical dressings and 96 units of plasma. In the first 14 days of the operation, 30,000 litters and 96,000 blankets were thus brought ashore in addition to quantities phased in under tonnage allocations and with units.

The ever present possibility of the use of poison gases by the enemy was met by landing with assault elements on each beach sufficient gas casualty maintenance units to treat 5000 casualties. In addition, a large supply of these units was kept at ports and harbors in the United Kingdom ready for express delivery, if required.

To insure an immediate supply to assault forces, a special waterproofed unit was designed to be carried ashore by Medical Department soldiers. One unit consisted of seven (7) specially treated mortar shell cases containing dressings, gauze, bandage, sulfanilamide, morphine syrettes, plasma, sulfadiazine, halazone tablets and a burn injury packet. It was completely buoyant, giving protection to the individual carrying it in case he should fall or be thrown into deep water. The unit was issued to the medical personnel attached or assigned to units going ashore in the first three (3) days. This unit arriving from D-Day to D + 3 proved extremely valuable in the early assault period when scheduled unloading of medical supplies was delayed.

To replace expected losses of organic equipment, replacement items were phased in on a decreasing percentage ratio based on troops ashore. Only essential items of Table of Equipment and equipment were included.

The handling of whole blood, penicillin and biologicals posed another problem. These items were perishable and could not be subjected to regular loading with its possible attendant delays in unloading and its lack of refrigeration. The problem was solved by attaching blood trucks to the Advance Sections of the Depot Company phased in with the Engineer Special Brigade and with field hospitals, and by arrangement for bulk shipment of blood and biologicals on hospital ships. This was to be followed by an immediate shift to air shipment as soon as landing strips became available. An air lift of 4000 pounds was established with the Air Force to become effective immediately with the first scheduled cargo flight. (The plan met with unforeseen setbacks when all but one of the hospital ships were forced to return to the United Kingdom after striking mines. The

situation cleared on D + 3 on Omaha Beach with the arrival of C-47 transport planes, but remained acute on Utah Beach because of the shortage of hospital ships until the corridor was forced.)

There was one other eventuality which must be planned and provided for before medical supply plans could be considered complete. There was the ever present possibility that units might be surrounded or cut off due to enemy counter-offensive action. The Army Surgeon prepared lists of items essential for one (1) day's operation for type units: companies, battalions, regiments. These included splints, folding litters, blankets, plasma, morphine, dressings and drugs and were to be pre-packaged for air-drop. Airfields near sources of supply were selected, and the plans were complete. (This was later used during the enemy counter-attacks at Mortain and Bastogne with great success).

On Omaha Beach, the first scheduled shipment of supplies landed on D plus 1 and was lost when the tide came in and covered the shipment as it lay on the beach below the high water line. Personnel of the 1st Section, Advance Depot Platoon, 1st Medical Depot Company, were landed early on D + 2 in two (2) Sections, accompanying the 5th and 6th Engineer Special Brigades, having been preceded ashore by 24 hours by the Commanding Officer of the Depot Company. Issue points were established on the beach itself, and supplies were distributed from reserve stocks brought ashore by the Brigade Medical Battalions. Late on D + 2, the Advance Platoon of the 32nd Medical Depot Company landed on the beach. By D + 3, the first Army Medical Dump in France was open for issue at St. Laurent Sur Mer.

On Utah Beach, no medical supplies were landed until D + 2, except LST property exchange units. However, each unit was self-sustaining for three (3) days as far as medical supplies were concerned and no pinch was felt except for blank forms. The last minute direct-to-unit delivery at the marshalling areas went virtually for naught when practically the entire stocks of these forms for the 1st Engineer Special Brigade and 4th Infantry Division were lost in landing. To further complicate the matter, bulk delivery of blank forms for maintenance was effected too late to be included in the specified lift. The problem remained acute until the beaches were linked and forms could be land-shipped via truck from Omaha Beach. Beach issues were made on Utah until D + 3, when the Army dump for this area opened in the vicinity of Le Grand Chemin, operated by the 2nd Section, Advance Depot Platoon of the 1st Medical Depot Company and the Advance Depot Platoon of the 31st Medical Depot Company.

In the confusion of the first days, medical supplies were landed at scattered points all along the beach and gathering them together presented a problem. Assemblies of medical units were likewise dispersed over a large area due to the fact that personnel of the unit were not permitted to accompany the equipment. This policy of shipping personnel and equipment separately was objected to strenuously by the Army Surgeon in the planning phase. Support was received from the Theater Surgeon, but the Transportation Corps would not permit guard detachments to accompany hospital assemblies except for those field hospitals included in assault forces. The Commanding Officer, 1st Medical Depot Company, organized his personnel into beachcombing elements which toured daily the entire beach areas in search of scattered maintenance supplies and unit equipment.

It was early apparent that medical maintenance units were not the answer to the establishment of medical supply in such an operation. Due to the large number of repacked boxes, it was necessary to open several boxes to get a few of one item. Bin stocks became overloaded due to the accumulation of slow moving items in this manner; many man hours were consumed in operating a breakdown section to cope with the problem; and issue procedures were correspondingly slowed down. The inaccuracy of, and often complete lack of, packing lists aggravated this problem, causing whole skid loads to be broken open fruitlessly in the midst of rush operation. In future operations of this nature, bulk shipments by items in original packages is recommended, with a complete avoidance of repacked boxes until such time when operations ashore assume normal proportions.

In the latter part of June, penicillin shipments suddenly stopped as stocks in the United Kingdom became exhausted. After a seven (7) day period, this situation was relieved by air shipments from the United States.

Two emergency requisitioning services were established early in the period greatly relieving shortages of items whose consumption rates were higher than anticipated. These services, Red Ball and Air Express, were also used to bring to the continent certain unforeseen requirements, replacements for unit equipment losses, and replacements for supplies, incurred in landing. Red Ball Express was designed primarily for the shipment of heavier items of equipment and bulk supplies needed in larger quantities. The receipt of items within a period of five to seven days after requisitioning could be expected. Smaller or urgently needed items were shipped by Air Express, being received in one (1) to three (3) days after the requisition was submitted to Army G-4. Tonnage available for these services at first was limited daily to 100 long tons for Red Ball and 6000 pounds of air lift for all Army service.

July found First U. S. Army facing a greatly oversized command as compared with the command for which medical supplies originally had been planned. In addition to the supply of First U. S. Army units, Third U. S. Army units began to arrive on the continent with many shortages of equipment and were placed under operational and administrative control of the Commanding General, First U. S. Army. In order for these units to become operational, it was necessary to fill these shortages. This was done insofar as possible from stocks available in First U. S. Army depots. In some cases, this seriously shorted units of our own command which had suffered combat losses or incurred shortages through equipment breaking down. Along with Third U. S. Army units, Advance Section, Communication Zone units now began to appear on the scene placing an additional burden on the already overtaxed medical supply service of First U. S. Army.

About this time, certain problems began to develop. Replacement of Medical Department item 99555, Stove, 2 burner, gasoline, far exceeded normal replacement figures. Leaded (red) gasoline was not suitable as fuel for these stoves, clogging the burner and making the stove useless after being used for a limited number of hours. It was known that the supply of these stoves was critical in the United Kingdom and in the United States. Therefore, after considerable difficulty, white gasoline was obtained in sufficient quantity to supply the needs of medical units using these stoves. The replacement rate of this item dropped immediately. Certain other items developed as trouble makers during this period.

These were, for the most part, items which were evacuated with patients and on which there was no exchange. Included in this category were pajamas, levin tubes, trachea tubes, and towards the latter part of July, litters and blankets. An attempt to establish an automatic weekly air lift for property exchange, based on casualties evacuated during the previous week met with no success.

During this period, it became apparent that certain types of units could not operate on Table of Equipment authorization plus excess authorization already made in the United Kingdom. Notable among these deficiencies were the lack of proper film drying equipment in evacuation hospitals, and the lack of adequate generators and general deficiencies in equipment for oxygen administration in all hospitals. The need for film drying equipment and oxygen administration equipment had been given thought during the planning phase, but had been abandoned after discussion. The generator problem had been wrestled with since the fall of 1943. The Army Surgeon had insisted upon the need for 15 KW generators in evacuation hospitals and 5 KW generators in the field hospitals. After much discussion, the need had been recognized and projects placed through Engineer channels. Unfortunately, these generators failed to arrive prior to departure for this continent, and as a last moment stop-gap, additional quantities of Medical Department item 99600-05, Unit Power Electric, 3 KW were issued to all hospitals.

To aid the situation, special projects for equipment in excess of allowances for these units were initiated and sufficient film loader and dryer bin combinations were obtained to issue 1 per evacuation hospital. Also through arrangement with the Chief Surgeon's Office, 15 KVA generators were obtained and issued 1 per evacuation hospital. These generators were mounted on M7 trailers and greatly alleviated the power problem in evacuation hospitals. To cope with the deficiency of equipment for oxygen administration, additional quantities of item 37126, Mask Type Oxygen Therapy Outfit and item 95643, Oxygen Therapy Outfit, w/Manifold were issued to each evacuation and field hospital. (See appendix 6).

With the increase in certain types of casualties such as combat exhaustion and recurrent malaria cases, non-T/O installations were established. Foremost among these were two combat exhaustion centers built around Army clearing companies which originally were intended to operate as 250 bed installations and which developed into 1000 bed units. In addition, three (3) companies of the 91st Medical Gas Treatment Battalion were opened to care for malarials and contagious disease cases. Issues were made to these units which exceeded Table of Equipment authorization, but necessary to their functioning. This equipment was taken from existing depot stock and the balance was ordered from the United Kingdom as special project items. (See appendix 6).

Early in July, a Section of the Supply Division of the Army Surgeon's Office was attached to the Base Platoon of the 1st Medical Depot Company. This section assumed the responsibility for editing unit requisitions for controlled and non-expendable items. This function previously rested with the Supply Division of the Surgeon's Office located in the Supply Echelon of Army Headquarters. As distances grew, it became apparent that to leave this function in Army Headquarters would mean delay and inconvenience to units. Under the new setup, units could have items approved and issued at the source of supply.

Following the collapse of the enemy forces after the breakthrough at St. Lo, France, problems previously unencountered, arose. Up until this time, the tactical situation had been fairly stable and distance between supply sources and units was not great. Now the picture changed to one of rapid movement. The Advance Sections of the 1st Medical Depot Company were utilized to the maximum. As of 1 August 1944, the Base Section of the depot was located at Ht. Chemin, France. The 2nd Advance Section was located with the Base Depot at this time, restocking in preparation to move. The 1st Advance Section was set up and issuing at Bison Station, France. On the 3rd of August, the Base Section moved approximately 1500 tons of medical supplies to the new depot location at St. Lo. Seventy-five (75) trucks were used in the move and a period of three (3) days was required to complete the transfer of stock from Ht. Chemin to St. Lo, France. Realization of transportation difficulties was now apparent. In view of moves of greater distance, and the lack of sufficient trucks, the tonnage on hand in the Base Depot had to be reduced. Steps were taken by the Army Medical Supply Officer, to turn over to Advance Section, Communication Zone, items which were bulky, slow moving, and not needed for current operations. After a physical check of items in the depot, such items as ward tents, Balken frames, refrigerators, etc., were turned over to Advance Section, Communication Zone.

In order to further lighten the load, forced issues of certain items were made to evacuation and field hospitals. Typewriters and 55 gallon drums of white gasoline were among these. In addition, all units were called upon to bring themselves up to Table of Equipment strength on Medical Department items they were short. As a result, depot tonnage was cut from 1500 tons to 1100 tons. This streamlining process was offset somewhat, however, by a period of light issues due to relatively few casualties.

On 9 August 1944, the 1st Advance Section was located at Montbray, France, and the 2nd Advance Section moved to Brecey, France. Both of these Sections continued to carry the main load of issues as the Base Section was located some 50 miles to the rear of divisional units. The Base Section moved again on 17 August 1944 to the hospital concentration area at Gathemo, France. This move was completed 20 August 1944. Again the tactical situation was far ahead of the source of supply and the Base Section was out of position almost as soon as the move had been completed. After four (4) days of relatively few issues, the Base Section prepared to move to Mesnil-Thomas, France. This move of approximately 175 miles was accomplished with 75 trucks furnished from the Provisional Medical Department Truck Company, and required 4 days.

As the situation lengthened out and the Army Medical Supply Officer joined the Executive Officer and the Chief of Operations in an advanced CP, it was necessary to break this section attached to the Medical Depot into 2 sections. One officer and four men remained with the Depot, and one officer and one man moved in the Supply Echelon of Army Headquarters. (The Medical Supply Section remained in these three echelons until reunited toward the end of the year at Spa, Belgium).

With the difficulty encountered by the lack of transportation for movement, replenishment of depot stocks from rear areas became a problem. Consequently, many items appeared in short supply i.e., sutures, needles, catheters, oxygen, sheet wadding, penicillin, etc. Many of these items were available at

rear installations, but transportation was not available to move them forward. This necessitated the depot dispatching trucks in emergencies to bring supplies forward. It was fortunate again that issues were light and casualties few. In the majority of items, stocks on hand in the depot, though low, were sufficient to satisfy demands.

The last period of the 3rd quarter, the Base Depot and the two (2) Advance Sections continued to support all First U. S. Army units. The tactical situation remained a fast moving pursuit and this added to the difficulty of supplying forward units. In order to maintain contact with the foremost elements, the Advance Sections were kept well forward. On 1 September 1944, the 1st Advance Section moved from Meenil-Thomas, France to Melun, France, a distance of 85 miles. Casualties continued light and therefore issues were correspondingly light. Contact with divisional units became strained, so on 9 September 1944, the Section moved to Buironfosse, France, a distance of 145 miles. Issues became heavier and the Section remained at this point for the remainder of the month.

Concurrent with this, the 2nd Section was operating at Conde-sur-Garthe, France, as of 1 September 1944. On 4 September 1944, it was withdrawn to Ciney, France, where a large German medical depot had been overrun. The Section was utilized to separate and classify this equipment and to translate the German inscriptions into United States Medical Department nomenclature. This was a tedious and time consuming task and the Section spent the balance of the month in this classification. Many of these captured items were reissued to First U. S. Army medical units and those which could not be utilized were turned over to First U. S. Army Civil Affairs and subsequently to Communication Zone.

The Base Depot remained at Meenil-Thomas, France, during the first two weeks of September and was further streamlined. The Army Medical Supply Officer and the Medical Depot Commander, again directed a physical inventory of depot stocks and approximately 300 tons were turned over to Advance Section, Communication Zone, when the Base Depot moved. Due to the unusual tactical situation, this area became obsolete prematurely and a movement of several hundred miles was required to put the Base Section in position again. Additional personnel from Army collecting companies were attached to the Depot to aid in making this move.

By now, transportation was extremely critical. Movement of the Depot had to be coincided with movement of hospitals and the only transportation available for both was the Provisional Medical Department Truck Company with approximately 100 trucks. On the 10th of September 1944, the Depot moved to Buironfosse, France. Without setting up here, it was ordered to continue to Scheit-Tinlot, Belgium, where it began to set up, but this position became obsolete immediately, and the Depot moved to Eupen, Belgium. After great difficulty in shuttling between Meenil-Thomas, Buironfosse, Scheit-Tinlot and Eupen, the Base Depot opened 19 September 1944 for issue at the latter place. Even so, some supplies remained in the old service area and were brought forward as transportation became available.

The transportation handicap was felt not only by First U. S. Army, but in rear areas as well. Property exchange supporting air evacuation failed to

function and evacuation items were stripped from the Army area. For a period of 72 hours, the only blankets and litters obtainable were 10,000 captured German blankets and 800 captured German litters. These kept the chain of evacuation functioning. Shipments from the rear on requisitions dropped to practically nothing. 5,000 units of penicillin had to be flown in by artillery liaison planes because of this situation. All requisitions and back orders to Communication Zone were cancelled due to the confused condition of due-in records. Four requisitions were immediately submitted through channels to replenish the fast diminishing depot stocks. Deliveries on these requisitions continued to be slow and incomplete and First U. S. Army Medical Department trucks had to be dispatched to the rear to bring supplies forward.

The final quarter of the year opened with all Army medical supply units well situated tactically for the first time since St. Lo. The Base Section was situated in the center of the Army Zone at Eupen, Belgium, easily accessible to the many hospitals concentrated in that area. Supporting units of the two flanking corps were the 2nd Advance Section operating at Malmedy and the 1st Advance Section at Valkenburg, Netherlands.

Casualties during this period were light due to the static tactical situation. Depot operations were normal, issues were slow and therefore the drain on depot stocks was not heavy. This was fortunate as transportation difficulties continued to seriously reduce depot stocks. Certain items remained in short supply as a result of faulty transportation facilities. Requisitions on Army allocated tonnage were placed on Communication Zone, but shipments as received were sketchy, incomplete and delayed. To maintain proper due-in records and to keep requisitioning on a 14 day level basis became increasingly difficult with the time lag between requisitioning and date of receipt.

Every effort was made on the part of this office to relieve the situation. Army Medical Department transportation was dispatched to draw supplies directly from Communication Zone depots. Certain items remained in short supply in spite of this since they were either in craft laying offshore or were in rear Communication Zone depots beyond the reach of Army transportation. Mis-directed rail and convoy shipments remained a problem. Often rail cars as well as truck convoys consigned to another command were received in this sector and had to be re-routed. One shipment on a First U. S. Army requisition was directed to Ninth U. S. Army, then misrouted a second time arriving at some forward installation in the Netherlands. The Depot Commander, as well as representatives of the 25th Regulating Station, personally followed the routing of this car until it was finally received some months after the initial shipment. In addition to these problems, many supplies received had not been requisitioned and could not be used in Army installations.

To ascertain the basis for the difficulty experienced in receiving supplies in forward areas, representatives of the Surgeon's Office, 12th Army Group, conferred with this office and attempted to follow an Army requisition through its complete processing. These representatives accompanied the requisition from Army G-4 to the 25th Regulating Station, to Advance Section, Communication Zone, to Communication Zone, to the depot and its processing there, and started back with five (5) trucks loaded with a portion of the requisition. (To follow it completely was impossible, portions of the requisition being extracted to several

Communication Zone depots). These officers found that many days passed before the shipment was finally accounted for. En route the trucks had been unloaded, repacked on rail cars and again forwarded and lost. The conclusion of the investigation as reported by these officers was that stocks available in Communication Zone depots often became delayed or lost in transit and the Transportation Corps had no facilities to follow through or regulate these shipments. In spite of such problems, Army units were supplied. Occasionally, certain items were not available and Army Medical Department trucks and Hospital Trains were used to relieve the emergency. However, this was not the complete answer to the problem.

On 19 October, the Chief of the Stock Control Section of the Supply Division, Office of the Chief Surgeon, visited this office and the Base Depot to investigate authorized and actual stock levels. The conclusion was that procedures as employed were adequate and being satisfactorily handled.

During October, a problem arose as the result of a shifting of Army boundaries and the accompanying transfer of Corps and supporting Army units. First U. S. Army lost XIX Corps which was supported by the 2nd Advance Section of the Depot Company and the 41st and 91st Evacuation Hospitals, and assumed the control of VIII Corps supported by one advance section and the 102nd and 107th Evacuation Hospitals. It was felt that the most expeditious way of handling the transfer of supplies was to leave physical stocks in the respective areas, transferring only depot personnel to assume control of the stock formerly operated by the other command. This was accomplished and operations were resumed with the 2nd Section supporting VIII Corps at Bastogne. The few necessary stock adjustments were quickly made.

Transferring complete hospital assemblies was more difficult. A sharp discrepancy in the operational equipment between hospitals of the two commands was noted. The Army Surgeon decided that the standards of First U. S. Army hospitals would not be reduced and all equipment furnished the two transferring hospitals in excess of Table of Equipment as First U. S. Army special projects was directed to be retained within the Army. The units leaving objected on the grounds that this equipment was necessary for continued efficient operation. A conference of Army Surgeons was suggested to consider the possibility of establishing a standard list of equipment for all commands. The Army Surgeon and his Medical Supply Officer represented First U. S. Army at the conference held at Communication Zone Headquarters in Paris and made detailed recommendations for changes in present Table of Equipment and Equipment Lists for Evacuation and Field Hospitals. As a result of this meeting, new allowances based on First U. S. Army levels were adopted to be authorized within the theater.

Late in October, the Base Depot at Eupen operated under a severe handicap using open storage for warehousing. Heavy traffic plus constant rains eventually made operations in the mud impossible. Vehicles became hopelessly mired in mud twelve to eighteen inches deep and supplies warehoused in the open were slowly sinking out of sight from their own weight. After considerable search, buildings were located at Dolhain, Belgium, which could house the Base Depot completely with its Optical Section, Repair Section, Bin Stock Section, and Warehouse Section. The Depot was moved, and the change afforded greater protection for supplies in addition to increasing the operational efficiency of the Depot.

Army hospitals setting up in buildings for the first time found requirements for many supplies and repair services not available through normal supply channels. For such items, local procurement was extensively employed and centrally administered from the Army Surgeon's Office through the Purchasing and Contracting Officer. To relieve the increased labor burden, civilians were also employed.

Captured German medical supplies were not as abundant as during the preceding three (3) months although some instruments, microscopes, and apparata were received and distributed to Army units.

At the close of October, after First U. S. Army hospitals had been operating for nearly six (6) months, a survey was made to determine those items of equipment on which replacement was imminent, e.g., anesthesia apparata, suction machines, electro-surgical units, and other equipment with deteriorating parts. This study was furnishedto the Office of the Chief Surgeon, European Theater of Operations, for necessary action to procure items required to rehabilitate hospital assemblies.

In November, the transportation problem in the rear remained acute and shipments of replenishment stock were far below requirements. Against a minimum daily maintenance requirement of 12 tons or 360 tons for a 30 day month, in November only 174 tons were received. In one seven (7) day period, only 5 tons of supplies were brought forward. Such irregularities in replenishment stock made operations most difficult and the general supply situation in respect to stock levels progressively deteriorated to an unsatisfactory condition. Many items requisitioned but not received were attributed to the persistent Communication Zone problems of first being unable to get necessary priority to unload craft laying offshore, and secondly the inability to obtain sufficient transportation to move supplies from rear (beach and port) depots to advanced depots in support of First U. S. Army. In addition, many shipments leaving Communication Zone depots were never received within Army. This condition existing for approximately two (2) months resulted in the accumulation of over 400 zero stock balances.

To relieve this situation, drastic action was taken. Direct communication was established with the Office of the Chief Surgeon. Lt. Col. White, Commanding Officer of the Army Medical Depot Company personally visited Paris to adjust Army due-in records in coordination with Communication Zone shipping records and thereby accounted for shipments long overdue and presumed lost. Army organic transportation was utilized to insure the prompt receipt of supplies shipped from the rear since the situation did not permit complete reliance on rail transportation. Shipments of critical items were expedited by Communication Zone using Hospital Trains and air transport. Generally, shortages lists were reduced and with the steady stream of replenishment stock being received, the general supply situation improved. Advance Section, Communication Zone Depot M409 becoming operational in Liege at this time, greatly alleviated the overall supply situation. Continued improvement was noted during the latter part of November and through the first half of December until the supply picture was normal and healthy.

To efficiently handle the problem of collecting and distributing captured materiel, a Captured Materiel Section was established in the Supply Division of this office. Prior to this time, German medical supplies recovered often were taken over

by Army G-3 officials and released by this office to be used for military installations or to relieve the acute shortage of medical supplies among the civilian populations of France, Belgium and Holland. Establishing this section necessitated the removal of the section of the Supply Division which had been with the Base Depot since the beach in a requisition editing capacity. The function of editing requisitions passed to the Commanding Officer, 1st Medical Depot Company. All requests in excess of authorized allowances continued, however, to require approval of the Army Surgeon.

The sudden change in the tactical situation on 16 December presented two major problems. The first was to insure complete supply coverage to the Army, i.e., to replace the tremendous combat losses incurred in the counter offensive as well as to meet the increased demand for expendable supplies. Keeping foremost in mind this basic mission, the second problem was to safely remove depot stocks from areas within the radius of possible enemy offensive action. Fortunately, the Base Depot was not in the area immediately threatened by the enemy attack and only the advance sections had to be withdrawn at once. The movement of these was accomplished under difficult conditions. Trucks were infiltrated into Malmedy as the situation cleared and complete depot stocks were removed to the Base Section.

On 17 December, the depot at Bastogne was threatened and supplies were withdrawn to Lubin, Belgium, first by empty ambulances returning to the rear and later by trucks as they became available. As the enemy offensive continued, the section moved farther back stopping at Carlsburg, Belgium. Threatened here, the section again retired, this time joining the Base Section at Dolhain. One small contingent was surrounded with a few tons of supplies within Bastogne and continued to supply troops fighting within the city until the corridor was forced and communication and supply lines were restored. This group of enlisted men handled all air-dropped medical supplies during the siege.

The section previously operating at Malmedy re-opened at Huy, Belgium, in support of a hospital center and the XVIII Airborne Corps, newly arrived to assist in stemming the German tide. The section previously established at Bastogne moved to join the Base Depot at Dolhain since it was not necessary to commit both sections in the greatly narrowed First U. S. Army sector.

Army G-4, in order to insure the safety of the bulk of Army medical reserves in the event of a general German advance to the Meuse, ordered the Base Depot to the rear. The evacuation was arranged to be accomplished by rail. Cars were loaded and shipped to the rear for storage, pending clarification of the tactical situation. The location chosen was at Baesse-Wavre, Belgium, about 30 kilometers southeast of Brussels. A series of incidents, some humorous and some serious, including an international dispute as to right of tenancy, misrouted cars, and lost vehicles prevented the Base Depot from establishing its Bin Section for issue at this point. The 1st Advance Section assumed issue responsibility at the Dolhain site.

Every effort was made to quickly determine losses within combat units as well as Army and Corps service units. Division and unit supply officers were personally contacted and arrangements were made to insure the immediate replacement of needed items. Numerous Army medical units suffered losses including two

(2) evacuation hospitals and units of two (2) field hospitals. Complete replacement of equipment was required for two (2) field hospital hospitalization units plus many other major items. Several large tactical units were issued 100% replacement of Table of Equipment equipment. In spite of heavy losses, the great drain on depot stocks of expendable items, and the displacement of depot installations, no unit with this command wanted for any item essential to combat efficiency. The shock was absorbed completely. This was done through the institution of an emergency requisition policy in lieu of the established 10 day policy, and through direct contract with the Supply Division, Office of the Chief Surgeon, Headquarters Communication Zone. In this manner, Army Depots were able to keep stocks of essential items abreast of issues without building up depot stocks.

V. OPERATIONS AND TRAINING.

TRAINING. Upon his arrival in the United Kingdom on 20 October 1943, Colonel Rogers, Army Surgeon, began a series of conferences with General Hawley, the Theater Surgeon, to determine what troops would be allocated to First U. S. Army. (The final troop allocation was as follows:

1 Convalescent Hospital
5 Field Hospitals
1 750-bed Evacuation Hospital
10 400-bed Evacuation Hospitals
3 Hq & Hq Det., Medical Groups
8 Hq & Hq Det., Medical Battalions
7 Ambulance Companies
11 Collecting Companies
6 Clearing Companies
1 Medical Gas Treatment Battalion
1 Auxiliary Surgical Group
1 Medical Laboratory
1 Medical Depot Company

All of these troops were assigned directly to Army. In addition, there was with each of the three corps, a medical battalion consisting of one (1) Hq & Hq Det., Medical Battalion, two (2) Medical Collecting Companies, one (1) Ambulance Company, and one (1) Clearing Company; one (1) Medical Battalion, Engineer Special Brigade with the 1st Engineer Special Brigade and with each of the 5th and 6th Engineer Special Brigades, a medical battalion consisting of one (1) Hq & Hq Det., Medical Battalion, three (3) Collecting Companies and one (1) Clearing Company.

As soon as this troop basis had been established, training of the units was started. A basic directive was published by this office which, through necessity, included the most fundamental subjects of the Medical Department training program. Their inclusion hinged on the fact that the training period of many units had been cut short in the United States. Full utilization was made of the schools offered by the Theater Surgeon. There were a total of thirty-five (35) courses available for officers, eight (8) for nurses, and ten (10) for enlisted men, plus fourteen (14) miscellaneous conferences. To these schools, First U. S. Army sent a total of 2063 officers, 214 nurses, and 935 enlisted men.

Fortunately, two (2) of the 400-bed evacuation hospitals, assigned first U. S. Army, had had previous experience in a combat area. Teams of instructors were sent out from these hospitals to give practical help and instruction to all the inexperienced hospitals.

Training of the field hospitals presented an unique problem since these units were to be utilized by First U. S. Army in a manner completely different than that for which they were originally trained. No field hospitals which had functioned in the capacity selected for them were available, but many members of the 3rd Auxiliary Surgical Group had served in hospitals which were trained and equipped along the lines that these field hospitals were to follow in their employment. These experienced personnel were used as instructors in field hospitals.

During the months of November and December, 1943, all training was along general lines but early in January, with the beginning of the planning for the Normandy landing, training became specialized and was directed toward the accomplishment of this specific mission. Early training was directed at individual units. Later, exercises combining two or more units, functioning in a manner planned to stress their mutual interdependence, were emphasized.

The 261st Medical Battalion of the 1st Engineer Special Brigade had actual combat experience gained in the landing in Sicily. Instructors were taken from this organization and placed with the medical battalions of the 5th and 6th Engineer Special Brigades. A request was forwarded from First U. S. Army to Theater asking authority to reorganize the medical battalions of the 5th and 6th Engineer Special Brigades under the same T/O used by the 1st Engineer Special Brigade, but this request was disapproved. Following this disapproval, the medical battalions of the 5th and 6th Engineer Special Brigades were functionally reorganized into three (3) companies each. These companies now had both collecting and clearing elements.

As the final step in unit training, several combined Army and Navy exercises were held along the southern coast of England. The terrain selected, beach and dune areas, was chosen to correspond as closely as possible to that of the proposed landing sites, reconnaissance having been made of these actual sites by personnel landed from submarines many months previous to the proposed invasion date. Many lessons were learned from these exercises and many faults corrected so that at the time of the actual departure from England for the continent, the Army and Navy medical service had become a smoothly functioning team.

PLANNING. The Army Surgeon, his Medical Supply Officer, and the Planning Officer, spent the months of January, February, and part of March in London with the Army Planning Staff. During this period, most of the plans for medical support of the Normandy landing were completed.

During the initial or assault phases of the operation, the medical plan called for hospitalization and evacuation to be based primarily on the use of four medical elements. These were the organic divisional medical units, landing with, or, in the case of clearing companies, shortly after the combat troops they supported; the Naval Medical Beach Party landing as early as 40 minutes after H Hour; the medical battalions of the three Engineer Special Brigades landing on D-Day, beginning at H + 180 minutes; on D + 1, the landing of field hospitals,

one of which was to be put ashore on each of the beaches selected for the landing. Patients were to be handled normally by divisional medical elements. Evacuating the division clearing companies were the medical companies of the Engineer Special Brigades. Evacuation from the beaches was by the Naval Medical Beach Parties alone in the early hours of the assault, and aided by the medical companies of the Engineer Special Brigades when ready for operation. These medical companies of the Engineer Special Brigades were to set up the first facilities for treatment and hospitalization of non-transportable casualties.

The field hospitals were to be the next large medical units brought ashore. As augmented, they would provide excellent facilities for surgery and the hospitalization of seriously wounded patients. Two of these units were to be in operation on each beach by D + 3, with one to land on each beach as early as D + 1.

Both the medical companies of the Engineer Special Brigades and the field hospitals were heavily staffed with surgical teams, giving these units what was, in effect, the surgical personnel of an evacuation hospital.

To increase the numbers of medical personnel available during the landing, the Army Surgeon arranged to place a collecting company and teams from auxiliary surgical groups on hospital carriers arriving on D + 1 off each beach. Medical supply personnel and personnel from the Office of the Army Surgeon were also included in these groups.

Evacuation from the beaches was to be LST and by hospital carrier. LST's were to be medically staffed by Army and Navy officer personnel and Naval Medical corpsmen. Operating rooms were to be fitted out on each craft. Exchange medical supplies were to be loaded and entered on the ship's manifest so that they would not be overlooked in unloading.

Plans were laid for the transportation of unusual quantities of whole blood for use from the very start of the operation. Each LST was to carry 10 pints. A refrigerator truck was shipped with each section of the Advance Platoon of the Medical Depot Company which was to land on D-Day. 350 pints of blood were to be delivered by marmite can to each beach. Further plans were laid to bring blood to the far shore by the transport planes scheduled to evacuate casualties.

Plans called for hospitalization and evacuation to be taken care of by the above listed medical units through D + 5. The schedule then called for the opening of the first evacuation hospital on D + 6. These hospitals were to land starting on D + 3. D + 10 was to complete the landing of the ten (10) 400-bed evacuation hospitals scheduled to take part in the operation. One (1) 750-bed evacuation hospital was to be landed on D + 15. On D + 19, the landing of the 4th Convalescent Hospital would complete the roster of hospitals scheduled to support the operation. During the period, D + 4 to D + 19, the headquarters, collecting, ambulance, and clearing elements of the three (3) Army Medical Groups to be used in the operation were scheduled to land.

It was planned that medical service would be under the control of the Corps Surgeons until such time as communications were established between the two beachheads. At this time, the Army Surgeon would assume control of medical service.

One Medical Group, consisting of a Group headquarters, three Battalion headquarters, collecting and ambulance companies, was to be landed on each beach. These groups, were to carry out evacuation from division clearing companies to the beach establishments of the Engineer Special Brigades, evacuating both to and from evacuation hospitals. A third Medical Group, consisting of a Group headquarters and two (2) Battalion headquarters, had under its control six (6) medical clearing companies. One of these companies had been especially equipped and trained, under the direction of the Army Neuropsychiatric Consultant, as a Combat Exhaustion Center. The other five (5) clearing companies were to be split between the beaches. These companies were trained for various roles, such as support for the evacuation hospitals, reception of overflow of lightly wounded, to assist the Combat Exhaustion Hospitals, and to function as clearing stations for Army or in support of Corps or division clearing units as needed.

As in all operations of this type, priorities for landing combat units necessarily phased hospital holding facilities well back on the list of units to be brought ashore. Thus, a total evacuation policy was set up, to be in effect until such time as the Army Surgeon considered that he had adequate bed space ashore to begin holding patients on the continent.

Evacuation by water, on LST's and hospital carriers to the United Kingdom, by necessity was the primary means invoked. It was planned to start air evacuation as early as possible. To this end, two (2) air evacuation officers from the 9th Troop Carrier Command were attached to the Surgeon's Office. By conference with the 9th Air Force, the details of air evacuation were arranged. The following delineation of responsibilities was agreed upon by First U. S. Army and Ninth Air Force, to be in effect on the continent:

a. Air Force.

(1) The equipping of all transport aircraft with suitable litter racks and insuring that each transport aircraft carries such equipment at all times.

(2) The medical care and treatment of casualties from the time they are loaded on an aircraft until they are unloaded from such aircraft.

(3) The temporary medical care and treatment with local resources of such casualties as may be delivered in an emergency at an airdrome at which no provisions for the reception of casualties have been made.

(4) The delivery of casualties to airdromes convenient to fixed hospitals, unless military necessity requires that they be delivered to other airdromes.

(5) All transport type aircraft returning from forward areas during actual operations will be utilized for air evacuation of the wounded, unless military necessity requires otherwise.

b. First U. S. Army.

(1) The establishment and maintenance of a holding medical unit in the immediate vicinity of each airdrome, within Army zone of responsibility, from which casualties are to be evacuated.

(2) The delivery of casualties to such holding units.

(3) The loading of casualties upon aircraft, within Army zone of responsibility.

(4) The provision of such additional equipment, within Army zone of responsibility, as may be required by the impracticability of effecting property exchange with the Air Force.

(5) The necessary liaison with the Air Force concerned for the evacuation of its casualties.

(6) The reception of casualties without delay, when notified by the Air Force concerned, at any airdrome within its zone of responsibility, at which an aircraft transporting casualties is forced to land and remain on the ground for any extended period.

Much time was spent in making firm the details of the division of responsibility between the medical service of the Army and the Naval forces supporting the operation. A particular stage where confusion could exist was in the early days of the landing, when evacuation was entirely by water. A definite and clear-cut division was made by agreeing upon the duties to be assumed by each service.

a. Responsibilities of the Army Surgeon:

(1) Medical service to all military personnel inland from the high-water mark of the landing beaches.

(2) The necessary liaison with the Naval medical officer required for evacuation of casualties from the beach.

(3) The provision of sufficient DUKW's for the evacuation of casualties from the beach to ships.

(4) The loading of casualties into DUKW's or other craft on the far shore, and the loading of motor vehicles when motor transportation is used to deliver casualties to beached craft.

(5) The transportation by DUKW's of casualties from shore to ship; and the transportation by the most suitable motor vehicles available in cases where motor transport may be used to deliver casualties to beached craft.

(6) The provision of sufficient motor transportation facilities for necessary lateral movement of casualties in the vicinity of beaches.

b. Responsibilities of the Navy (Far Shore and Afloat).

(1) The conversion of a sufficient number of LST's for the purpose of suitably transporting casualties on return trips to the United Kingdom.

(2) The equipping of such casualty carrying LST's with sufficient quantities of medical supplies. The responsibility for unloading will rest with the Far Shore Engineer Special Brigade.

(3) The medical care and treatment of all casualties from the time they are loaded on a ship or craft until they are unloaded from such ship or craft.

(4) The transportation of casualties from Far Shore in cases where DUKW's cannot be used for that purpose; and to augment DUKW evacuation whenever necessary.

(5) The unloading of DUKW's, craft, or boats used to transport casualties from the Far Shore to ship; and the unloading of motor vehicles when casualties are delivered to beached craft by motor transportation.

Plans were made to provide all troops embarking with Motion Sickness Preventive Capsules. Reports had been received that all tests showed these capsules had proven efficacious in preventing sea-sickness in a large percentage of cases in which they had been tested. Therefore, the Army Surgeon concluded that the inclusion of such a preventive measure would materially aid the troops embarking on small craft for the Channel crossing.

Provisions for defense against chemical attack were made, based on the thorough training program instituted in all First U. S. Army which stressed instruction of the individual soldier. A medical gas treatment battalion, assigned to First U. S. Army, was to be located in the marshalling yards in such a manner that an immediate response could be procured to any call for its shipment.

Stress was laid on rigid observance of Geneva Convention rules regarding the display of the Red Cross. No unit other than a medical unit would display a Red Cross. Further, all medical units were to adhere strictly to the rule that their installation must be 1000 yards from any troop installation which was a legitimate military target before the Red Cross could be displayed. The last rule was to apply to display of Red Cross visible from the air. It was explained that it in no way prevented the display of small flags and signs not visible from the air, used to identify medical establishments to friendly troops.

The above paragraphs present the important operational aspects covered by the Medical Planning Staff during its sojourn in London. (See Supply Section also). Last minute changes altered none of the general framework as described herein, proving that the necessary degree of flexibility had been incorporated into the overall structure for medical support. In most cases, deviations will be found to be described in the following report of operations.

OPERATIONS.

1. Preamble.

The mission of the First U. S. Army in operation "NEPTUNE" called for simultaneous landings on two beaches on the southern reach of the bay of the Seine, at the base of the Cotentin Peninsula. Four hours prior to these waterborne landings, two airborne divisions, the 82nd and 101st, were dropped in such manner that communications between the peninsula and the mainland were disorganized. The left flank of First U. S. Army was protected by the landing of the Second British Army. The objective of this assault was to secure the Cotentin Peninsula, tipped by the major port of Cherbourg, as a base for expanding continental operations.

Since the two beaches were separated by an impassable mud flat, the estuary formed by the confluence of the Vire and Douve Rivers, what amounted to

two separate operations were carried on simultaneously. Until communications were established firmly between these two beaches, two separate medical services were in operation. The beaches were code-named "Omaha" and "Utah". Their medical services will be considered separately, as they indeed existed, until joined by an unbroken land link on the 11th of June, D + 5.

2. Initial Landings.

a. Omaha Beach, 6 - 11 June, Inclusive.

D-Day (6 June): The landing of medical units on Omaha (V Corps) Beach was delayed due to the severe opposition encountered on the beach. Upon landing, it was impossible to set up the usual type medical installation. At 1350B, Headquarters & Headquarters Detachment, 61st Medical Battalion, 5th Engineer Special Brigade, closely followed by the 391st and 393rd Collecto-Clearing Companies of this battalion, landed on Easy Red Beach. Unable to proceed inland to designated locations, these units set up collecting points on the beach and began the task of collecting casualties and administering first aid to the wounded. Six (6) surgical teams of the 3rd Auxiliary Surgical Group attached to the Collecto-Clearing Companies of the 61st Medical Battalion were able only to render first aid because their equipment had not as yet landed. By evening of D-Day, these units had established two stations; one in a tank ditch near Easy Green Beach and the other in a pillbox inland from Easy Red Beach.

At 1600B, the first elements of the 60th Medical Battalion, 6th Engineer Special Brigade, landed on Easy Green Beach. An attempt was made to clear this beach of casualties but direct artillery and small arms fire necessitated moving to a defiladed position somewhat above high water mark where a collecting station was established inland from Easy Red Beach. The personnel and equipment of the 60th and 61st Medical Battalions continued to arrive ashore during the evening and night of D-Day. The collecting companies of the 1st Medical Battalion, 1st Infantry Division, landed with their respective combat teams, this date. A part of the Clearing Company, 1st Medical Battalion, landed this day, but was pinned to the beach. Collecting Company "B", 104th Medical Battalion, 29th Infantry Division, landed with its combat team as scheduled and proceeded inland.

Throughout the day and night, casualties were evacuated from the Omaha Beach to LST's. There is no definite figure on evacuations for this day, but it is estimated by the 60th and 61st Medical Battalions that a total of approximately 830 casualties were evacuated.

D + 1 (7 June): The two medical battalions, Engineer Special Brigades, plus units of the 1st Medical Battalion and Naval Beach Medical Sections made some progress in clearing the beach of casualties. The 61st Medical Battalion had established a clearing station on Fox Green Beach and one on Easy Red Beach. Most of the equipment of these collecting companies being still afloat, their work consisted mainly of first aid treatment and evacuation of casualties over the beach. More elements of both medical battalions of the Engineer Special Brigades, plus the 1st Section, Advance Depot Platoon, 1st Medical Depot Company, came ashore during the day. By evening, a nucleus of all organizations of the Engineer Special Brigade Medical Battalions had landed and were acting as aid

stations, and collecting and evacuation points in the locations assumed late on D-Day or early on D + 1. The unloading of medical equipment was delayed so that very little definitive treatment was given by these units. Four (4) surgical teams were added to the 60th Medical Battalion and a clearing station was opened by that unit approximately 700 yards inland from Dog Red Beach. One platoon of the Clearing Company of the 1st Medical Battalion, 1st Infantry Division, opened a clearing station on the high ground overlooking the Easy Green Beach entrance, and continued to function at this site for the next 36 hours. Surgical teams were obtained from the beach and definitive treatment was rendered here to the more seriously wounded. Employing all possible means, including the loading of wounded into DUKW's at the clearing station, a total of 201 patients were evacuated directly across the beach by this battalion.

At 1900B, the hospital carrier "Naushon" arrived off Omaha (V Corps) Beach and began taking patients aboard from craft lying offshore. Contrary to plan, this hospital carrier remained overnight, giving definitive treatment by means of its medical staff and the personnel of the First U. S. Army Medical Detachment "A", which was aboard.

This date, Headquarters and Headquarters Detachment, 104th Medical Battalion, 29th Infantry Division, Clearing Company "B", 104th Medical Battalion, and the 392nd Collecting Company, 53rd Medical Battalion, landed. Collecting Company "A", 104th Medical Battalion, went ashore with its combat team.

Acting upon instructions issued by the Chief of Staff, First U. S. Army, the Army Surgeon, went ashore to make a tour of medical installations and to obtain information as to the medical situation.

D + 2 (6 June): The remaining portions of the 634th Medical Clearing Company, 60th Medical Battalion, and Headquarters and Headquarters Detachment, 60th Medical Battalion, landed and proceeded to the clearing station of the 60th Medical Battalion, 700 yards inland from Dog Red Beach. The equipment of the 392nd Collecto-Clearing Company, 5th Engineer Special Brigade, was unloaded but artillery fire prevented the movement of this company inland. Between 0915B and 1000B, personnel of the First U. S. Army Medical Detachment "A" landed on Easy Red and Easy Green Beaches. This personnel consisted of the station and litter platoons of the 451st and 454th Medical Collecting Companies, 68th Medical Group; the Advance Depot Platoon, 32nd Medical Depot Company; six (6) surgical teams, 4th Auxiliary Surgical Group; 10 liaison officers from various medical units, including the 9th Troop Carrier Command; 7 officers and 10 enlisted men of the Surgeon's Office, Headquarters First U. S. Army. At 1400B, sufficient equipment was landed for the 593rd Collecto-Clearing Company to enable this unit to establish a station approximately 800 yards inland at the entrance to Easy Green Beach, and free the clearing station of the 1st Medical Battalion for forward movement. From this time onward, the evacuation of casualties proceeded as outlined in the section on Planning.

Equipment belonging to the 13th Field Hospital was landed during the morning hours and a location was secured through G-4, V Corps, for the setting up of this hospital. The personnel of the 13th Field Hospital and a portion of the 51st Field Hospital came ashore in the late afternoon.

The 38th Combat Team, 2nd Infantry Division, landed with only two battalion medical sections and no regimental aid station or Collecting Company. During the early part of the night, Headquarters Detachment, 1st Medical Battalion and Collecting Company "C", 104th Medical Battalion, landed.

D + 3 (9 June): The 453rd Medical Collecting Company, 60th Medical Battalion, moved to a point midway between St. Laurent-sur-Mer and Vierville-sur-Mer, from which location it evacuated elements of the 2nd and 29th Infantry Divisions. The 1st Medical Battalion Clearing Station moved to the vicinity of Le Grand Hameau, and later in the day moved farther south to the vicinity of Le Mas Gros, as the axis of the 1st Infantry Division swung farther to the east and south. One platoon of Clearing Company "B" and half of Collecting Company "C", 2nd Medical Battalion, arrived on the beach without equipment or transportation. Collecting Company "B", 2nd Medical Battalion, landed with the 23rd Infantry Regiment, 2nd Infantry Division.

An attack was ordered launched on Trevieres by two combat teams of the 2nd Infantry Division. For medical support, the Division Surgeon employed one clearing platoon of the 2nd Medical Battalion as a regimental medical detachment for the 38th Infantry Regiment, and Collecting Company "B", 2nd Medical Battalion, with three ambulances, plus one-half of Collecting Company "D", 2nd Medical Battalion, with ten ambulances borrowed through the V Corps Surgeon. Evacuation was to the Clearing Station of the 60th Medical Battalion. Clearing Company "D", 104th Medical Battalion, 29th Infantry Division, set up station at Vierville-sur-Mer to support the 2nd and 29th Infantry Divisions but was limited by lack of equipment to first aid treatment. Remaining personnel of the 51st Field Hospital landed this day as did portion of the 684th Medical Clearing Company, 53rd Medical Battalion.

The Surgeon, V Corps, was notified at 1600B by the Commanding Officer, 1st Medical Depot Company, that a medical depot was open in the vicinity of Colleville-sur-Mer (685-894). The Command Echelon, Surgeon's Office, Headquarters, First U. S. Army, consisting of the Army Surgeon, the Executive Officer, and two enlisted men landed late in the afternoon and proceeded to the vicinity of Grandcamp les Bains.

D + 4 (10 June): The remaining personnel of the Clearing Company, 2nd Medical Battalion, landed, plus the remainder of Collecting Company "C" with its transportation and equipment. During the early part of the night, 583rd Medical Collecting Company, 53rd Medical Battalion, and remainder of 684th Medical Clearing Company, 53rd Medical Battalion, came ashore.

All division clearing stations were functioning in a normal manner in spite of losses in equipment and personnel. At 1000B, one platoon of the 15th Field Hospital opened for the reception of casualties on Colleville-St. Laurent road in rear of V Corps. The first transport planes arrived in the Omaha area on the St. Laurent air strip. Four of these planes began the evacuation of casualties by air to the United Kingdom. The Army Surgeon's Office, Command Echelon, Headquarters First U. S. Army, was set up and ready to function in the vicinity of Grandcamp les Bains.

D + 5 (11 June): Two truckloads of critical medical supplies, plus biologicals and whole blood, were dispatched to the Utah area as requested

by the VII Corps Surgeon. The 51st Field Hospital opened one hospitalization unit for the reception of casualties just inland from Easy Green Beach. Headquarters and Headquarters Detachment, 53rd Medical Battalion landed. The Chief Medical Officer, Supreme Headquarters, Allied Expeditionary Force, arrived at the Army Surgeon's Office to view the medical services being rendered within the Normandy Beachhead.

b. Utah Beach, D to D + 5 (6 - 11 June), Inclusive:

D-Day (6 June): On Utah (VII Corps) Beach, Naval Beach Medical Sections were ashore by H + 1½ hours and evacuation of casualties began immediately. These Sections had evacuated approximately 75 casualties before the medical companies of the 261st Medical Battalion, 1st Engineer Special Brigade, were ashore and in operation. Collecting Company "C", 261st Medical Battalion, arrived ashore at H + 4 hours and established station about 400 yards inland in rear of Green Beach. A portion of Company "A", 261st Medical Battalion, arrived a little later in the day and established station in rear of Red Beach. Six surgical teams of the 3rd Auxiliary Surgical Group landed with the Collecting Companies of the 261st Medical Battalion (2 teams per company). During the day, the three collecting companies of the 4th Medical Battalion, 4th Infantry Division, landed with 26 of their combined total of 30 ambulances. These ambulances were put into operation immediately and utilized to their maximum capacity in the evacuation of casualties.

The 326th Medical Clearing Company, 101st Airborne Division augmented with one (1) attached surgical team, landed by glider in support of its division and established station at Hiesville. The 307th Medical Clearing Company, 82nd Airborne Division, with one (1) attached surgical team, landed by glider in support of this division and established a clearing station.

D + 1 (7 June): During the early part of D + 1, Collecting Companies "A" and "C" of the 261st Medical Battalion were the only holding medical units ashore and were heavily burdened with casualties. Evacuation across the beach continued throughout the day. During the afternoon, information was received that the 307th Medical Clearing Company, 82nd Airborne Division, was established near Ste. Mere Eglise, and that this company was holding some 300 casualties. Even while arrangements were being made to contact this unit for removal of these casualties, they began to arrive at the beach in transportation belonging to the 307th Medical Clearing Company. They were mostly glider and jump casualties from both the 82nd and 101st Airborne Divisions. The 491st Medical Collecting Company and 649th Medical Clearing Company, 50th Medical Battalion, landed. The Operations Officer, and one enlisted man of the Army Surgeon's Office arrived ashore to inspect the medical activities on this beach.

D + 2 (8 June): During the night of D + 1 - D + 2, Headquarters Detachment and Company "D" of the 4th Medical Battalion and Company "B", 261st Medical Battalion, landed complete with transportation. By 0630B, Company "B", 261st Medical Battalion, was established adjacent to Company "C", 261st Medical Battalion, and was receiving casualties. At the same time, the Clearing Company of the 4th Medical Battalion set up approximately three (3) miles inland, in support of the 4th Infantry Division. During the afternoon, the 307th Medical Company, 82nd Airborne Division, was contacted near Fauville (353-952). It was

found to be flooded with casualties, both American and enemy. Arrangements were made with the 4th Medical Battalion to furnish trucks to assist in the evacuation of these casualties; part of whom were moved to the 4th Medical Battalion Clearing Station and the remainder to the 261st Medical Battalion in the beach area. The 492nd Collecting Company, 50th Medical Battalion, and the 315th Medical Battalion of the 90th Infantry Division landed, as did the 2nd Section, Advance Platoon, 1st Medical Depot Company. The 4th Medical Battalion Clearing Station was receiving patients by midnight.

D + 3 (9 June): The hospital carrier "Lady Connaught" arrived during the night of D + 2 - D + 3 and discharged First U. S. Army Medical Detachment "B". This personnel consisted of the station and litter bearer platoons of the 502nd and 427th Medical Collecting Companies, 31st Medical Group; six (6) surgical teams of the 4th Auxiliary Surgical Group; the Advance Depot Platoon, 31st Medical Depot Company; six (6) Medical Corps officers from the 662nd Medical Clearing Company, 134th Medical Group; ten (10) liaison officers from various medical units, including one officer from the 9th Troop Carrier Command. Despite her rated capacity of approximately 300 casualties, 400 casualties were placed aboard the "Lady Connaught" during the day and she sailed for the United Kingdom that evening. Also, during the night of D + 2 - D + 3, personnel of the 42nd Field Hospital, plus three (3) surgical teams, were brought ashore after their ship had been sunk and most of their personal and a part of their organizational equipment lost. The remainder of their organizational equipment began to be landed at this time. The equipment of the 2nd platoon would be established near Le Grand Chemin. Prior to this time, the Medical Dump had been operated by the 261st Medical Battalion at location of Collecting Company "C" of this battalion. The 315th Medical Battalion set up clearing station at Ste. Mere Eglise, but artillery fire forced them to withdraw temporarily. However, they returned to this location later in the day. The clearing station of the 101st Airborne Division suffered a near hit from an estimated 1,000 pound bomb, which cost them six medical officers and forty enlisted personnel. Clearing station of the 4th Medical Battalion was set up just south of Beuzeville-au-Plain.

D + 4 (10 June): The 128th Evacuation Hospital, the first Army evacuation hospital to land on Utah Beach, came ashore. It was followed later in the day by the 91st Evacuation Hospital and the 45th Field Hospital. The 42nd Field Hospital, which landed the night of D + 2 - D + 3, opened just northwest of Le Grand Chemin. Due to the heavy surf, the unloading of medical supplies was delayed and a critical shortage of certain items developed. In view of this shortage, it was necessary for the VII Corps Surgeon to contact the Army Surgeon in the Omaha area for delivery of these items. Arrangements were made for their delivery the next day.

D + 5 (11 June): The 128th Evacuation Hospital, the first evacuation hospital to become operational on the continent, opened during the evening in the vicinity of Beuttevilles; the 91st Evacuation Hospital opening on 12 June in the same vicinity. The 463rd Medical Collecting Company arrived ashore this day.

Subsequent landings of remaining First U. S. Army medical units (assigned and attached) on the continent were as follows:

D + 6 (12 June)

24th Evacuation Hospital	Opened D + 7, vicinity of La Cambe (571-877)
449th Medical Collecting Co.	
450th Medical Collecting Co.	
577th Ambulance Company	

D + 7 (13 June)

5th Evacuation Hospital	Opened D + 9, vicinity of Le Molay (650-783)
41st Evacuation Hospital	Opened D + 8, vicinity of Le Molay
464th Medical Collecting Co.	
501st Medical Collecting Co.	
564th Ambulance Company	
565th Ambulance Company	
452nd Medical Collecting Co.	Landed night of D + 6 - D + 7

D + 8 (14 June)

566th Ambulance Company	Landed night of D + 7 - D + 8

D + 9 (15 June)

575th Ambulance Company
451st Medical Collecting Co.
1st Medical Depot Co (less Advance Platoon)

D + 10 (16 June)

45th Evacuation Hospital	Opened D + 18, vicinity of La Cambe (568-882
96th Evacuation Hospital	Opened D + 13, vicinity of Ste. Mere Eglise (557-956)
493rd Medical Collecting Co.	

D + 11 (17 June)

67th Evacuation Hospital	Opened D + 13, vicinity of La Fiere (523-956)
178th Medical Battalion, Hq & Hq Det	
427th Medical Collecting Co.	
502nd Medical Collecting Co.	
68th Medical Group, Hq & Hq Det	
176th Medical Battalion, Hq & Hq Det	
576th Ambulance Company	
175th Medical Battalion, Hq & Hq Det	
578th Ambulance Company	
618th Medical Clearing Company	
97th Evacuation Hospital	Opened D + 15, vicinity of St. Sauveur Le Vicomte (171-976)

D + 12 (18 June)

10th Medical Laboratory — Opened D + 22, vicinity of La Cambe (570-875)

31st Medical Group, Hq & Hq Det
179th Medical Battalion, Hq & Hq Det
621st Medical Clearing Company
622nd Medical Clearing Company

D + 13 (19 June)

44th Evacuation Hospital — Opened D + 15, vicinity of La Cambe (557-862)

D + 15 (21 June)

454th Medical Collecting Co.

D + 17 (23 June)

2nd Evacuation Hospital — Opened D + 23, vicinity of Le Marais (639-738)

37th Medical Battalion, Hq & Hq Det
3rd Auxiliary Surgical Group (Less 23 teams)
426th Medical Battalion, Hq & Hq Det
134th Medical Group, Hq & Hq Det

D + 18 (24 June)

4th Convalescent Hospital — Opened D + 22, vicinity of La Cambe (570-875)

Detachment, 91st Medical Gas Treatment Bn

D + 19 (25 June)

662nd Medical Clearing Co. — Arrived night of D + 18 - D + 19.
617th Medical Clearing Co.
633rd Medical Clearing Co.

D + 20 (26 June)

Detachment, 91st Medical Gas Treatment Bn
177th Medical Battalion, Hq & Hq Det.

D + 21 (27 June)

47th Field Hospital

D + 34 (10 July)

180th Medical Battalion, Hq & Hq Det.

Through 11 June, 8,063 casualties were evacuated by First U. S. Army medical units.

3. Hospitalization and Evacuation.

a. Assault Phase.

In the initial stages of the invasion, the Surgeon, V Corps, on Omaha Beach, and the Surgeon VII Corps, on Utah Beach, were responsible for the evacuation on their respective beaches. On D-Day, the Naval Beach medical parties, Medical Battalions of the Engineer Special Brigades and unit medical detachments, all rendered medical aid and placed casualties on any available landing craft for transportation to larger vessels lying off shore. Evacuation across the beaches was carried out by elements of the medical battalions of the Engineer Special Brigades. As the situation developed, elements of the Corps medical battalions evacuated division clearing stations to the Engineer Special Brigade medical battalions. Clearing stations of the Engineer Special Brigade medical battalions were augmented with surgical teams which were brought in with them and reinforced on D + 2 (8 June) by six (6) additional surgical teams on each beach from First U. S. Army Medical Detachments "A" and "B".

Definitive surgery was performed on major cases in the clearing stations of the Engineer Special Brigades from D + 2 on. Two field hospitals arriving on each beach on D + 2 were, of necessity, employed as evacuation hospitals until such time as the latter type of hospital arrived, commencing D + 5. The 261st Medical Battalion on Utah Beach became the evacuation center for that beach. On Omaha Beach, the 60th Medical Battalion operated a clearing station in the vicinity of St. Laurent, while the 61st Medical Battalion, 5th Engineer Special Brigade, operated three collecto-clearing stations ranging from Easy Green Beach to Fox White Beach. The first air strip available to transport planes on the continent opened on D + 4 in the vicinity of the 593rd Collecto-Clearing Company of the 5th Engineer Special Brigade above Easy Green Beach. Twelve (12) patients were evacuated by air on that day.

Immediately thereafter, arrangements were made for diversion of walking cases to the clearing station of the 60th Medical Battalion at St. Laurent, for evacuation by boat, and the transferring of all litter patients to the 593rd Collecto-Clearing Company at Easy Green Beach for priority travel by air. It was further arranged to start consolidating the entire 61st Medical Battalion in the vicinity of the 593rd Collecto-Clearing Company to form an air holding unit for the air strip. This was accomplished by D + 6.

Some of the problems which were encountered were the separation of hospital personnel from vehicles containing equipment and from equipment and stores not loaded on unit vehicles but shipped separately. In many instances, the separation caused several days delay between the arrival of the personnel and the time the hospital could become operational; this, when the need for hospitalization was most critical. Another serious fault due to the separation of personnel from unit equipment was that, in the unloading of pre-shipped equipment and stores, material became widely dispersed, hospital equipment having been found in dumps other than medical, in personnel transit areas, in Class V dumps and even along the roadside. Because of this dispersion, beyond the control of the hospital concerned, many of the chests, crates and boxes had been ransacked and pilfered. In some instances, unit medical detachments and organic medical units of divisions were phased in too late to support their unit when the units

were initially committed to combat, necessitating a strain on the already limited resources of Corps, and later, Army medical units.

In general, the medical service planned for the invasion was sound, and required a minimum of change. The total evacuation policy was absolutely essential. It was accomplished through the use of medical detachments on LST's to provide proper care for patients evacuated on this type of craft, and by the use of hospital carriers, one being scheduled daily for each beach. The attachment of surgical teams to Engineer Special Brigades and medical companies of airborne units, and the early augmentation of additional medical personnel of First U. S. Army Medical Detachments "A" and "B" undoubtedly saved a great number of lives. The phasing in of litter bearers, technicians, and medical officers of Army medical groups in Medical Detachments "A" and "B" provided a much needed source of replacements to divisions, and increased the capacity of clearing units of Engineer Special Brigades on the beaches. Liaison officers of Army medical units accompanying Medical Detachments "A" and "B" made it possible to select suitable sites for hospitals and have the sites demined and cleared prior to their arrival, thus enabling units to become operational on the continent at the earliest possible moment.

b. Cherbourg and St. Lo Campaigns.

Following the establishment and joining of the two beachheads, much of the effort of the German forces was spent attempting to prevent a widening of the land link between Omaha and Utah. During this period, the arrival of Army medical units enabled the Army Surgeon to build the evacuation chain described in the section on Planning. This system, utilizing all Army medical units in their normal roles was used to support the campaign for the Cherbourg peninsula, and was continued on into the phase of the campaign during which the assault on St. Lo took place. On D + 6, all evacuation had reverted to Army control. By D + 15, all First U. S. Army 400-bed evacuation hospitals were ashore and operating. On that date, the Surgeon, First U. S. Army, instituted a 10 day evacuation policy. Prior to this time, the policy had been one of total evacuation with the exception of holding non-transportable patients, until such time as they became transportable.

Third echelon evacuation was controlled through the medium of Medical Groups. The 68th Medical Group operated in the Omaha area. Under the three battalion headquarters attached to this group, five collecting and four ambulance companies evacuated division clearing stations, field and evacuation hospitals, and using the station and litter platoon of the collecting companies, reinforced second echelon medical elements and evacuation hospitals as necessary. The 31st Medical Group, operating in the Utah area carried out the same mission in that sector. The 134th Medical Group, through two attached battalion headquarters, coordinated the activities of six clearing companies. Two of these operated as Combat Exhaustion Centers. The remaining four supported evacuation hospitals receiving and treating the overflow of lightly wounded under supervision of the surgical staff of the hospital, or taking over post-operative non-transportable cases when the hospitals moved. When large numbers of combat exhaustion cases filled the center, a clearing platoon was attached as support thereto.

The 4th Convalescent Hospital received convalescent ambulatory cases, allowing these men to be held under Army control. At this time, when every

effort was made to keep all available man-power on the continent, this hospital fulfilled a most important mission. On one occasion, two thousand seven hundred troops were in this installation, which figure will give an indication of the value of such a unit to a field army.

The 91st Medical Gas Treatment Battalion was at first employed as support for evacuation hospitals, its companies being used in much the same manner as the clearing companies. Later this unit was given the mission of handling all of the common contagious diseases, save pneumonia, diphtheria and meningitis, which diseases continued to receive treatment in evacuation hospitals. This was a further step taken to retain more available beds for surgical battle casualties.

This second phase brought out a few minor changes in previous plans. The periodic report on evacuation from Army Hospitals originally was based on a six hour interval. It was found from experience that this short interval works a hardship on hospitals rendering the report and the units furnishing courier service for same. It was also found to be impracticable to have such reports rendered by telephone from so many units. Consequently, the report was changed to twice a day, as of 0600 and 1800, which proved to give sufficient timely information upon which to base evacuation planning, as well as to control admissions to the hospitals. The material originally called for in the report was sound, except that the information should all have been based on the same period of time. This was corrected. Surgical backlog and total 24 hour evacuation figures as taken from the Combat Statistical Report were added. See attached copy of this report, and instructions pertaining to same as contained in Operations Memorandum No. 2. On the basis of the twice daily periodic report, hospital admission quotas were established by the Army Surgeon for the next twelve hour period. These quotas were given to the Medical Group responsible for evacuating the division and corps clearing stations. The establishment of such quotas enabled the Army Surgeon to take into consideration the bed status of the hospital and the surgical backlog prevailing, thus enabling him to equalize the load and prevent any unit from becoming bogged down. The Medical Group, through the employment of ambulance regulating points in front of evacuation hospitals, distributed the patients among the hospitals on the basis of quotas assigned by the Army Surgeon. This equalization was greatly facilitated by placing evacuation hospitals in pairs in relatively close proximity to each other.

One major evacuation problem occurred immediately after the fall of Cherbourg when it was determined that there were approximately 1,500 wounded prisoners of war hospitalized in the three hospitals in that city. The 68th Medical Group triaged and transported 1,382 of these patients from Cherbourg to the 261st Medical Battalion on Utah Beach over a period of 36 hours. The remaining non-transportable prisoner of war patients were consolidated in one hospital in Cherbourg for treatment by captured German medical personnel, under the supervision of American medical officers.

Evacuation hospitals functioned throughout the entire operations with little, if any, relief. The number of evacuation and field hospitals set up for the First U. S. Army during the planning phase was for an army composed of three corps. With the build-up of the First U. S. Army on the continent,

first by VIII Corps and later, by Third U. S. Army units, the medical service of the First U. S. Army was augmented during the period 26 June to 1 August 1944, by the following field and evacuation hospitals of the Third U. S. Army:

52nd Evacuation Hospital
34th Evacuation Hospital
35th Evacuation Hospital
39th Evacuation Hospital
100th Evacuation Hospital
102nd Evacuation Hospital
103rd Evacuation Hospital
104th Evacuation Hospital
106th Evacuation Hospital
107th Evacuation Hospital
109th Evacuation Hospital
16th Field Hospital

All of these units reverted to the Third U. S. Army control on 1 August with the exception of the 106th and 109th Evacuation Hospitals, which reverted at a later date. Advance Section, Communications Zone, made the 77th Evacuation Hospital for use by the First U. S. Army on 21 July 1944, along with three ambulance companies which were given the task of evacuating from the evacuation hospitals to the beaches. Throughout this period, evacuation hospitals were utilized by closing a hospital and leap-frogging it forward to a new location. Hospitals were established as far forward as the tactical situation would permit, usually in front of corps rear boundaries. At the height of operations for the period 6 June 1944 to 31 July 1944, inclusive, there were twenty-two (22) evacuation and six (6) field hospitals assigned and attached to the First U. S. Army for the support of sixteen (16) active combat divisions.

On request of the Surgeon, First U. S. Army, Advance Section, Communications Zone, established a holding unit at the air strip at Sinneville on 21 July by utilizing the 93rd Medical Gas Treatment Battalion, augmented by one platoon of a field hospital. On 24 July 1944, by mutual arrangement between the Surgeon, First U. S. Army, and the Surgeon, Advance Section, Communications Zone, the air holding units at Sinneville and Colleville and the beach evacuation center on Utah Beach reverted to the control of Advance Section, Communications Zone. Up to the time, Advance Section, Communications Zone, took over the evacuation centers, the First U. S. Army had evacuated 20,117 patients by air and 36,012 by boat, a total of 56,129.

Throughout the campaign, hospitalization units of field hospitals, attached with surgical teams from the 3rd Auxiliary Surgical Group, were utilized at division clearing stations. By operating at the division clearing stations, these units were in a position to give definitive treatment to the most seriously wounded. Upon movement of a hospitalization unit forward with the division clearing station, it was necessary, at times, to leave sufficient medical personnel at the old site to care for the non-transportable wounded remaining in the hospital. Transportation for these units was usually furnished by one of the evacuation hospitals. Throughout the operation, field hospitals serving in the capacity of small surgical hospitals were of great value to the Army medical service.

The surgical teams assigned and attached to the First U. S. Army proved to be inadequate in number, but this situation was relieved somewhat by utilizing improvised surgical teams from general hospital personnel assigned to the Advance Section, Communications Zone, when their parent hospital was not functioning. From time to time, it was necessary to call on Advance Section, Communications Zone, for other personnel, both commissioned and enlisted to augment the staffs of the Army hospitals.

In the early days of the invasion, it was noticed that a number of patients were being admitted to evacuation hospitals with what seemed to be self-inflicted gunshot wounds. Most of those cases were minor wounds and were taking up much needed hospital bed space.

On 22 June, instructions were issued to Commanding Officers of all First U. S. Army evacuation hospitals to hold all cases of suspicious self-inflicted gunshot wounds in the hospital. The Army Inspector General was making a round of the hospitals checking into these cases in an effort to develop a policy as regards self-infliction of wound to avoid hazardous duty. After checking into these cases, the following policy was developed. All cases of self-inflicted gunshot wounds, about which a question existed as to their being self-inflicted for the purpose of avoiding hazardous duty, would be held in evacuation hospitals pending investigation by a representative of the Inspector General. These cases would not be evacuated from the hospital except on orders of the Army Surgeon. The name, rank, serial number and organization of each such case in hospital at that time or thereafter admitted was to be reported to the Army Surgeon's Office. The Army Surgeon's Office, in turn, was to turn over to the Army Inspector General's Office, this list of names, and the Inspector General or his representative would make an investigation of each such case. After investigation, the Inspector General would report action to the Army Surgeon's Office. If the wound was determined to be really accidental, the Army Surgeon's Office would direct the hospital concerned to include a form in the patient's medical records to this effect, and clear patient from hospital to duty or further evacuation. To avoid further investigation, this form would indicate to proper authorities in the United Kingdom that the case had been investigated and the outcome of such investigation. Where a patient was found guilty of self-infliction of wound to avoid hazardous duty, the Inspector General or his representative consulted the Army Neuropsychiatric Consultant regarding the particular case, after which the patient was tried. This policy was presented to the Chief of Staff and approved.

Several weeks later, it became apparent that these cases were clogging up our evacuation system. It was quite a problem for the Inspector General or his representative to visit each evacuation hospital to investigate such cases. At a conference between the Army Surgeon and the Army Inspector General, it was decided that one hospital would receive all such cases. On 24 July 1944, all such cases were transferred to the 16th Field Hospital, a Third U. S. Army unit attached to First U. S. Army, and used as a supplement to the convalescent hospital, in this case. Also, this unit was to receive other medical cases, including malaria. The 16th Field Hospital was responsible for reporting all such cases admitted to the Army Surgeon's Office; the evacuation hospitals merely transferring these cases to the 16th Field Hospital without reporting case to this office. By this procedure, all case of self-inflicted gunshot wounds were concentrated in one location, thereby saving much time in the investigation of cases by eliminating

inter-hospital travel by the Inspector General or his representative. Further, it relieved the evacuation hospitals of holding such cases and thereby made bed space available for the more seriously wounded.

During this period ending the last of August, 848 cases of self-inflicted wounds were reported of which 625 were found upon investigation not to be malingering or on which sufficient evidence was not obtained to warrant court-martial proceedings. Twenty-four men were returned to their organizations for court-martial, and 199 were still under investigation at the end of August.

Upon Third U. S. Army becoming operational on 1 August, it was necessary to turn over to that army, certain medical units which had been attached to First U. S. Army for operations. Among these units, was the 16th Field Hospital. At a conference held between the Surgeon, First U. S. Army, and the Surgeon, Third U. S. Army, it was agreed that all suspected self-inflicted gunshot wound cases in the 16th Field Hospital belonging to the units of First U. S. Army would be transferred as soon as possible to the 91st Medical Gas Treatment Battalion, which was to be established for the reception of such cases; Third U. S. Army retained all such cases belonging to units of that army.

Upon announcement by the Army Surgeon that a ten-day evacuation policy was in effect (D + 15), arrangements for the return of patients to duty from hospitals were made between the Army Surgeon and the Assistant Chief of Staff, G-1, Headquarters First U. S. Army. This policy was to the effect that Commanding Officers of evacuation hospitals were to call Commanding Officers of the Corps Replacement Battalions and notify them as to the number ready for duty for that particular day and the location of the hospital. The replacement battalion would then be responsible for sending transportation to pick these men up for return to the replacement battalion. One exception to this was that all neuropsychiatric cases ready for duty were to be returned by Medical Department transportation to clearing stations from which they were admitted to hospital.

During the period 6 June 1944 to 1 August 1944, 22,942 patients were treated by hospitals of First U. S. Army and returned to duty.

Prisoners of war were utilized throughout most of the period at the evacuation hospitals. This arrangement was closely coordinated with the Assistant Chief of Staff, G-1, and the Provost Marshal, Headquarters First U. S. Army. The utilization of prisoners of war became necessary due to the fact that the T/O of evacuation hospitals is such that during periods when large numbers of casualties were being admitted to the hospitals, the enlisted personnel were needed for the more urgent work of caring for the sick and wounded. It was, therefore, necessary that additional personnel be made available for general work such as litter bearing, digging latrines, garbage pits and other labor. Usually, forty (40) prisoners of war (non-medical) have been attached to each evacuation hospital within First U. S. Army to do such work. To guard these prisoners of war, the Provost Marshal placed two (2) armed guards with each evacuation hospital. This arrangement worked out very satisfactorily, enabling the evacuation hospitals to render better care and treatment to the sick and wounded.

The prisoners, with practically no exceptions, worked well and seemed pleased with the way in which they were being handled.

c. Pursuit across France.

After the German collapse, following the breakthrough at St. Lo, a new problem presented itself to the medical service of the First U. S. Army. This problem was to provide hospitalization and evacuation to a rapidly advancing front. As the tactical situation developed, the left flank as well as the front of the army required active medical support due to the efforts of the enemy to break out of a pincer, of which his army formed the southern jaw. The distance over which medical support was required was approximately one hundred and fifty miles. The speed at which our combat forces extended these lines greatly enhanced these difficulties.

The following policies, laid down by the Army Surgeon, provided a solution:

(1) The Employment of Field Hospitals.

As explained in the report of the early stages of the campaign, one hospitalization unit of a field hospital was established adjacent to each division clearing station. This policy provided means for early treatment of those patients triaged as non-transportable.

During the later phases, as the lines of evacuation were greatly lengthened, it was necessary to move hospitals forward with greater speed than had previously been called for. It was decided that, due to their greater mobility and because of the fewer casualties being encountered, the hospitalization units of field hospitals could be employed as small evacuation hospitals. This decision proved of great value.

(2) The Employment of Evacuation Hospitals.

Throughout the period, these hospitals were utilized as far forward as the tactical situation would permit. This was accomplished by the closing of a hospital and clearing it of patients in order to move forward. Sufficient hospitals were kept mobile so that one was always available to leap-frog a unit that had either been taxed to capacity or, because of its great distance from the advancing front, was no longer of great value to the forward troops.

When, due to the relative immobility of evacuation hospitals, it was no longer feasible to attempt to keep pace with the combat troops and the field hospitals were being utilized as small evacuation hospitals, the evacuation hospitals were employed as transfer points. Serving in this capacity, they materially lessened the distance over which casualties had to be transported in one continuous move. After the patients were rested, wounds cared for, and dressings applied, the casualties were turned over to the control of Advance Section, Communications Zone, for further evacuation to general hospitals in the rear, or to air strips for evacuation.

Following the breakthrough at St. Lo, many of our hospitals had large surgical backlogs due, in great measure, to the large numbers of lightly wounded casualties being treated. This condition hampered their mobility and thus,

their usefulness to the medical service. At a conference attended by Major General Kenner, Chief Medical Officer, Supreme Headquarters, Allied Expeditionary Forces; Colonel Beasley, Surgeon, Advance Section, Communications Zone; Colonel Rogers, Surgeon, First U. S. Army; Colonel Snyder, Executive Officer, Office of the Surgeon, First U. S. Army; and Colonel Amspacher, Operations Officer, Office of the Surgeon, First U. S. Army, it was decided to establish the 77th Evacuation Hospital, an Advance Section, Communications Zone organization, in the rear of First U. S. Army to receive these lightly wounded, unoperated cases, thus relieving the backlog in Army hospitals.

(3) Handling of Special Type Cases.

The 91st Medical Gas Treatment Battalion, which was designed for the treatment of gas casualties, was utilized as a hospital for the care of special types of cases. These cases interfere with the primary mission of an evacuation hospital. After having been augmented with the necessary equipment, it was given the mission of handling the following:

Contagious diseases; Measles, German measles, mumps, chicken pox, scarlet fever, and dysentary.

Malaria: It was found upon investigation that all cases were recurrent in nature and had been contracted during the campaigns in North Africa, Sicily, and Italy, or during maneuvers in the southern section of the United States. The great majority of these cases had not been complying with recent directives for the taking of atabrine for suppressive therapy. This was due to various reasons: not available, did not like it, did not agree with them, etc.

Return to duty cases: Arrangements were made with G-1, First U. S. Army, and the Replacement System, whereby all cases returning to duty would be handled by the 91st Medical Gas Treatment Battalion, 4th Convalescent Hospital, and the 618th and 622nd Clearing Companies. This arrangement worked well during the earlier stages of the period, but as the movements of combat units became increasingly faster, it fell into a stage of disorganization. At times, medical units were not relieved of their duty cases by the replacement system.

Self-Inflicted Wounds: Patients suspected of having inflicted a wound upon themselves for the purpose of escaping hazardous duty were transferred to this unit as soon as transportable. These cases were held pending investigation by a representative of the Inspector General.

(4) Employment of the 4th Convalescent Hospital.

Return of Duty Cases: See fourth paragraph on this page.
Ambulant, ten day cases.
Venereal disease cases.

(5) Employment of the 618th and 622nd Medical Clearing Companies.

Return to duty cases: See fourth paragraph on this page.
Combat exhaustion cases.
Neuropsychiatric cases.

(6) Employment of Clearing Companies as Holding Units.

The speed at which our combat forces moved forward not only caused the above changes in the policy of employment of hospitals, but also in the utilization of the medical clearing companies. Many hospitals were needed in the forward zones while they were still immobilized with a small number of non-transportable abdominal and chest cases. A method was needed to relieve hospitals of such cases so that the hospitals would not have their efficiency impaired by leaving their own personnel behind, to care for such non-transportables when moved to a new location.

In view of this situation, the Army Surgeon employed clearing companies to take over these cases, thus, relieving the hospitals of their responsibility. The clearing companies care for these patients until they are transportable and then evacuate them to Communications Zone hospitals in the rear.

Until mid-September, the pursuit of the fleeing German armies continued. One change taking place during this period is noteworthy. Field hospitals were placed under centralized command, accomplished by assigning them to the Hq & Hq Detachment, 177th Medical Battalion, Lt. Colonel E. S. Fugelso, commanding. The first mission assigned the battalion was to re-assemble the field hospitals. Hospitalization units were scattered over an area of one hundred by two hundred miles at fourteen different locations. At completion of assembly, the Army Surgeon ordered that field hospitals would provide evacuation hospital service to the Army, on a basis of one (1) field hospital per Corps. The basic plan used to carry out this assignment was to place a hospital headquarters and two (2) hospitalization units forward in support of each Corps at all times. One of these two units was designated as the unit of record, set up completely, and augmented as necessary, by the personnel and materiel of the accompanying unit. The third unit remained in reserve until progress made the advance of the hospital necessary. Then it moved up, became the forward unit and was supplemented by addition of the hospital headquarters and one of the unit which it had passed in moving forward. Because of the relatively few casualties sustained during the drive through France and Belgium, the system outlined above remained in effect until the Army ran into stubborn resistance at the German border.

The policy of grouping the majority of evacuation hospitals in a centrally located Army medical service area, leaving one or at most two, out in support of the right and left flank corps was instituted. The application of these arrangements to a situation where communications were poor and overall operating distances accomplished two vital needs. First, control of Army medical units was simplified, and second, the bulk of casualties were concentrated, simplifying evacuation to Communications Zone establishments.

The solution to the problem of handling special types of cases, a group made up of contagious diseases, malaria and ambulatory convalescents remained the same. Such cases came under the control of the 91st Medical Gas Treatment Battalion and the 4th Convalescent Hospital, relieving the evacuation hospitals of the necessity of filling beds needed for surgical cases with such patients. During the last half of the month of September, the 4th Convalescent

Hospital, because of lack of sufficient transportation, was left behind. The 91st Medical Gas Treatment Battalion took over the cases normally handled by the 4th Convalescent Hospital, in addition to its usual duties. The organization of this unit permitted the setting up of three entirely separate hospital establishments, allowing control over a lengthy axis. Thus, the battalion was able to maintain a hospitalization unit in contact with the troops and open for admissions at all times.

Combat exhaustion and neuropsychiatric cases were, as heretofore, evacuated to the 616th and 622nd Clearing Companies.

d. The Siegfried Line.

As the combat troops approached the fortifications of the Siegfried Line, enemy resistance stiffened and the tactical situation settled into one of a relatively static front. Opportunity was taken to regroup the medical units of First U. S. Army so that this new phase of the campaign might be more adequately covered. An area was secured midway between the Army's north and south boundaries, and the bulk of Army medical units, evacuation hospitals, NP hospitals, 91st Medical Gas Treatment Battalion, the 1st Medical Depot Company, and the headquarters of the Medical Groups were concentrated in this area with all possible speed. The Army Surgeon re-arranged the Army medical units to provide three (3) identical groups. One group operated in each corps zone, and was charged with the responsibility for control of Army medical service. The composition of the three groups was as follows:

31st Medical Group

178th Medical Battalion
426th Medical Battalion
621st Medical Clearing Company
564th Ambulance Company
565th Ambulance Company
566th Ambulance Company
574th Ambulance Company
463rd Medical Collecting Company
501st Medical Collecting Company
502nd Medical Collecting Company
47th Field Hospital

68th Medical Group

175th Medical Battalion
176th Medical Battalion
662nd Medical Clearing Company
449th Medical Collecting Company
451st Medical Collecting Company
454th Medical Collecting Company
576th Ambulance Company
577th Ambulance Company
578th Ambulance Company
594th Ambulance Company
13th Field Hospital
51st Field Hospital

134th Medical Group

179th Medical Battalion
180th Medical Battalion
450th Medical Collecting Company
452nd Medical Collecting Company
464th Medical Collecting Company
617th Medical Clearing Company
479th Ambulance Company
546th Ambulance Company
575th Ambulance Company
583rd Ambulance Company
42nd Field Hospital
45th Field Hospital

The Headquarters and Headquarters Detachments of the 37th and 177th Medical Battalions were placed directly under control of the Army Surgeon's Office, and were given the task of providing evacuation, reinforcement and, by means of the Provisional Truck Company, transportation to the Army medical units which had been concentrated in the vicinity of Aupen (X 861-261). These battalions had the following composition:

37th Medical Battalion	177th Medical Battalion
384th Ambulance Company	427th Medical Collecting Company
591st Ambulance Company	493rd Medical Collecting Company
Provisional Truck Company	618th Medical Clearing Company
	622nd Medical Clearing Company
	653rd Medical Clearing Company

To further coordination of the movements and disposition of medical troops, it was decided that Group Commanders would be given the authority to control all medical transportation within their zone of action. Group Commanders were informed that they would be responsible for augmenting and reinforcing, from the units attached to their groups, Army, corps, and divisional medical installations in their corps zones. The purpose of this reorganization was to mobilize Army medical service as highly as possible. Actual operations throughout the remainder of the month gave proof that the desired ends could be obtained under the above outlined organization.

During the last week in September, heavy rain changed fields and country roads into veritable quagmires. Routine hospitalization and evacuation procedures were greatly retarded, and in some cases, made hazardous for both patients and Medical Department personnel. A decision was made by the Army Surgeon that while such conditions of climate and terrain prevailed, all First U. S. Army hospitals, and as many supporting medical units as possible would be established in buildings.

While engaging in pursuit of the enemy, the Army sustained relatively few casualties. The major problem of evacuation was to conquer the distances involved in all routes. At one time during this period, a large number of German wounded, approximately one thousand, at one division clearing station, jammed evacuation channels in that area completely. The situation was remedied by augmenting ambulance with truck evacuation for lightly wounded prisoners, distributing the more seriously wounded to field and evacuation hospitals, and bypassing these hospitals with the very lightly wounded to Advance Section, Communications Zone hospitals. Since the possibility remained of recurrence of a like situation, the Army Surgeon decided that, henceforth, lightly wounded prisoners should be processed through normal Prisoner of War channels, where provisions had previously been made to treat them, while seriously wounded prisoners would follow normal routes of evacuation. The resultant elimination of large numbers of lightly wounded removed an unnecessary burden from the receiving and evacuating sections of the hospitals and preserved bed space necessary for the seriously wounded.

Lack of bed space provided by the Advance Section, Communications Zone, at reasonable distances from Army installations, made it necessary to continue

establishment of Army evacuation hospitals as transfer points. Without these transfer points, ambulance routes would have, at times, exceeded one hundred miles in length.)

Efforts were made by Communications Zone to alleviate the pinch of evacuation demands. On 11 September, Major Pace, Liaison and Evacuation Officer, 9th Air Force, arrived in Army Headquarters with information that airstrip A-85E at Gerfontaine (G 650-780) would become available to First U. S. Army on 13 September. Advance Section, Communications Zone, placed a holding unit at that location. This was the first time since the month of July that First U. S. Army had been afforded the opportunity to evacuate a significant number of casualties by air. A temporary reduction in the number of Army hospital beds necessarily given over to the task of holding casualties was effected by this means. However, because of weather conditions, variations in the number of planes available, and the increase in casualties as German resistance stiffened, the evacuation problem began again to assume critical proportions. At times, evacuation from the Army area was closed down for periods ranging from twenty-four (24) to forty-eight (48) hours. First U. S. Army hospitals formerly held as reserves had to be pressed into service to provide holding capacity. A further temporary easing of this situation was effected by the arrival of hospital trains in Liege (K 475-290). However, an average of three trains daily would have been necessary to maintain complete evacuation of Army hospitals and such numbers were not available. The 618th Clearing Company, heretofore utilized for the hospitalization of combat exhaustion cases, was opened as a holding unit in the vicinity of Duffet (K 475-290). It was necessary to use this unit in addition to those beds already set aside at Army evacuation hospitals to hold cases awaiting evacuation. On the 26th of September, a new airstrip, A-92, was opened in the vicinity of St. Trond (K 185-484), and evacuation from it was instituted. The establishment of the 15th General Hospital in Liege (K 475-290), came as a further aid to evacuation. However, a complete solution was not reached until mid-October. Many factors combined to bring about the unsatisfactory conditions. (The lack of an administrative airfield, inability to secure sufficient transport aircraft when a field was available, inadequate numbers of general hospital beds at reasonable distances from the Army area, scarcity and irregularity in arrival of hospital trains, all contributed to this condition. The problem of evacuation from Army hospitals with its corollary lack of bed space remained a most conspicuous shortcoming until mid-October.)

The month of October was a period given over, in large measure, to the build-up of resources in preparation for launching a major offensive, designed to carry First U. S. Army to the Rhine River. A regrouping of armies, carried out in the latter part of the month, saw the newly arrived Ninth U. S. Army shifted from the south to the north flank of First U. S. Army. XIX Corps passed from control of First U. S. Army to Ninth U. S. Army; VIII Corps from Ninth U. S. Army to First U. S. Army as part of this shift. First U. S. Army medical units in XIX Corps sector were turned over intact, with the exception of the 47th Field Hospital and the 4th Convalescent Hospital, to control of Ninth U. S. Army. Reciprocally, Ninth U. S. Army medical units in VIII Corps sector passed to control of First U. S. Army. A list follows of the medical units involved in the exchange:

Units Lost	Units Assigned or Attached
41st Evacuation Hospital	102nd Evacuation Hospital asgd fr 9th Army
91st Evacuation Hospital	107th Evacuation Hospital asgd fr 9th Army
111th Evacuation Hospital	110th Evacuation Hospital asgd fr 3rd Army
31st Medical Group	64th Medical Group
178th Medical Battalion	170th Medical Battalion
426th Medical Battalion	240th Medical Battalion
442nd Medical Collecting Company	419th Medical Collecting Company
463rd Medical Collecting Company	423rd Medical Collecting Company
501st Medical Collecting Company	439th Medical Collecting Company
502nd Medical Collecting Company	623rd Medical Clearing Company
621st Medical Clearing Company	580th Ambulance Company
564th Ambulance Company	581st Ambulance Company
565th Ambulance Company	590th Ambulance Company
566th Ambulance Company	595th Ambulance Company
574th Ambulance Company	

One additional 400-bed evacuation hospital, the 110th passed to control of First U. S. Army, from Third U. S. Army, in the exchange.

Admissions to First U. S. Army hospitals occurred on a decreasing scale after the end of the first week in October, and it was realized that due to the tactical situation, this period of relative quiescence would last for some time. V Corps and VII Corps sectors were the scene of patrol activity only. VII and XIX Corps collaborated during the month in the encirclement and siege of Aachen, the town finally being taken by troops of the First Infantry Division. The majority of battle casualties sustained by Army for the period originated from this ten day siege.

As a corollary to the decrease in the number of hospital beds necessarily held for battle casualties, increased capacity was provided for the care of diseases with a convalescent period of relatively short duration, such as the respiratory diseases usually occurring during late fall and early winter months. These and other relatively less important factors combined to present to the Surgeon the opportunity to retain, within the administrative boundaries of the Army, numbers of personnel which would have passed in the normal chain of evacuation to Communications Zone hospitals. The mechanisms by which such advantage was secured are presented herewith.

(1) Corps and division clearing stations were given the mission of holding minor cases of disease for treatment to expedite return of such personnel to duty.

(2) The Medical Group operating in the zone of each Army corps was directed to establish an Army clearing station. This clearing station admitted the overflow of minor cases from corps and division clearing stations, operated in addition, a dental prosthetic laboratory and provided dispensary service to troops operating in the immediate vicinity.

(3) On the 20th of October, First U. S. Army hospitals put into effect the policy of holding for return to duty all patients whose period

of illness would last 20 days or less. This was a temporary change in policy, to remain in effect only during such time as casualties were light.

One minor problem occurring during this period was the hospitalization in Belgian territory of German civilians. Due to the friction existing, it became necessary to set aside a 200-bed civilian hospital to prevent incidents such as would certainly have arisen, had Germans been placed haphazardly in Belgian hospitals.

Because of the distances involved, evacuees from the 110th Evacuation Hospital in VIII Corps sector did not go through the usual channels to rear of First U. S. Army, but were sent to the Communications Zone installations to which Third U. S. Army was being evacuated. This mild disturbance of routine evacuation was a result of the shift of Ninth and First U. S. armies.

Because of the same dislocation of the axis of First U. S. Army, plus the broadening of its front, it became necessary to relocate certain units. The 4th Convalescent Hospital moved to Spa; the 91st Medical Gas Treatment Battalion established a company in the northern Corps zone (VII) and made plans to direct the remaining companies to the areas of the central (V) and southernmost (VIII) Corps.

Difficulties in evacuation experienced during the preceding month, were gradually eliminated. The site of those difficulties had been behind Army hospitals, at Communications Zone installations. Increase in ADSEC holding capacity and the advancement of Communications Zone general hospitals provided adequate bed space. Material aid was provided by assignment of a greater number of hospital trains, 12 in all, in the rear of First U. S. Army.

November found the tactical situation of First U. S. Army little altered from the preceding month. Although major hospitalization policies in effect during the month of October remained unchanged, several minor innovations are noteworthy.

Formerly, patients with self-inflicted wounds were held in the 4th Convalescent Hospital pending investigation by the Inspector General, when suspicion existed that the occurrence involved intent to escape hazardous duty. The plan reduced the number of hospital beds available for convalescent patients. To remove this flaw, it was decided that the patient would return to his organization prior to investigation, at such time as his physical condition permitted. The hospital was to inform the patient's unit that his status was undetermined. On completion of the investigation required, the unit was to return the data necessary for completion of records to the hospital. Here, final entries were to be made on the patient's record, or the information forwarded to The Surgeon General, should the record no longer be in possession of the hospital. Such procedure met with approval of the Army Inspector General and has been adopted.

In an attempt to gain an overall picture of the results of treatment in Army hospitals, First U. S. Army medical officers were stationed for short periods in the ADSEC hospitals in rear of First U. S. Army. It was the duty of these officers to check the conditions of patients brought into ADSEC installations and through this estimate, ascertain wherein our treatment could be improved.

On 8 November, the Army Surgeon held a conference at the 4th Convalescent Hospital of all hospital, group, and separate medical unit commanders. During this conference, both administrative and professional aspects of Army medical service were discussed. Topics considered under the administrative heading were discipline, the appearance of installations and individuals, supply discipline, with particular emphasis on gasoline and tire conservation, improvement of unit messes, passes, rotation of personnel between Army and Communications Zone units, arming of Medical Department personnel, and the inception of a system of routine inspections by officers from the Office of the Army Surgeon. The handling of duty cases was re-examined to emphasize the basic idea behind the Army Surgeon's plan for their disposition. This idea is that there lies within the power of the Medical Department the opportunity to render an appreciable service to the Army, through salvaging and return to duty by means of the convalescent agencies at its disposal, key personnel who otherwise would pass out of the control of the Army. Furthermore, this plan frees the replacement systems of both Army and Communications Zone from much administrative procedure. A final administrative note emphasized the importance of continual maintenance of dispensary facilities by all medical units. The Army Surgeon directed the consideration of all present to the fact that the Medical Department is a service, and must function as such at all times and under any conditions. The professional portion of the program was handled by the Army Medical and Surgical Consultants and the Venereal Disease Control Officer, who discussed matters of current importance. The Army Medical Statistician pointed out common errors in reporting. The meeting was concluded by the Army Medical Supply Officer who introduced a questionnaire on the status of excess T/E materiel.

During the month, preparations were made, by means of conferences with G-1 and G-4 agencies, to furnish medical care to large numbers of recovered Prisoners of War, in the event that such groups were turned over to Army on short notice. A basic detachment was set up, consisting of two (2) medical officers and fifteen (15) enlisted men, plus the equipment necessary to establish dispensary and minor hospitalization facilities in the event of overrunning one of these German installations. This plan included that utilization be made of medical personnel and supplies present at such installations. After incorporation in the general service plan for care of recovered Prisoners of War, copies of the plan were distributed to those Medical Department units selected for its execution. At this writing, it has not been necessary to place the plan into effect.

Undoubtedly, the most serious problem to confront the Army medical service during the month was that posed by the tremendous increase in trench foot casualties. The first case of this condition appeared as early as the 27th of August, and was found in the records of a hospital unit then attached to Third U. S. Army. Admissions for this condition remained low during the months of September and October, rising during the first weeks of November, and reaching an all-time high on the 14th of that month, on which day 335 cases were admitted. Following this peak, a mean strength of approximately 100 admissions per day was sustained during the month. The greatest possible number of factors which could aid in the production of the condition were present at this time. The cold, damp weather, combined with the relatively static type of foxhole warfare, produced the wet feet and immobility which are the etiological agents of trench foot.

The following preventive measures were used to combat the disease:

1. On 1 October, Professional Memorandum #5, was published. This memorandum outlined the conditions under which trench foot could best exist and the necessary measures for its prevention. Its main theme was directed at instilling in the individual soldier the knowledge which would enable him to reduce materially, his opportunities for becoming a casualty from trench foot.

2. Circular Letter No. 126, Office of the Chief Surgeon, European Theater of Operations, was distributed to all medical units, to include regimental medical detachments. This circular set forth detailed instructions on prevention, diagnosis, and treatment of trench foot. (See attached copy).

3. On 17 November, a letter was prepared by the Army Surgeon, again emphasizing the importance of the disease, and recalling much information already disseminated. It added some new points gathered during the experience of the past weeks. This letter was distributed as an attachment to a letter from the Army Commander to his Corps Commanders.

On the 27th of November, representatives of the Army Surgeon held conferences with all corps and division surgeons at which the following points were emphasized:

a. That sufficient supplies of dry socks were provided for all men.

b. The necessity for wearing overshoes; if only small size overshoes were available, the men should be directed to wear the overshoes over 2 pairs of socks.

General discussion at these meetings brought forth the fact that frequent rotation of units from the front lines to an area where drying facilities were available, was probably the most important measure in the prevention of trench foot. Throughout the period, this office continued to lay stress on foot care by the individual soldier, through daily change of footgear, especially socks, and exercise of the feet, meanwhile reiterating the importance of unit rotation as the most efficacious method for reduction of manpower loss from the disease.

To prevent loss of overshoes from division stocks, all Army medical units were ordered not to evacuate overshoes with the men taken from division clearing stations.

To check on the incidence of recurrence, persons admitted a second time with a diagnosis of trench foot were reported by name, rank, and army serial number.

Moderately severe to mild cases of the disease were sent to the 91st Medical Gas Treatment Battalion where a thorough study of the conditions and its response to various types of treatment was conducted. Its importance in the production of a high non-effective rate, plus the sometime permanent disability incurred, indicate the necessity for maintenance of continued effort towards its suppression, during the remaining winter months.

Toward the end of November, increasing difficulty was experienced in the securing of buildings large enough to house Army medical units. Two (2) factors were responsible; first, the sparse settlement of the central and southern part of First U. S. Army zone of action; second, the general rush for covered accommodations.

Before Army medical units crossed the German border, all German POW labor was returned. This was in accordance with previous plans.

For the first two weeks and two days of November covered by this report, fighting was limited to patrol activities and artillery duels. As a result, casualty admission rates for the first half of the month were light. However, on the 16th of the month, VII Corps launched an attack employing three infantry divisions, one regimental combat team of a fourth infantry division, one armored division, and one combat command of another armored division. On the 18th of the month, admissions rose to an overall figure of 1,879 for that one (1) twenty-four (24) hour period. The terrain fought over, principally the forests around Hurtgen, was impassable to 3/4 ton field ambulances and the litter-carrying 1/4 ton truck. Inability to use either of these important vehicles in the dense woodlands which were practically devoid of a road net, placed the all important task of evacuation in forward areas upon the litter bearer. Army medical units were drained of all personnel available for the task. A shortage of Medical Department personnel existed in the replacement system at this time. Thus, when request was made to the Army G-1 for additional litter bearers, it was necessary to process 190 line troops in accordance with the dictates of the Geneva Convention, give them a period of training as litter bearers and use them for 20 days in this role. An indication of the magnitude of the task involved in first echelon evacuation may be gathered from the knowledge that in one corps zone, 415 litter bearers were employed, in addition to those normally present in divisional medical units. In other respects, evacuation within the Army proceeded without incident.

To the rear of Army medical installations, 55 hours during which there was no evacuation, were encountered. These hours were spread over a period of four (4) days, and interspersed among them were times when the arrival of a hospital train would open more bed credits in the rear of First U. S. Army. On one occasion, several evacuation hospitals became so jammed with casualties that it became necessary to shift patients to other evacuation hospitals in a relatively quiet sector. Too few hospital trains, the necessity to evacuate the patients of a general hospital struck by a robot aircraft, damage to the railheads in the city of Liege by the same type of missile culminated in a lack of sufficient bed space to receive First U. S. Army evacuees. Fortunately, all these factors were attacked and mended in time to prevent the disaster that can result from their prolongation.

The first sixteen (16) days of the month of December saw no major alterations in the hospitalization and evacuation policies of First U. S. Army. The bulk of First U. S. Army was concentrated on the northern flank of the Army zone, since the tactical plan called for the Army main effort to be made in that area.

e. The German Counter Attack.

On the 16th of December, report was received by this office that the town of Malmedy was being shelled. This report came from the 44th and 67th Evacuation Hospitals functioning in that town. Report was also received that the city of Eupen was being shelled. Two (2) hospitals, the 67th and 5th Evacuation Hospitals, located in Malmedy and Eupen, respectively, suffered a slight amount of damage to their buildings. The Commanding Officer and one (1) non-commissioned officer of the 454th Medical Collecting Company were killed during the shelling of Malmedy while rendering first aid to civilian wounded. At the time, no mention was made of an attack in force.

At 1900 hours, word was received that the enemy had made some penetration on the VIII Corps front and along the boundary between VIII and V Corps. A request for information to the Army G-3 elicited the response that the action was thought to be local, and the penetration not considered serious. Three (3) hours later, further request to G-3 Section revealed that penetration in VIII Corps area was making progress. Based on this information, decision was made to move the 1st Hospitalization Unit of the 42nd Field Hospital from Wilts, and the 107th Evacuation Hospital from vicinity of Clerveaux to St. Hubert as fast as it could be entrucked. The 102nd Evacuation Hospital was closed to admissions in preparation for movement. Withdrawal of the two evacuation hospitals was successfully completed, but a portion of the field hospital was overrun by the German advance. Lost with the officers and men of the field hospital was one surgical team of the 3rd Auxiliary Surgical Group.

At 170100, an officer from the 154th Medical Group was sent to Headquarters, 99th Infantry Division to determine at first hand the tactical situation along the boundary between V and VIII Corps. Although the information with which this officer returned indicated that the Headquarters of the 99th Infantry Division did not think the situation serious, decision was made to withdraw the 1st Hospitalization Unit of the 47th Field Hospital, then located at Walmes, and the 3rd Hospitalization Unit, located at Butgenbach, later in the morning. However, the German advances were in excess of all estimates and so rapid that completion of these moves was impossible. The 1st Hospitalization Unit was actually overrun, but before any damage was done, American troops reentered the area, and all personnel of the unit as well as the patients were able to reach our forces. However, it was necessary to abandon the equipment of both hospitalization units, which equipment was subsequently captured.

At 1530, 17 December, it was necessary to order the 44th and 67th Evacuation Hospitals in Malmedy to evacuate their installations of all transportable patients and the bulk of their personnel. Later that night and during early hours of the following morning, it became possible to complete the total evacuation of these two hospitals. In addition to the hospitals in Malmedy, the 618th Medical Clearing Company operated a Combat Exhaustion Center in buildings in the town. On the 18th of December, such patients and personnel as could be moved were evacuated from this installation and a detachment consisting of two (2) officers and eighteen (18) enlisted men remained behind to take care of patients left in the station. On the 20th of December, 247 patients and the remaining personnel of the 618th Medical Clearing Company were evacuated from Malmedy.

During this period, constant check of the tactical situation was maintained in order to ascertain when it would be safe to attempt recovery of the equipment of the two (2) evacuation hospitals abandoned in Malmedy and of Company "C" of the 91st Medical Gas Treatment Battalion similarly left behind in Grand Halleaux. On the 19th and 20th of December, when it appeared that the northern advance of the German army had been checked south of Malmedy, the equipment of these organizations was successfully recovered.

On the 18th of December, orders were received from the Chief of Staff, First U. S. Army to evacuate all medical units then located in the town of Spa. Original plans called for evacuation to Remouchamps, but they were amended later and a new destination, the city of Huy, was indicated. On that day, 1000 patients were evacuated by Army ambulance and trucks from the 4th Convalescent Hospital, 900 going to the 3rd Replacement Depot and 100 to the 130th General Hospital in Ciney. The 102nd Evacuation Hospital was entrucked and evacuated to Huy, closing there the evening of the 18th.

Later that night, report was received that the 107th Evacuation Hospital, now in operation at St. Hubert, and the 110th Evacuation Hospital at Bach, were filled because evacuation to their rear was not keeping up with their admissions. Surgeon's Office, ADSEC, was contacted and immediate relief of the situation was effected.

On the 19th of December, because of the necessity for moving the 4th Convalescent Hospital, Company "C" of the 91st Medical Gas Treatment Battalion, in danger of being overrun at Grand Halleaux, and three evacuation hospitals, bed capacity was reduced to such levels that a ten (10) day evacuation policy was untenable. Accordingly, on this date, the Army Surgeon instituted a total evacuation policy.

The same day, notification was received from G-4 that the VIII Corps would look to Third U. S. Army for supply and evacuation. This was necessary, since the German penetration had cut communications between this headquarters and VIII Corps.

On the 20th of December, a letter of instructions was received from G-4, First U. S. Army, informing this office that First U. S. Army was to be placed under operational control of 21st Army Group. Reorganization of First U. S. Army was effected along the following lines:

1. VII Corps headquarters and Corps troops were withdrawn and the combat troops in line in the VII Corps sector were taken over by XIX Corps, Ninth U. S. Army. VII Corps received the 75th and 84th Infantry Divisions and the 3rd Armored Division and was withdrawn into Army reserve.

2. The XVIII A/B Corps became operational, this date, with its front along a line running NE, SW through Aywaille (X 540-102). This Corps was to have 82nd Airborne Division, 30th Infantry Division, 7th Armored Division and the surviving combat team of the 106th Infantry Division.

3. V Corps was to consist of the 1st, 2nd, 9th and 99th Infantry Divisions and the 5th Armored Division. This office was requested to

submit a list of medical units which it wished to retain to provide medical service for the above troops. The list follows:

2nd Evacuation Hospital
5th Evacuation Hospital
44th Evacuation Hospital
45th Evacuation Hospital
67th Evacuation Hospital
96th Evacuation Hospital
97th Evacuation Hospital
102nd Evacuation Hospital
112th Evacuation Hospital
128th Evacuation Hospital

Hq & Hq Det., 68th Medical Group
Hq & Hq Det., 134th Medical Group

Hq & Hq Det., 50th Medical Battalion
Hq & Hq Det., 53rd Medical Battalion
Hq & Hq Det., 57th Medical Battalion
Hq & Hq Det., 173th Medical Battalion
Hq & Hq Det., 176th Medical Battalion
Hq & Hq Det., 177th Medical Battalion
Hq & Hq Det., 179th Medical Battalion
Hq & Hq Det., 180th Medical Battalion
Hq & Hq Det., 187th Medical Battalion

582nd Medical Collecting Company
583rd Medical Collecting Company
422nd Medical Collecting Company
423rd Medical Collecting Company
427th Medical Collecting Company
439th Medical Collecting Company
445th Medical Collecting Company
449th Medical Collecting Company
450th Medical Collecting Company
451st Medical Collecting Company
452nd Medical Collecting Company
454th Medical Collecting Company
457th Medical Collecting Company
458th Medical Collecting Company
459th Medical Collecting Company
464th Medical Collecting Company
468th Medical Collecting Company
469th Medical Collecting Company
470th Medical Collecting Company
482nd Medical Collecting Company
484th Medical Collecting Company
491st Medical Collecting Company
492nd Medical Collecting Company
493rd Medical Collecting Company

479th Ambulance Company
489th Ambulance Company
546th Ambulance Company
565th Ambulance Company
575th Ambulance Company
576th Ambulance Company
577th Ambulance Company
578th Ambulance Company
583rd Ambulance Company
584th Ambulance Company
956th Ambulance Company

617th Medical Clearing Company
618th Medical Clearing Company
622nd Medical Clearing Company
628th Medical Clearing Company
629th Medical Clearing Company
633rd Medical Clearing Company
649th Medical Clearing Company
660th Medical Clearing Company
662nd Medical Clearing Company
684th Medical Clearing Company

1st Medical Depot Company
10th Medical Laboratory
3rd Auxiliary Surgical Group
with present atchmnts
Det., "A", 152nd Sta Hosp., atchd
91st Medical Gas Treatment Battalion
4th Convalescent Hospital

13th Field Hospital
45th Field Hospital
47th Field Hospital
51st Field Hospital
66th Field Hospital

The shift between VII and XIX Corps made it necessary to move First U. S. Army hospitals out of Brand immediately. Accordingly, sites were secured at Verviers and the 128th and 97th Evacuation Hospitals directed to establish in that location. On the request of the Surgeon, Ninth U. S. Army, the 96th Evacuation Hospital was instructed to remain open for receipt of Ninth U. S. Army casualties. During this period when closure and moving of so many First U. S. Army hospitals became necessary, Surgeon's Office, Advance Section, Communications Zone, granted permission to Army to hospitalize patients directly in the 77th Evacuation Hospital, which unit was acting as a holding unit to the rear of First U. S. Army.

On 25 December, G-4, First U. S. Army, instructed the Army Surgeon to move all medical units, other than those absolutely essential for operations, to a position well west of the Meuse River. It was further directed that any installation east of the Meuse be held in readiness for movement on 24 hours notice. Accordingly, the 96th, 5th, and 45th Evacuation Hospitals, the 4th Convalescent Hospital, plus combat exhaustion hospitals and all hospitalization units of field hospitals not in use at the time, were directed to reconnoiter in the specified area. Two (2) of the evacuation hospitals were ordered to find sites where it would be possible to receive patients. Many difficulties were encountered in finding suitable locations. The area contained few large towns. The retrograde movement of First U. S. Army had doubled back on Advance Section, Communications Zone, and replacement installations, and the area contained the largest ammunition dump in Belgium. But, by the 31st of December, movement of medical units was completed. At this time, First U. S. Army, working under a total evacuation policy, had the following evacuation hospitals open: the 2nd, in Eupen, the 128th and 97th Evacuation Hospitals in Verviers, the 102nd Evacuation Hospital and all three hospitalization units of the 51st Field Hospital in Huy. Plans were under way to replace the 51st Field Hospital with the 67th Evacuation Hospital at such time as its equipment was checked and ready to go. The 618th Combat Exhaustion Center was open west of the Meuse at Avesnes.

During this period, it became necessary to relieve the Commanding Officer of the 102nd Evacuation Hospital from his assignment, as a result of poor operational functioning of that unit. The decision was based on observations carried out over a period of three (3) months. Various incidents had indicated shortsighted prior planning, and lack of force on the part of the command element of the unit. Since continuous corrections from this office produced no improvement, the Army Surgeon was forced to conclude that the Commanding Officer was the determining factor in the situation. Accordingly, action was taken and command passed to Lieutenant Colonel John Woodruff, formerly surgeon of the 9th Infantry Division.

The problem of trench foot continued to receive a good share of attention by the Army Surgeon. In addition to the measures outlined in previous "After Action Report", other points of attack were sought out, in order that no detail which could lead to improvement would be slighted.

This office secured the services of three (3) Sanitary Corps officers. They were sent, one to each of the three Army corps; V, VII, and VIII, with the mission of investigating all factors which could possibly have a bearing on the incidence of trench foot. These men were instructed to seek opinion and

facts not only from officers, both line and medical, but also from the individual soldier himself. As a summary of the more important facts presented in their reports, the following list is included:

1. Overshoes are lacking in the larger sizes (from size 10 up), one corps was short 11,000 pairs of these larger sizes.

2. Rigid disciplinary measures are an aid in prevention of trench foot. In one unit, this was carried as far as having squad leaders sign a daily certificate which stated that each man in his squad had that day carried out approved preventive measures.

3. Rotation of units from the actual front lines to an area where drying facilities are available is mandatory.

4. Reinforcements lack knowledge of foot care.

Suggestion was offered to the Army Quartermaster that an experiment be conducted to determine the relative merits of the shoes and galoshes presently issued, as compared to shoepacks, by equipping a battalion with the last named type of footgear.

The 12th Army Group directed that an educational film on trench foot be prepared in First U. S. Army. The technical work was done by a photographic section from Supreme Headquarters, Allied Expeditionary Forces. Clinical material was obtained at First U. S. Army medical installations and medical supervision supplied by a medical officer of First U. S. Army.

At the beginning of the month of December, evacuation was effected, as previously reported, by employing one medical group in each corps zone. Two separate medical battalions with their component collecting, ambulance, and clearing elements supported Army service area installations and coordinated the activities of the Army Combat Exhaustion Centers. A ten-day evacuation policy was in effect.

The main difficulty experienced as a result of the German counter attack was that of maintaining contact with rapidly moving or partially encircled clearing units. The problem of evacuating entire hospital installations on short notice placed further strain on the system. Although movement of hospitals was effected as necessary, suitable buildings for their establishment were found only in a few cases. The reduction of bed capacity brought about by this circumstance plus the necessity of keeping available beds open for receipt of fresh casualties made the establishment of a total evacuation policy mandatory.

During the early days of the enemy attack, 16 through 19 December, this Army received one medical battalion headquarters detachment, three (3) collecting companies and one (1) ambulance company from Ninth U. S. Army. These additional resources enabled the Surgeon, First U. S. Army, to augment the ambulances of the 134th Medical Group, evacuating the V Corps, and to send a total of thirty (30) ambulances from First U. S. Army reserves, to the 64th Medical Group evacuating VIII Corps. Further augmentation of VIII Corps ambulances was effected by means of one platoon from an Advance Section, Communications Zone,

ambulance company which was given the mission of evacuating the 107th Evacuation Hospital.

When VIII Corps passed to Third U. S. Army control, the 64th Medical Group, composed of two battalion headquarters, one (1) collecting company, four (4) ambulance companies, and one (1) clearing company, were relieved from assignment to First U. S. Army. In addition, the 169th Medical Battalion, attached to VIII Corps and serving as the Corps medical battalion, plus one (1) field and three (3) evacuation hospitals, were lost from First U. S. Army in the shift.

XVIII A/B Corps came to First U. S. Army unequipped with a Corps medical battalion. This deficit was made up by using the battalion headquarters and one collecting company obtained from Ninth U. S. Army, plus one platoon of a First U. S. Army clearing company. Further, no medical group was available to take over regulation of third echelon evacuation in this Corps zone. Thus, the end of the month found the 69th Medical Group servicing the entire VII Corps, which had been returned to the line on the right flank of the First U. S. Army and, in addition, the majority of the divisions of XVIII A/B Corps. The 134th Medical Group evacuated the V Corps and the left flank division of XVIII Corps. Plans were under way to secure a third group headquarters, to return Army medical service to the former set-up, wherein one group serviced one corps only, since experience had taught that such a system provided optimum conditions for control.

Medical Department reinforcements continued to prove a source of anxiety to the Army Surgeon. Litter bearers, more than ever essential to evacuation in the terrain facing First U. S. Army, were the focal point of this difficulty. As mentioned in a previous paragraph, 190 line troops were serving in this capacity. On 3 December, a ten day extension of their services was granted and they remained on duty until 13 December, on which date 173 were returned to reinforcement pools. Seventeen (17) of the original 190 were killed in action, missing in action, wounded, or Absent Without Official Leave.

The 8th Infantry Division drew 16 litter bearers from the 134th Medical Group to supplement division litter bearers. On the 20th of December, a request was received from the 2nd Infantry Division for 150 Medical Department reinforcements of all types. As reinforcement sources were still unable to aid, six (6) medical officers and ninety-seven (97) enlisted men were supplied from Army medical units. This constant depletion of third echelon medical units to supplement or fill gaps in first and second echelon units forced the Army Surgeon to ask for assistance from Communications Zone medical sources. At one period during this month, over 300 Medical Department personnel from Communications Zone units were on duty in First U. S. Army medical installations. The above figures will serve to show the severe strain placed on the Medical Department by performance of this task in addition to its normal functions.

During the period, evacuation was maintained satisfactorily within Army. At no time did Army installations become so completely filled that they were unable to accept further admissions. Evacuation to the rear of First U. S. Army kept pace with all demands placed upon it.

D. TRANSPORTATION.

No medical unit above the size of a company is entirely mobile. However, by the pooling of transportation which is not required for administrative duties by established units, movement of large medical units is possible.

During the initial stages and up to and through the time when the German forces in France collapsed, this system of coordinating the loan of vehicles between units was effected through the Office of the Army Surgeon and accomplished its purpose. But when the distances involved in each trip ran up to 100 miles, communications and turn-around time made control by a unit capable of following up the vehicles imperative. Accordingly, a provisional Medical Department truck company was set up, finally coming under command of the 57th Medical Battalion, Headquarters and Headquarters Detachment. Trucks and drivers were pooled under the direction of this organization. In periods of rapid movement, one hundred and fifty (50) trucks have been out on missions, coordinated by the personnel of the battalion. On other occasions, when the situation was static, the number of trucks pooled on temporary duty with the Provisional Truck Company was reduced to fifty.

Maintenance equipment was secured and mechanics from various units placed on temporary duty with the organization with this task being rotated at intervals between units. By these means, the all important bogey of breakdown and loss of service was defeated. Such are the reasons behind the formation of the Medical Department Provisional Truck Company. What follows is an account of transportation problems as they presented themselves from St. Lo to the Siegfried Line.

After the German collapse, at St. Lo, a new problem presented itself to the medical service. This was to provide hospital care over a front, which, as the situation developed, extended for a distance of approximately 150 miles. It was thought best to concentrate all Medical Department transportation, save those few vehicles necessarily left behind in each installation for housekeeping purposes. Using the vehicles of all the evacuation hospitals plus thirty (30) from the 91st Medical Gas Treatment Battalion, three (3) truck fleets of about sixty (60) vehicles each were set up, and hospitals were moved in toto by these fleets, one (1) fleet of sixty (60) vehicles serving to move one (1) evacuation hospital. Due to the shortage of Quartermaster transportation, the Medical Depot which, at that time was carrying approximately 1200 tons of medical supplies, was also moved with these same vehicles, as well as two sections of the Advance Depot Platoon, each of which carried approximately sixty (60) tons of supplies. Between the 21st and 31st of August, ten (10) evacuation hospitals of 400 beds, one (1) evacuation hospital of 750 beds, the 1st Medical Depot Company, the 91st Medical Gas Treatment Battalion, the 10th Medical Laboratory, and a 500 bed section of the 4th Convalescent Hospital, were moved a distance averaging 165 miles.

Numerous difficulties presented themselves. In the early part of the movement, the supply of gasoline at the forward end, in the vicinity of Fenouches (R 081-174), was somewhat uncertain. Tactical troop movements necessitated a lengthening of the route and on occasion made it impossible for supply units to move for periods of time varying from two to twelve hours. Occasionally, blackout conditions, added to the heavy traffic on the routes, completely stopped any night movement. Control of the truck fleets was made extremely difficult by all the foregoing factors plus the distances covered. The

communications, again because of the distance involved, were entirely by written field message. An added element that made for difficulty was the lack of maps in the possession of the drivers of the vehicles. This was almost completely overcome by having strip maps, or simpler still, type-written routes containing the numbers of the highways involved, plus the main towns through which the routes passed, given to the drivers. At the completion of these series of movements, it was thought wise to form, in anticipation of such moves in the future, a provisional truck company containing one hundred (100) vehicles, under the control of the 68th Medical Group. The provisional truck company was set up, using ten (10) vehicles from each of the ten (10) 400-bed evacuation hospitals. At the completion of this series of movements and before the last Medical Department unit, the remaining element ofthe 4th Convalescent Hospital, could be moved from the vicinity of Gatheme (T 575-245) to Senonches (R 081-174), it again became necessary to move all the elements of the Army medical service to the new Army service area, in La Capelle (O 260-605). From Senonches (R 081-174) to the new area, La Capelle (O 260-605), the round trip covered a distance of 420 miles, making the turn-around time on these vehicles almost thirty-six (36) hours. In addition to the difficulties encountered in the above described movements, it became necessary to mobilize all the field hospitals to such an extent that they could keep up with the rapid movement of the divisions. Accordingly, thirty-nine (39) vehicles were allotted to the 177th Medical Battalion under whose control the field hospitals came, with the object of having one (1) field hospital platoon always ready to move in each of the three (3) corps zones. The gasoline situation was even more critical at the forward end of the route but this was partly solved by arranging that each outgoing convoy would carry with it sufficient gasoline to return to its starting point. Further, also, large quantities of lightly wounded German prisoners caused a drain on the number of vehicles available for these movements, since it was necessary to press trucks into service for their transportation. But by the most strenuous exertion, all demands were met.

With the speed of tactical troop movements constantly pulling medical units towards the front, the first two weeks of September were a facsimile the last two weeks of August insofar as transportation was concerned. The Provisional Truck Company, formed under the 68th Medical Group, provided the main source of Medical Department transportation during this period. Increased operational flexibility, improved maintenance, and greater control of a useful number of 2½ ton trucks were the benefits resulting from the formation of this organization. Due to the fact that a multiplicity of tasks must be carried out by a Group headquarters with a limited number of personnel, an administrative shift was made which placed the Truck Company under the control of the 57th Medical Battalion, since this unit would be able to spare more time to an organization which had become extremely important to the Medical Department.

Because of the distances involved, it was necessary to move several units by train. The 2nd and 96th Evacuation Hospitals, and a five hundred bed section of the 4th Convalescent Hospital were moved in this way. The extreme rapidity of movement had left these units so far to the rear that truck transportation would have been uneconomical and was discarded in favor of rail. The end of September found Army medical units in good position with regard to the combat troops. Negotiations were being carried out for the rail movement of the remainder of the 4th Convalescent Hospital, which during the entire month of September had remained at Gatheme (T 575-245). Completion of this movement would complete the regrouping of all First U. S. Army medical units.

The abrupt slowing of progress as the Siegfried Line was reached lessened the need for trucks. Therefore, much unit transportation was returned to parent organizations, leaving only sufficient trucks with the Provisional Truck Company to carry out the mission of supplementing Medical Department unit transportation.

The arrival of the detachment of the 4th Convalescent Hospital at Maastricht (X 555-525) completed the regrouping of Medical Department units begun during the month of October.

A minimum amount of movement of large Army medical installations occurred during the month of November. Because of this the number of trucks kept with the Medical Department Provisional Truck Company was reduced to 50. Preventive maintenance was stressed. The period was entirely devoid of noteworthy incident in this field.

Because of the static situation still extant, pooled transportation had been cut to fifty (50) 2½ ton, 6 x 6 trucks, at the beginning of the month of December. Until the enemy attack was launched on 16 December, only one movement of any size was accomplished. The 128th Evacuation Hospital was moved from Dolhain (X 735-263) to Grand (X 834-417). Beginning on the 16th of the month, nine (9) evacuation hospitals, one (1) convalescent hospital, and three (3) field hospitals, one (1) advance section of the 1st Medical Depot Company, and one (1) company of the 91st Medical Gas Treatment Battalion were moved during the remaining 15 days of December. 1,726 patients were transferred from the 4th Convalescent Hospital to reinforcement depots by truck. Medical supplies were moved from various points, Paris being the most distant, to the Base Depot Company. On seventy-three (73) missions, Medical Department trucks of the Provisional Truck Company covered 44,838 miles. The close of the period found one hundred (100) trucks pooled under the direction of the Provisional Truck Company.

While minor problems remained unsolved, the conclusion may be safely drawn that the control, preventive maintenance and all around general efficiency of use of that backbone of transportation, the 2½ ton, 6 x 6 truck, was bettered by the above described arrangements.

VI. SURGICAL.

PLANNING PHASE.

Prior to 1 January 1944, the plan for organization of the Surgical Service of the First U. S. Army had been formulated. The principles of treatment and surgical procedures were being drafted by the Surgical Consultants of the Chief Surgeon's Office for incorporation in the Manual of Therapy. There remained the problems associated with staffing, equipping and training the personnel of each medical unit directly concerned with the surgical treatment of the wounded and the definition of the professional policies which would govern the function of these units.

Surgical Staffs of Hospitals.

Only two (2) of the ten (10) 400 bed evacuation hospitals assigned to First U. S. Army had been tested in combat. The 750 bed evacuation hospital was an affiliated unit which had functioned in the United Kingdom and had treated Air Corps casualties. Approximately one-half of the 3rd Auxiliary Surgical Group had been through the African and Sicilian Campaigns. Suggestions and ideas emanating from these sources were given full consideration and wide dissemination.

The field hospitals, at best, had few professionally qualified surgeons, anesthetists or radiologists. The responsibility for the surgery and professional care of casualties was shifted to the surgical teams and surgical nurses of the auxiliary surgical group whose members also contributed much toward the selection of equipment and the preparation of surgical linens and supplies.

Evaluation of the qualifications of inexperienced personnel was based on personal interviews concerning civilian practice, and on the training received in maneuvers. Particular attention was given to the selection and training of surgical specialists.

Training.

Much time and effort was devoted to teaching primary aid to Medical Department personnel whose duties would require this knowledge. Special emphasis was given to the application of splints. Surgical technicians received training in operating room technique in their respective hospitals and in the auxiliary surgical group.

Short courses of instruction in various surgical subjects were arranged by the Operations Section of the Surgeon's Office for personnel selected from the staffs of Army hospitals.

Actual assignments for clinical work in United Kingdom hospitals were obtained.

Conferences and round table discussions were held with the various surgical specialists and the consultants of the Chief Surgeon's Office.

Hospitals set up in the field under tentage were inspected for equipment and arrangement of the operating theaters. It was decided not to standardize the pattern of the operating room in all respects but to permit the commanding officer and the chief of surgical service to work out the details of his own set-up after an inspection of the various types on exhibit.

Equipment.

Estimates of items of surgical supply were submitted upon request of the supply officer and requisitions for equipment submitted by hospitals and surgical teams were checked for quantity and necessity. Substitutes and improvisions for items that could not be obtained were offered.

Professional Policies.

Technical and professional material contained in First U. S. Army Medical News defines the policies established for the conduct of the Surgical Service.

(See Medical News No. 5, Office of the Surgeon, First U. S. Army, dated 29 April 1944).

State of Preparedness.

With a clear understanding of its professional policy, with each medical unit equipped and staffed for its designed function and with the principles of treatment, description of surgical procedures and techniques included in the Manual of Therapy, the Surgical Service of First U. S. Army was ready for the marshalling areas and prepared for the invasion.

ASSAULT PHASE.

The management of battle casualties during the assault phase has been discussed in a report rendered August 1944. (See Surgical Service).

Further information and detailed descriptions of the activities of surgical teams in the surgical care of the wounded on the beach is incorporated in the annual report of the 3rd Auxiliary Surgical Group from which the following remarks are taken:

"Basically, the idea of early surgery on the beach was sound. Its benefits are measured not only in the 900 patients the teams operated on before the regular hospitals arrived, not only in the 8057 patients they helped evacuate during this time, but also in the steadying influence of a group of older professional men at a time of extraordinary stress and strain. From the standpoint of service, this first week undoubtedly was the most fruitful and the most gratifying in the history of the Group".

In future amphibious landings, the following suggestions should be given consideration:

On a heavily defended beach, no definitive surgery can be undertaken until operating room facilities can be set up in a clearing station.

Prior to this time, medical care should be confined to primary aid, and evacuation of the wounded to ships.

A certain number of surgical teams should be stationed on hospital ships off shore from the beginning.

Clearing stations can provide suitable operating room facilities for surgical teams until field hospitals can be set up, provided the clearing stations are surgically equipped and reinforced with additional personnel to assist in the pre and post-operative wards.

Early in the assault phase, it became apparent that evacuation hospitals could not give definitive treatment to all patients admitted to the hospital. On 28 June 1944, authority was given to commanding officers of evacuation hospitals to evacuate transportable surgical cases to the United Kingdom without definitive treatment. Initially, this system was resorted to only when the accumulation of patients awaiting operation in hospitals began to approximate the 24 hour capacity

of the operating room. Subsequently, various policies governing the by-passing of patients were put into operation in order to meet the tactical situation. For details of the professional aspects of sorting patients for evacuation and treatment, see Notes on Professional Care Applicable to all Phases of Warfare.

The problem during the first part of an assault phase is purely surgical. Time is required before disease and combat exhaustion begin to take their toll, but the flow of wounded begins immediately and continues to an extent which taxes the surgical capacity of all front line hospitals. Even after all First U. S. Army hospitals were in operation, the overloading continued as more divisions were committed. Hospitals from the Third U. S. Army were attached to First U. S. Army, all the teams of the 4th Auxiliary Surgical Group were likewise employed and, in addition, the surgical personnel of general hospitals formed into surgical and shock teams were placed at the disposal of First U. S. Army. At one time, the total number of surgical teams employed reached 141; the total number of shock teams 53.

Handling of this volume of surgery was associated with certain errors of judgment, departure from policy or faulty technique.

Too early evacuation of post-operative abdominal cases resulted in placing an arbitrary limit on the time which abdominal cases would be held. Confusion in the management of chest injuries and improperly applied casts called for special issues of Medical News on these subjects.

In general, when corrective measures were necessary, it was more effective to cite individual cases by name and by hospital than to make general statements.

PURSUIT PHASE.

In this phase, the hospitals and professional personnel were entering the third month of combat experience. All surgical teams of the 4th Auxiliary Surgical group had been returned to their parent organization, but a few surgical teams organized from general hospital personnel were still being employed to augment the surgical staff of Army evacuation hospitals. The surgical service had available well-staffed experienced hospitals and an adequate number of qualified surgical teams.

The type of warfare changed from the hedgerow phase of the Normandy Campaign to a phase of rapid movement eastward across France and Belgium.

Problems were more logistical than medical in nature. Surgical service rendered to battle casualties was regulated to a lesser extent by surgical skill and experience and more by such factors as distance, available transportation and supply. The chain of evacuation was greatly lengthened, the wounded had to travel long distances in ambulances before reaching the next medical installation in the rear, trucks available for moving hospitals and medical supplies were relatively few and gasoline was a critical item.

The problem from a medical viewpoint was to keep pace with the tactical situation. Movement was so rapid that hospitals could not be ideally placed at

all times and some evacuation hospitals could not be moved owing to lack of available transportation.

The situation was met by employing the most mobile units, the field hospitals, as modified evacuation hospitals to the extent that field hospitals admitted all types of casualties for screening and sorting, but gave definitive treatment only to those that could not safely be sent back either on account of the serious nature of the wounds or the difficulties with evacuation occasioned by bridge facilities at river crossings and the increasing distances back to other medical units, Army or ADSEC.

As a result of this experience, the following observations are noteworthy:

The requirements of a good Army medical service are not alone the possession of experienced hospitals staffed with qualified surgeons.

Medical units had to be properly deployed to meet the tactical situation and sufficiently mobile to permit them to be well placed.

A fixed or standard operational set up of medical units, however efficient for a certain type of warfare, cannot be maintained during all phases of combat. Flexibility and adaptability to the tactical situation are essential.

The capacity of a hospital to care for a heavy flow of casualties should not be determined by the number of vacant beds that can be made available through evacuation or by increasing the bed capacity. The number of available personnel is of equal importance and must be augmented throughout. More administrative personnel, more nurses, ward officers, surgeons and even litter bearers have to be provided.

Under the pressure of a large and sustained flow of casualties, clerical mistakes increase, errors of judgment occur, and medical care is less efficient throughout.

When the number of cases awaiting operation in a hospital exceeds the 24 hour capacity of the operating room and its potential capacity when augmented by surgical teams, the indication exists for sending back without definitive treatment, patients who would ordinarily be held in the hospital.

The quality of medical care and surgical treatment as well as mortality statistics should be judged in the light of the current tactical situation, and the number and type of casualties being received.

A qualified surgical team and good operating room facilities should be maintained at holding units and transfer points to care for the wounded that have developed complications or have been improperly selected.

As far as possible, evacuation should be in the nature of a continuous process. Sporadic evacuation, or the evacuation of a limited but unpredictable quota of casualties by convoy, prevents the establishment of a sound

basis for sorting patients. When evacuation stops, the effect is not simply one of filling vacant beds. Patients who ordinarily would reach the next rearward hospital in good condition for definitive surgery are denied early evacuation and, in the meantime, have lost initial priority in the operating room by being diverted to evacuation wards. In either event, definitive treatment on this category of patients is delayed.)

PHASE OF ATTACK OF A ZONE DEFENSE.

After the enemy was driven behind the Siegfried Line, the type of warfare changed tempo to a more methodical phase with certain sectors static. This change in the tactical situation had an adverse effect upon the morale of the personnel of the Medical Department. It seemed that the backbone of enemy resistance had been broken and speculation was rife as to when the war would end. Excitement and rapid movement were replaced by a comparative lull, enthusiasm waned, and eyes turned homeward. Chronic fatigue became manifest, chronic illness and ailments such as malaria, which had been suppressed or disregarded, began to take the toll of surgeons and anesthetists who had been through three (3) campaigns. A plan for rotation of medical personnel who had been overseas for more than two years was formulated and discussed.

This quiet phase of warfare afforded the first opportunity for forward surgeons to visit the general hospitals for personal observations of their cases. With the enthusiastic support of the Chief Surgeon, the following arrangements were completed for members of surgical teams and surgeons from evacuation hospitals:

Short visits to general hospitals in the next rearward echelon. Here, the condition of patients evacuated from army hospitals was observed at the time of their arrival in the ADSEC surgical echelon.

Visits of chiefs of surgical service to general hospitals and hospital centers in the United Kingdom.

Interchange of surgical personnel between army hospitals and general hospitals on a temporary basis of 60 days and, in certain instances, on a permanent basis.)

(The observations of the first two groups are summarized in Medical News No. 18, Office of the Surgeon, dated 5 December 1944, and in notes published for distribution. The benefits which have accrued to group c are obvious although the visits are not yet complete and reports must await the return of the personnel.)

Records.

One of the outstanding deficiencies which was universally recognized by group a was the inadequacy and inconsistency of the medical records. In some instances, the Clinical Work Sheet of Army hospitals was enclosed in the Medical Jacket (52d). In others, the records were abstracted on the 52c.

To overcome this deficiency and to establish uniformity, a standard Clinical Work Sheet for First U. S. Army was drawn up and is currently being

printed on a better quality of paper than the mimeographed sheets which do not withstand the repeated folding and unfolding to which they are subjected. Until the new printed forms become available, the Clinical Work Sheet of each Army hospital is, by directive, enclosed in the Field Medical Jacket (52d) so that all information concerning the patient's condition and treatment now accompanies the patient.

With the onset of winter, new problems arose in connection with the care of patients.

Cold weather and muddy terrain made buildings much more desirable than tents for setting up both field and evacuation hospitals. Suitable buildings are difficult to find; consequently, it is not often possible to site a field hospital immediately adjacent to the division clearing station. Other disadvantages result, among the more important are:

The inability at times to maintain the formal arrangement of a field hospital situated in front of an evacuation hospital.

The necessity for longer ambulance hauls.

The increased litter carry within the hospital itself.

The limits placed on the ability of an evacuation hospital to increase its bed capacity or to billet surgical teams.

The restrictions placed on the use of Mobile X-ray and Surgical Vans. (See Medical News No. 17, Office of the Surgeon, dated 10 November 1944).

In spite of these and many other disadvantages, the warmth and protection afforded patients in the shock, pre-operative, operating and post-operative wards are desirable.

(Trench foot.)

Perhaps the most serious effect of cold, wet weather was manifested by the appearance of trench foot. The first cases were seen in the last four days of September. By 1 October, a directive on the management of this condition was distributed. (See Professional Memorandum No. 5, Office of the Surgeon, dated 1 October 1944).

The number of cases diagnosed trench foot is shown on the accompanying graph for each day from 27 October to 1 January. The blue line represents the number of cases occurring in First U. S. Army and the red line the number of cases that occurred in divisions and corps.

After the appearance of large number of cases, it seemed wise to organize the professional care of trench foot, according to the following plan:

All cases of trench foot showing marked objective signs such as gangrene, discoloration, blisters, marked edema or infection, were evacuated to general hospitals.

All other cases were transferred to the 91st Medical Gas Treatment Battalion which was designated as the center for the study of trench foot.

After completing an 8 to 10 day treatment at the center, ambulatory patients were sent to the convalescent hospital where they were refitted with larger shoes and galoshes, given exercises, prescribed walks and, finally, close order drill before return to duty.

By direction of the Army Surgeon, corps and division surgeons were personally contacted and requested to submit reports concerning the measures employed to protect the individual soldier against the development of trench foot. Review of these reports showed that there was difficulty in obtaining large size galoshes, and that in some instances shoes were too tight to permit the wearing of two pairs of socks.

On 27 November, the policy was inaugurated whereby all cases of suspected trench foot would be held in corps and division clearing stations until objective manifestations of the condition were sufficiently obvious to justify the diagnosis of trench foot. Experience had already established the fact that even with very gradual warming of the feet by exposing to room temperature of 65°-70°, the condition would become obvious within the first 24 to 48 hours. This method of management was of definite value in that approximately 7.5% of the cases could be returned to duty as having had a mistaken diagnosis, that is just cold feet.

As a result of observation and experience with trench foot to date, the following conclusions are reached:

That the prevention of trench foot and the execution of preventive measures is a command function which can be stimulated and checked as to its effectiveness by medical officers.

That the system of holding these cases at the division level is the most efficient way of assuring the early return to duty of cases with cold feet, at the same time the treatment of the established cases is not seriously delayed or impaired.

That the return to duty of the minor cases which are the only ones held in Army has been, on the basis of 1000 cases, approximately as follows:

Cold feet and returned to duty	75	
Sorted by evacuation hospitals for center		200
Sorted by center for convalescent hospital		160
Returned to duty from convalescent hospital	140	
Total	215	

That only the minor cases should be held in Army area. Of these approximately 20% can be returned to duty.

Recurrent Trench Foot.

To date (1 January), 42 cases of Recurrent Trench Foot have been reported. Only 8 of the 42 occurred among patients who had been treated at the center and returned to duty through the 4th Convalescent Hospital.)

Study of Evacuation.

During the month of November, the study of the records and evacuation procedures of four (4) hospitals in active operation was conducted. The outstanding general observations were:

The quality of professional care is, on the whole, very high, yet the record which accompanies the patient rarely reflects this good work.

There was a lack of uniformity in the records kept at the hospital and sent with the patient when he is evacuated. The records of blood, plasma, penicillin and sulfonamides administered are fairly well kept, but it is difficult to find this information as it is entered in different places on the records. Temperatures are being taken in all hospitals, but in most instances are not recorded on the patient's individual chart. The temperature record rarely accompanied the patient when he was evacuated.

There is a tendency to evacuate certain types of cases too early. Chest injuries, injuries to major blood vessels, badly contaminated compound fractures and patients with fever (temperatures over 100°F) fall into this group.

Records.

Reference has been made, paragraph beginning on bottom of page 66, to the preparation of a standard Clinical Work Sheet for First U. S. Army Medical Department. To date, this form is not in use.

Consultants Meetings.

Two (2) meetings of the consultants of the United States and British Armies were attended. These meetings were profitable and instructive in the round table discussions of the professional care of battle casualties.

PHASE OF ENEMY COUNTER ATTACK.

When the extent of the counter offensive became apparent, it was necessary to evacuate patients and personnel from field and forward evacuation hospitals and, as soon as possible, to set up one evacuation hospital in the rear of the threatened sector. Casualties passed directly to accessible evacuation hospitals and to ADSEC hospitals. The personnel of two (2) general surgical teams of the 3rd Auxiliary Surgical Group were captured. One of these teams consisting of four (4) officers and three (3) enlisted men (Surgical Team No. 11) remained with the platoon commander and part of the hospital personnel of the 1st Hospitalization Unit of the 42nd Field Hospital. The other team consisting of four (4) officers and three (3) enlisted men (Surgical Team No. 20) was serving with the 101st Airborne Division.

Much of the equipment left behind by evacuation hospitals was subsequently recovered. ADSEC general hospitals were of the greatest assistance in handling

large numbers of by-passed cases. On the other hand, Army was able to reciprocate by providing a neurosurgeon for the 77th Evacuation Hospital (an AD AC unit) and by furnishing surgical assistance to the 130th General Hospital in the form of four (4) general surgical teams.

It is too early to evaluate all the effects of this phase upon the professional care of battle casualties. It was necessary to by-pass all cases except the non-transportables and to adopt a policy of complete evacuation.

The question was raised concerning a policy to guide the decision for evacuation of patients from a hospital which is in the path of enemy advance. This decision is a command function. From a medical viewpoint, if patients are not evacuated, sufficient medical personnel must stay behind to care for the patients even at the risk of capture.

NOTES ON PROFESSIONAL CARE APPLICABLE TO ALL PHASES OF WARFARE.

Sorting of Wounded for Treatment and Evacuation in the Army Zone.

Sorting is an essential function of forward surgery. It facilitates treatment and evacuation. On the accuracy with which sorting is accomplished will depend the lives of the seriously wounded, the combat status of the lightly wounded, and the efficient employment of the hospitals in each surgical echelon.

There are two kinds of sorting:

The grouping of cases for transport to the proper hospitals.

The sorting of patients within the hospital for treatment and for evacuation.

To accomplish the first type of grouping, the responsible officer should have a clear understanding of the function of each medical installation, a grasp of the current evacuation policy, and an average degree of clinical judgment and common sense.

To accomplish the second type of sorting, the sorting officer should possess a high quality of surgical judgment based on experience. In addition, he should know the capacity of his operating theater and the qualifications of the surgical teams and individual surgeons so as to arrange the distribution of the more serious cases to the more experienced teams. He must be capable of rapid work and judgment and appreciate the constantly shifting standards by which to judge the distribution of cases. In short, he should be the most experienced officer on the staff.

There is a difference of opinion as to where the first sorting of casualties should be done. In the First U. S. Army, the focal point for sorting is at the apex of the division in the division clearing station where casualties are divided into four (4) groups destined for different units:

Lightly wounded. Those whose injuries are so minor as to allow immediate return to duty are held here for treatment.

Special Center Cases.

Non-transportables. The primary purpose of sorting of wounded at this point is to divert the non-transportables to the field hospital which is the furthest point forward at which definitive surgery is done.

Transportable battle casualties destined for evacuation hospitals.

The non-transportable cases are those with:

Continuing hemorrhage uncontrolled by first-aid measures.

Wounds of the abdomen.

Wounds of the chest which are serious and producing respiratory distress:

Large sucking wounds.

Stove-in chest.

Massive intra-thoracic hemorrhage.

Trans-thoracic or abdomino-thoracic wounds. These are often difficult to diagnose without x-ray and are occasionally missed.

Extremity wounds with:

Serious impairment of blood supply or with tourniquet in place.

Traumatic amputations.

Suspected gas gangrene.

Patients with compound fractures of the femur and patients with multiple wounds who remain in shock and whose condition cannot be made suitable for transport.

Sorting of patients within the hospital.

In the receiving tent of the evacuation hospital all patients are admitted and further sorted by the receiving officer for assignment to the following wards:

Shock ward. All patients who need resuscitation or are urgently in need of surgery. In this ward all means for combating shock are assembled.

Pre-operative ward. Those who need surgery but not urgently. This class of patients constitute the bulk of the work in an evacuation hospital.

Evacuation wards. Those who can travel back to receive definitive treatment in the next surgical echelon. It must be realized that all

walking wounded are not slightly wounded cases and cases with time or mistaken judgment may prove non-evacuable.

Medical wards.

Sorting for operation is the most difficult of all sorting.

The order in which patients are sent to the operating room is determined by the condition of the patient upon admission, the extent of the wound, and its potential complications. The selection is made by an experienced surgeon with mature judgment; in a field hospital by the leader of the surgical team, in the evacuation hospital by the chief of the surgical service.

In the selection of patients for operation, the importance of pre-operative study and preparation must not be lost sight of. Each individual case deserves separate appraisal with reference to the surgical urgency of the wound, the degree of shock, and the response to resuscitation measures. The high priority cases are those with:

Uncontrolled hemorrhage, which must be stopped by surgery.

An occasional maxillo-facial injury with severe obstruction to the airway which requires tracheotomy for relief.

Extremity wounds with major artery damage or massive muscle damage of the thigh or buttocks.

Thoraco-abdominal wounds.

Abdominal wounds must be attempted as soon as their condition warrants intervention. Hemorrhage and peritonitis are the urgent considerations.

Chest wounds. Profound physiologic disturbances can usually be controlled by such measures as needle aspiration of air and blood, insertion of a flutter valve for pressure pneumothorax, aspiration of tracheobronchial tree, temporary closure of sucking wounds, novocain injection of intercostal spaces and oxygen therapy. Chest cases prove of most interest as to when to intervene.

Major or multiple compound fractures are early priority cases as are wounds of major joints.

It must be realized that the above listing of high priority cases is not intended to convey the impression that all cases in one category will be sent to the operating room before any cases are selected from the next group. The listing is only a guide to priority. The timing of the operation will be determined by the condition of the individual case. Many patients have a combination of wounds. Priorities will change with changes in the patient's condition, but the less seriously wounded can not continue to lose their priority at the threshold of the operating room.

In the shock ward, as elsewhere, the gravity of each patient's condition is assessed on clinical signs. Measurements of blood volume and determination of values for plasma protein, hemaglobin, red cell count and volume and hematocrit readings give valuable information but in the First U. S. Army, such laboratory data have not yet been compiled and correlated on a sufficiently large number of patients to serve as a basis for determining the quantity of blood or the speed of transfusion required for a given case. The first attempt to conduct such studies was made during a pressure period when casualties were so heavy that the investigating officers found themselves giving blood and plasma rather than making detached observations. A second attempt during a lull was more successful.

From a practical point of view, when a patient in shock fails to respond to energetic resuscitation measures, it is recommended that the patient be re-examined on the assumption that a continuing process exists which may be remediable only by surgery. Search is made for evidence of concealed hemorrhage, mechanical disturbances of the cardio-respiratory mechanism, increasing intracranial pressure, spreading peritonitis, or gas gangrene.

On the other hand, when a patient is responding to resuscitation measures, it is important to time the operation so that the patient does not pass the peak of improvement. Once past this peak, it is difficult and often impossible to attain the same degree of response. During pressure periods, delay may mean a lost opportunity for selecting the optimum time for surgery.

From the clinical viewpoint, it is recognized that repeated observations of the blood pressure and pulse should be made and recorded. A single reading may be very misleading. Pulse volume may be more important than pulse rate. Collapsed veins and fluctuations of blood pressure sounds with respiration suggest inadequate restoration of blood volume. Turning and chaning the position of a patient in shock may be followed by a sudden change for the worse. Conversely, rest is beneficial and warmth, not externally applied heat, but simply getting a patient into a warm room or tent after exposure to cold is definitely worthwhile.

At the other end of the scale of urgency are the the less seriously wounded. The actual disposal of these cases will depend upon factors of a logistical rather than purely professional nature. At times of pressure, there never have been enough front line hospitals to give immediate and full medical attention to all wounded. Consequently, hospitals must be evacuated of such patients as a careful examination has considered transportable under the conditions imposed. When the number of cases awaiting operation approaches 24 hour capacity of the operating theater or its potential when augmented by the addition of surgical teams, the indication exists to by-pass, that is to send on without definitive treatment all cases that can safely travel, provided these cases will receive surgical treatment earlier at the next hospital to the rear. The opinion that to send away unoperated cases is a confession of failure is a manifestation of false pride.

Before sending on such cases, they are fed, hydrated, and given the indicated penicillin therapy. We have not found it feasible to give penicillin, plasma or blood transfusions while patients are being transported in ambulances.

The extent to which By-passing has been used is reflected in the following statistics:

Hospital	Period (Incl)	Battle Casualties Admitted	Total Surgical Procedures	By-passed Cases	Percent By-passed
2nd Evac	16-19 Nov 1944	499	296	203	40.8%
5th Evac	16-19 Nov 1944	431	185	246	57.2%
45th Evac	16-19 Nov 1944	602	264	338	56.0%
128th Evac	17-19 Nov 1944	916	434	482	52.8%
Total (4 hospitals)		2448	1179	1269	52.1%
Total (2nd, 5th & 45th Evacs)		1532	745	787	51.3%

Note: 2nd, 5th and 45th Evacuation Hospitals received only litter patients after 1500, 17 November. 128th Evacuation Hospital received only walking patients after 1500, 17 November. 2271 cases were admitted to these four (4) hospitals from 1500, 17 November to 2400, 19 November, of which 1167 (51.6%) were walking.

(Sorting of Post-operative Cases for Evacuation is the Final Sorting in the Army Zone.)

Since rapid evacuation is a tactical necessity, the sorting of post-operative cases for evacuation to general hospitals in the rear or to the United Kingdom must go on continuously. Obviously, the evacuating officer must evaluate the condition of the individual patient in terms of the ordeal which he faces. The means of transport and time-distance to the next hospital are factors which influence his decision. In all cases, the opinion of the operating surgeon is respected and no patient should be evacuated without his sanction unless evacuation is by command decision. Surgeons must be kept posted as to the pressure being exerted by the number of cases, otherwise the hospital will soon be filled with cases marked not to be evacuated. Surgeons must also be reminded that evacuation and optimum post-operative care of a single case may conflict.

The decision for evacuation of post-operative cases is as far as possible left to clinical judgment, but experience has demonstrated the need for establishing policies which regulate the length of time certain types of cases must be held after operation. The necessity for an arbitrary policy of this type first became apparent on the basis of reports emanating from the general hospitals in the United Kingdom concerning the abdominal cases. Many of these cases were being transported too early and arrived in poor condition. As a result of these reports, the policy was put into effect that all abdominal cases would be held for a minimum of ten (10) days regardless of clinical factors.

Other policies of a more general nature served as guides to the selection of patients for evacuation, for example:

Chest cases that have undergone thoracotomy or debridement with closure of sucking wounds are held until the cardio-respiratory function is stabilized and there is no rapid reaccumulation of blood or fluid.

Extremity cases with main artery damage or impairment of circulation should be detained for observation until a definite decision can be reached as to the viability of the limb and the necessity for amputation.

Evacuation of neurosurgical cases that still require parenteral or tube feeding is avoided.

Tracheotomized patients are detained for instruction in the care of the tube. Otherwise they should be accompanied by an attendant.

One of the most difficult decisions to make concerns the lightly wounded. It is axiomatic in military surgery that the lightly wounded who can return to duty within the time limit set by the current evacuation policy must be held in a combat zone. When the evacuation policy is restricted to ten (10) days, the tendency is to hold patients who actually require a much longer convalescence before they can be returned to duty; for example, patients with penetrating wounds of the muscle of an extremity will not be ready for duty within ten (10) days. So-called ten (10) day duty cases are sent to a convalescent hospital after receiving definitive treatment in an evacuation hospital.

When patients are being evacuated to a holding unit on a beach or near an airstrip rather than directly to a general hospital, it is necessary to maintain adequate operating room facilities and a qualified surgical team at the holding unit to care for the wounded who have developed surgical complications.

Mistakes in the selection of cases for evacuation are quite apparent when viewed from the rear. General hospitals can furnish information as to how well the forward units are working, but unfortunately, the opportunity for forward surgeons to visit the general hospitals for personal observation of their cases comes late in a campaign. In the early stages, they learn from reports that are sent forward. Later, during quiet times, visits to the general hospitals in the next surgical echelon are arranged.

Plasma and Blood Transfusions.

Early in the campaign, the question was raised as to whether blood transfusions were being given to patients who might be resuscitated equally well with plasma. To answer this question, a study of the treatment of shock in field and evacuation hospitals was planned with Lt. Col. Zollinger of the Chief Surgeon's Office. Shock teams from general hospital personnel were sent to Army hospitals where they collected data on the ratio of plasma to whole blood given in the shock wards of forward hospitals. A summary of the information contained in Lt. Col. Zollinger's report showed that the ratio of plasma to whole blood given in evacuation hospitals was 1.34 to 1, and field hospitals 1 to 1.65.

The administration of plasma begins at the battalion aid station. The transfusion of blood is ordinarily initiated at the field or evacuation hospitals, but a few patients receive blood transfusions in the clearing stations. The principle followed is to carry resuscitation only to the point which will per-

mit safe transportation of the patient to a hospital installation. The peak of resuscitation should be attained for the first time at the hospital where surgery is available.

It is difficult to give an arbitrary figure as to the amount of plasma and blood that should be given to an individual patient. Estimates of the total quantity required should be based on a consideration of such factors as the amount of blood lost, the presence of continuing hemorrhage, and the presence of blast injury to the lungs. In general, thoracic cases should receive blood in preference to plasma and in such cases hydration should not be pushed to the fullest extent.

Reactions.

Reactions to the transfusions of plasma have occurred. On one occasion, it was necessary to discontinue the use of all plasma of a certain manufacture.

Reactions from blood tranfusions in the form of a slight shiver or mild rigor followed by a rise of temperature are fairly frequent. Reactions in the form of a severe rigor and a temperature over 105°, and even fatal reactions occur in waves and the cause is difficult to trace. There is some evidence to support the following factors; errors in typing, hemolysis due to the use of blood that is approaching the expiration date, physical changes in the blood resulting from freezing or possibly from not keeping the blood at optimum temperatures during delivery from the base depots in the United States or United Kingdom, contamination as shown by cultural studies and the presence of pyogens.

A certain incidence of hemoglobinuria and anuria occurs. Anuria is probably a result of several factors among which may be mentioned multiple blood transfusions, chemotherapy, and the damaging effect upon the kidney of certain unknown products of tissue destruction or a prolonged state of shock and low blood pressure.

Alkalinization of patients who exhibit hemoglobinuria or anuria is indicated according to directives. The drug recommended is Sodium Citrate which is not always available and which the majority of patients have received in large quantities along with multiple blood transfusions. Sodium Lactate has never been available. As a substitute, a solution of Sodium Bicarbonate has been used intravenously in a few cases with good results.

Jaundice is not uncommon. If additional transfusions are necessary for jaundiced patients, the use of fresh blood is safer.

Mechanical difficulties in the transfusion of blood have, at times, constituted serious problems. This difficulty was most prevalent on the beach but has been manifested at times since then in the transfusion of United Kingdom blood. The difficulty was attributed to the filter and to the small bore of the needle in the recipient set. The Paris blood which was received in small quantities to tide over a critical period clotted and would not flow. Col. Cutler expressed the opinion that this blood did not contain a sufficient quantity of citrate solution. The U. S. blood (Alsever's) flows freely but has the objectionable feature of being 50% diluent and 50% blood.

Anaerobic Infections.

Tetanus toxoid has afforded complete protection of U. S. soldiers against the development of tetanus.

Gas gangrene has been diagnosed in 0.5% of all battle casualties admitted to first U. S. Army hospitals. Prisoners of war are included in this figure and show a higher incidence than American casualties. From 6 June 1944 to 1 January 1945, there were 552 cases of gas gangrene, 362 of these occurred in U. S. troops. During the summer months of June, July, and August, the incidence was 0.51% among 54,991 battle casualties. During cooler weather of September, October, November and December, the incidence was 0.66% among 41,070 battle casualties. The mortality rate for all cases occurring from August to December inclusive was 12.2%.

The diagnosis of gas gangrene has been made entirely on clinical findings as it has not been feasible for the laboratory to make satisfactory anaerobic cultures or examinations of involved muscle. It is fair to assume that some cases reported as gas gangrene were mistakes in diagnosis. If the diagnosis of gas gangrene is reserved for true clostridial myositis, the number of cases would be considerably smaller and the mortality rate higher.

A study of gas gangrene to be of value would require the full time of a specially equipped mobile laboratory unit. The limited number of qualified personnel available does not justify their utilization on a research problem which involves approximately 3 per 1000 U. S. casualties.

Serum therapy has not been used as a prophylactic measure except in a few isolated cases. In spite of the routine tests for sensitivity, serious and, at times, fatal reactions have followed the injection of anti-sera in the treatment of gas gangrene.

Penicillin.

After seven (7) months use of penicillin in the treatment of battle casualties, it is not yet possible to assay its value in terms more specific than clinical impressions nor attribute to penicillin beneficial results, the credit for which is not, in part, due to other factors. For example, is reduced mortality attributable to time, technique, better surgery, blood transfusions, sulfonamides or penicillin? Penicillin is a new factor but not the only new factor introduced.

It is obvious that comparative results can not be obtained by denying penicillin to a large group of battle casualties as long as an adequate supply is available.

Penicillin has undoubtedly contributed to minimizing wound infection. It has not eradicated gas gangrene although it may have contributed much toward the prevention and control of clostridial infections. There is presumptive evidence that it is beneficial in abdominal wounds in preventing infection of retroperitoneal and mesenteric hematomas. It has been injected routinely into the pleural sac where it persists for at least 48 hours and is probably effective for 96 hours. In the

prevention and control of infection in all types of wounds, penicillin is of great value so long as it is not regarded as a substitute for good surgery.

Methods of Administration.

Parenteral. The current method of intramuscular injection every four (4) hours is practicable but does not maintain an optimum blood level. The British advocate the continuous intramuscular drip method as more efficient and less painful than the intermittent injection.

Local. At present, penicillin is mixed with a sulfonamide powder for local use. A better diluent may be developed. The Australians have used powder plasma successfully.

Primary Aid.

In the Medical News No. 5, Office of the Surgeon, 29 April 1944, the function of the medical installations in the divisional area was defined as primary aid and this was outlined in specific points. It is now possible to review these points in the light of the experience of the past seven (7) months.

Measures for the control of hemorrhage and pain. The most important of these are the tourniquet and the morphine syrette.

Tourniquets have saved many lives and doomed an occasional limb. The danger comes from tourniquets that may be covered over by clothing or blankets and remain undetected from the time the patient leaves the aid station until he arrives at the field hospital. The fact of the tourniquet should always be noted on the emergency medical tag. There have been a few cases in which this was neglected and a viable limb was lost.

The morphine syrette contains ½ grain of morphine tartrate. This amount was given partly because it was thought that the tartrate salt of morphine was less potent than the sulphate. Recent experience has not borne this out. Moreover, in cold weather when the circulation is slow, patients are very apt to have delayed absorption. When subsequently warmed and transfused, the cumulative effects suddenly assert themselves and the patients pass into morphine poisoning. It is well to keep this fact in mind and to handle the morphine syrette with discretion. (See Professional Memorandum No. 6, Office of the Surgeon, 24 November 1944).

Resuscitation measures (plasma and blood). Plasma is used at the battalion aid station, but it must not be given to the point of delaying the patient on his journey to the rear. Plasma given at this level means time lost. While it is a temptation to give a patient who has not quite responded to his first three bottles another three bottles, benefits so slowly gained are very apt to be dissipated again under the unavoidable insult of further transportation and once the patient relapses, his condition is much more likely to be irreversible. Occasionally, it may be necessary to hold a patient at the aid station but the rule should be to sacrifice full resuscitation for early evacuation.

Blood has not been used at the aid stations but it has been used by some clearing stations when they were adjacent to field hospitals so that the blood could be taken over very quickly. No blood banks are maintained at clearing stations.

Protection of the wound from further contamination. The large Carlisle dressing is sometimes too small and when two (2) or three (3) of them are superimposed, they become bulky and hard to handle. It is recommended that a larger dressing be made available, patterned after the British "shell" dressing.

Initiation of chemotherapy. The instructions for the local and systemic administration of sulpha drugs have been well followed, but it is recommended that the local application be discontinued for the following reasons:

The main danger is overdose. The patients are already taking sulpha drugs by mouth and they are not very well hydrated. Absorption from a large raw surface is rapid. Cases of urinary blockage have been seen. Secondly, the sulpha cannot be evenly distributed when it is only sprinkled and not rubbed in. Some parts of the wound become caked with a heavy layer and others get none at all. Thirdly, the sulfonamide cannot reach the depths of the wound when it is sprinkled in and it is in the depths where it is most needed. Finally, at debridement the sulpha is seen to be inseparably mixed with dirt and clotted blood, it has to be removed, together with all the tissues upon which it can have had any effect. It would seem more effective to postpone the local application of sulfonamides until the time of debridement.

Administration of tetanus toxoid. The "booster" dose remains routine with all American casualties. Prisoners of war are given the antitoxin. No case of tetanus has been reported among American casualties in the Army area.

Splinting of the injured part for transportation. On the whole, splints have been well applied in the forward area. In some instances, splints were carelessly applied and occasionally no splints have been applied to extremities with fractures or extensive wounds. During the assault phase, the outstanding deficiency in the preparation of casualties occurred in connection with dressing the litter, especially the failure to put blankets beneath the patient. Ring splints continue to be a problem in the upper extremity. They are safe only when the patient can be watched continuously and this is difficult during evacuation. A well-applied Velpeau bandage is probably better for the majority of fractures of the upper arm. In the lower extremity, the ankle hitch has led to pressure necrosis when it was left on more than six (6) hours. After this length of time, it should be loosened if there is any question in the mind of the examiner.

Accurate recording of the significant data on the emergency medical tags has been commensurate with the conditions under which the recording is accomplished.

In the evacuation from forward stations, the ¾ ton truck converted into a litter ambulance has become indispensable. It is inconspicuous, roadworthy, and can go where a regular ambulance cannot go. Aid stations would be at a loss without their "jeep ambulance".

The medical officers of the forward echelon have acquitted themselves painstakingly and courageously of an exacting and often dangerous task. They treat the casualties during the first critical hours, carry out the primary triage, and solve many a bottleneck. Successful evacuation depends largely on their judgment and devotion. They have earned high praise.

Definitive Surgery.

urgical Personnel.

Recommendations for changes and additions in the T/O of medical units have been submitted by these units and discussed by the various sections of the Army Surgeon's Office. No further comment is necessary.

It is recognized that the chief difficulty in obtaining well qualified surgeons and surgical specialists to staff all the hospitals is the limited number available, but it is also obvious that the chief obstacle to the proper assignment, prompt interchange or adequate replacement of available personnel is in the final analysis contingent upon rank.

Experience has answered the question of whether the most skilled surgical specialists should be placed forward in Army hospitals or in general hospitals to the rear. The requirements for forward surgery are as follows:

Anesthetists. Surgical teams need the best trained anesthetists. Evacuation hospitals need at least two (2) fully qualified anesthetists to supervise the work of the other less qualified individuals.

Neurosurgeons. The best neurosurgeons should be forward. One (1) in each evacuation hospital and three (3) to lead surgical teams meet the requirements.

Orthopedic Surgeons. The most skilled orthopedists should be placed in general hospitals in the Communications Zone or the Zone of Interior. There is little need for an orthopedic surgeon, in the civilian sense of the word, on surgical teams. Evacuation hospitals each need one (1) trained orthopedist.

Thoracic Surgeons. The minimum requirements are one (1) for each evacuation hospital and one (1) per four (4) surgical teams.

General surgeons especially qualified in abdominal surgery and trained in the application of the four (4) major types of plaster casts are essential on surgical teams and in evacuation hospitals; four (4) per evacuation hospital is recommended.

Maxillo-facial Surgeons. The cosmetic type of plastic surgeon is not needed in forward surgery. One (1) oral surgeon (dental) and one maxillo-facial surgeon is required in each evacuation hospital, and on each of three (3) surgical teams.

E.E.N.T. Qualified ophthalmologists are too few. One (1) is needed in each evacuation hospital. One (1) ENT surgeon per evacuation hospital is a necessity. To find one surgeon qualified in both is rare.

Surgical Teams.

The model surgical team should compromise of the following:

A mature general surgeon whose primary interest is abdominal work.

A thoracic surgeon.

A younger surgeon who has had hospital training in orthopedics and is skilled in the application of plaster.

A highly qualified anesthetist with additional training in bronchoscopy.

A surgical nurse either on the team or provided by the hospital.

Surgical technicians. Two (2) to four (4) trained enlisted men depending upon whether the team is working in a field or an evacuation hospital.

Specialist Teams.

With properly staffed evacuation hospitals, the only specialty team needed are three (3) neurosurgical and three (3) maxillofacial teams.

Auxiliary Surgical Groups.

Report has been submitted.

The policy of employing personnel from inactive medical installations (general hospitals and evacuation hospitals) for temporary duty with active hospitals assures the effective utilization of all available medical personnel in times of stress.

CLINICAL NOTES.

Introduction.

The following comments, observations and statistical data are intended to reflect the experience of the First U. S. Army in the application of the surgical principles incorporated in the Manual of Therapy. No attempt has been made in the discussions to deal completely with each subject. A review of the Medical News and the Professional Memoranda, Office of the Surgeon will disclose

the time and nature of the major surgical problems as they were encountered. Frequent reference to these sources is made in an effort to avoid needless restatement.

Field hospitals have complete x-ray equipment in each hospitalization unit but only one trained radiologist per hospital. There is no problem of volume.

Evacuation hospitals need additional equipment as well as more personnel for 24 hour duty.

The x-ray department of evacuation hospitals cannot keep pace with surgery and evacuation when there is a large number of admissions shortly after the hospital opens nor when the hospital continues to receive a peak load of casualties day after day. Mobile x-ray units are used to avoid or to relieve this situation. Without this assistance, the x-ray department resorts to fluoroscopic examinations and diagnoses to overcome the bottle-neck.

In the First U. S. Army, the three (3) companies of the 91st Medical Gas Treatment Battalion have been used as a center for certain types of medical cases and for the care of D.I.W.'s. This battalion has no x-ray equipment nor personnel. Two (2) mobile x-ray units have been necessary to provide three (3) companies with minimum radiologic facilities which leaves only one (1) mobile unit to service all evacuation hospitals. Three (3) mobile units are needed for an army. Requisitions for x-ray equipment and personnel for this unit have been submitted.

The supply of x-ray films is becoming critical. To prevent loss of films and retakes the flash-box method of marking radiographs has been instituted. (See Medical News No. 17, Office of the Surgeon, 10 November 1944).

Anesthesia.

Mention has been made of the necessity for skilled anesthetists in forward surgery -- skilled not only in the administration of inhalation, intravenous and block anesthesia but especially qualified in the endotracheal method. Training in bronchoscopy is very desirable.

The responsibility of the anesthetist is great. Often he must administer an anesthetic to a patient who needs extensive surgery but is at best a poor risk. Not infrequently he is called upon to give anesthesia to two (2) patients at the same time. During the operation, he must supervise the administration of blood, plasma or other intravenous fluids.

The relative frequency with which different methods of anesthesia are used varies in field and evacuation hospitals.

As representative of methods of anesthesia used in field hospital surgery, the following percentages derived from an analysis of 4111 anesthetics given by anesthetists of 3rd Auxiliary Surgical Group Teams are cited:

Inhalation	62% (70% by endotracheal tube)
Intravenous	33%
Block and Local	3%
Spinal, less than	1%

In evacuation hospitals, a much lower percentage of inhalation anesthesia is used. The statistics on anesthesia below are from an evacuation hospital where 9712 patients were operated upon from 24 June to 24 December:

Pentothal	60.06%
Local	27.94%
G.O.E.	7.43%
Open Ether	1.23%
Combined Pentothal	2.43%
Spinal	0.79%
Gas Oxygen	0.12%

Spinal anesthesia finds little place in forward surgery. Its use is largely restricted to operations or acute abdominal conditions such as appendicitis.

Local anesthesia is extensively used in neurosurgery.

A large number of sympathetic blocks were done for impaired circulation of the extremities.

Bronchoscopy was done on 6% of the patients operated upon by auxiliary surgical teams.

Neurosurgery.

Available Neurosurgeons.

At the time of the invasion, the First U. S. Army had one (1) neurosurgeon with each evacuation hospital and three (3) neurosurgeons in the 3rd Auxiliary Surgical Group. Two (2) of the latter were on general surgical teams and the third, Major Walter G. Haynes, was appointed as an advisor in neurosurgery.

Subsequent appraisal of specialists in the evacuation hospitals revealed that three (3) evacuation hospitals did not have well qualified surgeons in this specialty. To remedy this situation, two (2) of the younger neurosurgeons from the auxiliary surgical group were transferred to two (2) of these evacuation hospitals and the third hospital was provided with a neurosurgical team under the leadership of the Advisor in Neurosurgery.

A second neurosurgical team was obtained from the 4th Auxiliary Surgical Group and employed until August when it was possible to secure the services of a neurosurgeon from a general hospital to lead a second neurosurgical team. Permanent transfer of this neurosurgeon was subsequently effected.

Neurosurgical Teams.

The number of neurosurgeons required for an Army depends more upon the length of the front than upon the number of divisions. Three (3) neurosurgical teams would be adequate provided each evacuation hospital has a competent neurosurgeon. With only two (2) neurosurgical teams, the work at times has taxed the capacity of both teams.

Plan of Management.

Before the invasion, it was recognized that certain types of brain injuries could undergo definitive surgery as late as 48 to 72 hours after injury. On this basis, a policy for by-passing neurosurgical cases was worked out with the Neurosurgical Consultant from the Chief Surgeon's Office (Lt. Col. Glenn Spurling). See Medical News No. 14, Office of the Surgeon, 20 July 1944.

Spinal Cord Injuries.

Confusion still exists with reference to the indications for laminectomy in cases of spinal cord injury. The current policy allows a liberal exercise of surgical judgment and the tendency has been to operate upon a greater percentage of these cases than was the practice in the early days of the campaign. A conference for clarification of this issue was delayed by the change in the tactical situation.

Recent reports indicate a high incidence of decubitus in patients with spinal cord injury. An air mattress to protect the bony prominences is needed and an improvised type made from life preservers has been suggested.

Statistics.

Neurosurgical cases admitted to First U. S. Army hospitals (6 June - 31 December 1944):

	ADMISSIONS		DEATHS						CASE FATALITY RATE PERCENT		
			Pre-Op		Post-Op		Total				
	No.	% of Total	No.	% of Total	No.	% of Total	No.	% of Total	Pre-Op	Post-Op	Total
TOTAL	6855	7.2	447	32.0	325	16.5	772	23.0	6.5	4.7	11.2
Head	5925	6.2	387	27.7	297	15.1	684	20.4	6.5	5.0	11.5
Spine	656	.7	60	4.3	28	1.4	88	2.6	9.4	4.4	13.8
Nerve	274	.3	-	-	-	-	-	-	-	-	-

The following statistical report of neurosurgery in the First U. S. Army by hospital and surgical team does not include the cases for the month of December. It is noteworthy that the combined mortality of penetrating wounds of the brain is 14% and of compound fractures of the skull is only 1.9%. (See attached table). In the last war (1917-18) Cushing, the master neurosurgeon, reported 153 penetrating wounds of the brain with 43 deaths, a mortality of 31%.

Electro-coagulation, suction machines and illuminated retractors are new tools since the last war. Penicillin and sulfonamides are new

drugs. These factors enable better surgery to be performed. Better surgery may be responsible for the lowered mortality. It is incredible that there are better surgeons.

Wounds of the Eye.

Qualified ophthalmologists are scarce. Each evacuation hospital has one (1), but none has been available for surgical teams of the auxiliary surgical group. At one time, consideration was given to the organization of "head teams" by adding an eye surgeon to the neurosurgical or maxillo-facial teams. A primary obstacle has been the lack of a sufficient number of ophthalmologists to justify employment on such a "part time" basis.

The utmost conservation in the enucleation of eyes in the forward area is advisable. When enucleation is done as part of the surgical procedure for a wound of the orbit, the disorganization of the eyeball should be such as to preclude the possibility that the apparently shattered eye might be saved. General surgeons do not operate on eye cases.

The following statistics from the 97th Evacuation Hospital reflects a conservative attitude toward enucleations:

Removal of foreign bodies	16
Wounds requiring suture of cornea	7
Wounds requiring suture of sclera	9
Wounds requiring suture of conjunctiva	7
Wounds with intraocular foreign bodies (Patients evacuated at once for removal of F.B.)	2
Wounds with intraorbital foreign bodies not removed (Patients evacuated for removal of F.B.)	5
Patients evacuated for enucleation	12
Enucleation of remains of severely lacerated eyes	6
Chalazion operations	2
TOTAL	66

The policy of leaving damaged eyes for enucleation in general hospitals overlooks the fact that eye casualties are rarely just eye cases. They usually have multiple wounds of the head or other parts of the body.

Complete descriptions of eye injuries and the findings by surgeons in the field are invaluable.

Maxillo-Facial Surgery.

For the care of maxillo-facial injuries, each evacuation hospital has a maxillo-facial surgeon and an oral surgeon. In addition, the auxiliary surgical group has two (2) maxillo-facial teams whose primary duty is the treatment of maxillo-facial injuries in field hospitals when associated injuries render the patients non-transportable. Since relatively few maxillo-facial cases are operated in field hospitals, the teams work in evacuation hospitals and go forward only on call from the field hospitals. To cover a wide front, three (3) rather than two (2) maxillo-facial teams are needed.

The principles of treatment of these mutilating injuries in forward hospitals are outlined in the Manual of Therapy. Application of these principles in the field deserves comment:

In the primary aid phase of treatment, the correct litter posture (face down) during evacuation to evacuation hospitals has not always been followed.

Tracheotomized patients should be accompanied by an attendant or held for four (4) days for instruction in the care of the tube.

Intramaxillary multiple loop wires with intermaxillary elastic traction proved adequate to bring about centric occlusion in the majority of mandibular and maxillary fractures.

Edentulous mandibles offer a greater problem, especially when dentures are also destroyed or lost. The use of Roger Anderson type of pins and bars has been restricted.

Circumferential wiring of the mandible has, at times, been necessary. Fractures at the angle of the mandible with the upward riding posterior mandibular fragment has been left for correction in general hospitals or handled by elastic traction to plaster head cap by means of a stainless steel wire passed through a drill hole in the bone.

Maxillary fractures have been supported by a plaster head cap attached to a labial arch bar, an acrylic or Kingsley type splint, or stainless steel wires passed through the cheeks on either side. Some reports from the general hospitals raise considerable objection to the plaster head cap as a very uncomfortable appliance.

A study of statistics shows that 5.8% of the wounded admitted to First U. S. Army hospitals had maxillo-facial injuries. From 6 June 1944 to 1 January 1945, 5535 maxillo-facial injuries occurred. The case fatality rate was 1.4%, (0.5% of these deaths were pre-operative). Breakdown of these statistics for tabulation is difficult but the separate reports of three (3) evacuation hospitals and of one (1) maxillo-facial team are included as representative:

43th Evacuation Hospital

	Operated	By-passed	Total
Compound Fractures:			
Mandible	5	0	5
Maxilla	7	1	8
Maxilla & Mandible	2	0	2
Thyroid Cartilage	3	0	3
Soft Tissues:			
Face	49	8	57
Neck	30	5	35
TOTAL	96	14	110

2nd Evacuation Hospital

	Operated	By-passed	Total
Fractures:			
Maxilla			
With sinus involvement		30	
Without sinus involvement		18	
Mandible		87	
Combined fractures of Maxilla and Mandible		11	
Teeth with Soft Tissue Injury		19	
Nasal Bones		11	
Temporal Bone		6	
Frontal Bone with Sinus Involvement		14	
Malar Bone		5	
Maxillo-facial injuries in which loss of soft tissue substance occurred.		14	

97th Evacuation Hospital

Total number of operative cases		200	
Fractures:			
Mandible		20	
Maxilla		19	
Orbit		9	
Nose		7	
Palatine		6	
Malar		2	
Frontal		6	
	Total Fractures		
Number of patients having loss of bone			13
Classification of bone loss:			
Mandible		6	
Maxilla		4	
Orbit		4	
Frontal		3	
Number of patients having loss of soft tissue			31
Classification of soft tissue loss:			
Eye		16	
Ear		6	
Eyelid		4	
Lip		5	
Cheek		4	
Chin		4	
Nose		3	
Eyebrow		1	
Wounds of face and neck in which drainage was deemed necessary			65

Tracheotomies	3
Removal of foreign bodies from face and neck, other than from eye	43

Maxillo-facial Team No. 1
3rd Auxiliary Surgical Group

Compound Fractures:	
Mandibular	58
Maxillary	9
Nasal	8
Zygomatic	15
Frontal, ethmoid	3
Temporal	3
Soft Tissue Wounds:	
Face and Mouth	148
Pharynx	14
Larynx	4
Neck	10

Burns.

Burns have not constituted a major problem numerically. The total number of burns (all locations) admitted to hospitals from 6 June 1944 to 1 January 1945 was 1143, with a mortality of 2%.

The principles of treatment have been as described in the Manual of Therapy, which permitted the surgeon a choice between sulfadiazine cream 5%, petrolatum, boric acid ointment with or without sulfanilamide powder on fine meshed gauze to cover the burned surface.

All these methods have been used but the preference is for the sulfadiazine cream.

A few surgeons object to the pressure dressings on the face on the basis that the secretions from the eye, nose and mouth collect beneath the dressing.

Surgery of the Extremities.

Debridement of Wounds.

The practice of minimal removal of skin and bone and maximum removal of devitalized muscle, the use of ample incisions, the relief of tension by fascial incisions and the avoidance of plugging wounds with vaseline gauze are essentials which are well known but not always well executed.

Plaster Casts.

Attention is invited to Medical News No. 13, Office of the Surgeon, 18 July 1944, subject "Transportation Casts".

To insure that the general principles in the application of casts are followed, it is now required that the surgeon write his name on the cast.

The Tobruk splint has seldom been employed as a transportation splint.

Records of the 3rd Auxiliary Surgical Group show that members of surgical teams utilized four (4) major types of extremity casts as follows:

Hip Spica	433
Full Leg	609
Shoulder Spica	178
Velpeau	340

Experience has established the advisability of postponing the application of a plaster hip spica following debridement for compound fractures of the femur on patients whose condition is poor at the completion of the debridement operation. Instead of a hip spica, an Army leg splint is applied with skin traction. One (1) or two (2) days later when the patient's condition has improved, the splint is replaced by a plaster spica. In the hands of the general surgeon, this method is less time-consuming and requires less moving and changing of the patient's position.

Comparative statistics on compound fractures.

The following table shows the total number of compound fractures admitted by two (2) evacuation hospitals selected at random. The operative mortality is almost identical:

	45th Evac.	5th Evac.
Total Cases	2341	2584
Operative Mortality	0.26%	0.23%

Compound fractures of the femur when studied alone show a somewhat higher mortality:

	45th Evac.	5th Evac.
Total Cases	212	225
Total Deaths	5	7
Mortality	2.3%	3.1%

A certain percentage of compound fractures are associated with a severe degree of shock which makes the casualties non-transportable. As non-transportables, they are admitted to field hospitals. The figures of one of the more active field hospitals (51st Field Hospital) show a much higher mortality rate than evacuation hospital figures:

	Operations	Post-Op Deaths	Post-Op Mortality
Femur and Pelvis	119	7	5.88%
Tibia, Fibula and Foot	194	4	2.06%

	Operations	Post-Op Deaths	Post-Op Mortality (Cont'd)
Scapula and Humerus	96	1	1.04%
Radius, Ulna and Hand	138	1	.72%
TOTAL	547	13	2.57%

Hand and Foot Injuries.

Reports from general hospitals indicate that hand and foot injuries have been the most poorly managed of all wounds. The four (4) deadly sins have been:

Insufficient cleansing by gentle scrubbing with soap and water.

Tendency to overdebridement of these wounds.

Use of nail and pulp traction.

Prolonged or over-fixation of the hands and feet in the treatment of injuries of metacarpals, metatarsals or phalanges.

A large percentage of injuries of the hands and feet belong in the category of self-inflicted wounds (S.I.W.). Special provision is made for the care of these cases. At one time, the difficulties involved were primarily administrative and secondarily professional, in that S.I.W.'s had to be held until cleared by the Inspector General. The delay in evacuation of these patients thus occasioned has since been eliminated.

The principles of treatment of these wounds incorporated in Circular Letter No. 131, Office of the Chief Surgeon, 3 November 1944, are an improvement based on experience over the methods previously recommended and employed.

Vascular Surgery.

The handling of extremities with main artery damage has been disappointing. Blakemore's non-suture method of blood vessel anastomosis has been employed a few times without convincing results. It is doubtful if this Blakemore method has much application. To date, heparin has not been available for use except on two (2) or three (3) patients.

Paravertebral sympathetic nerve block has not prevented a high incidence of gangrene but has apparently permitted amputation to be accomplished at a lower level. Improvement in the circulation has been observed with sufficient frequency to justify the continuation of the policy of employing sympathetic nerve block routinely and as early as possible.

Periarterial sympathectomies have not been advocated.

Lateral sutures and a few anastomoses of main arteries have been done successfully but it is seldom possible to attribute the result to the repair when viable limbs have also followed ligation at similar levels.

The results of treatment for main arterial damage to extremities have, to date, been most discouraging. When heparin and papaverine become available, a vascular clinic will be established to afford a better opportunity for study of these cases and for a more controlled test of the various methods of restoring the circulation including the use of glass tubes, a method developed by the Canadians.

The following are vascular surgery statistics of operations performed at the 45th Evacuation Hospital:

ARTERY	TOTAL	ADEQUATE CIRCULATION	AMPUTATION	GAS GANG(1)	DEATHS(2)
Axillary	6	3 (3)	2	0	1
Brachial	29	24 (4)	4 (with one inevitable) (5)	1	0
Radial	10	9	0	0	1 (6)
Ulna	3	3	0	0	0
Radial & Ulna	1	0	1	0	0
Femoral	20	8	9 (with one inevitable (7)	2	2 (8)
Popliteal	16	5 (with one probable)(9)	8 (with one inevitable (10)	1	1 (8)
Prof. Femoris	2	1	1	0	0
Post. Tibial	25	23	1	0	1 (11)
Ant. Tibial	1	1	0	0	0
Ant. & Post. Tibial	6	1	5	2	0
Common Carotid	1	1	0	0	0
Common Iliac	1	0	0	0	1
Ext. Iliac	2	0	0	0	2
Int. Iliac	1	0	0	0	1
VEINS					
Inf. Vena Cava	2	0	0	0	2
Common Iliac	1	0	0	0	1 (12)
	127	79 (with one probable)	31 (with three inevitables)	6	13

Note:
(1) All cases resulted in amputation and are included in the figures for amputations.
(2) Unless otherwise noted are operative.
(3) One anastomosis with adequate circulation.
(4) Five were sutured and circulation was adequate in all.
(5) Dry gangrene distal phalanges.
(6) Death due to pulmonary edema six hours post-operative.
(7) Dry gangrene of foot.
(8) One died of shock prior to operation.
(9) No note as to circulatory status on evacuation.
(10) Cellulitis and dry gangrene of foot.

(11) Due to pulmonary infection. Lacerated femoral vein was ligated at time of operation.
(12) Nine days post-operative due to associated injuries.

The following are vascular surgery statistics of operations performed by members of the surgical teams of the 3rd Auxiliary Surgical Group:

Number of patients	191	
Suture or anastomosis		15
Major ligations		178
Number of patients with sympathetic blocks		98

Amputations.

A conservative attitude has been maintained toward amputations. Consultation is required. Devascularized limbs are given a chance, and not amputated as a primary operation. The conditions for which amputations have been done are inadequate circulation following ligation of the main artery, certain types of gas gangrene and as a step in the completion of a traumatic amputation.

Physiologic amputation with a tourniquet in patients who do not respond to resuscitation has a limited application but must be used with caution.

Amputation under refrigeration anesthesia has been satisfactorily accomplished a few times.

The number of amputations of the lower extremity has been almost twice that of the upper extremity. The following table shows the number of extremity amputations of all types:

Month	Upper		Lower
June	99		154
July	263		470
August	135		216
September	49		88
October	43		127
November	84		217
December	109		76
Total	782		1348
GRAND TOTAL		2130	
PERCENTAGE	36.7%		63.3%

Thoracic Wounds.

Early in the assault phase, it became apparent that the management of chest cases was attended by a certain amount of confusion. This observation led to the preparation of Medical News No. 11, Office of the Surgeon, 5 July 1944.

Gradually, a more conservative trend developed with reference to removal of foreign bodies. Measures for control of the urgent physiologic disturbances were more effectively employed pre-operatively and operations were better timed.

Approximately 60% of sucking wounds have been treated by debridement, aspiration of blood and closure in layers. When thoracotomy is indicated, adequate access can usually be gained by extension of the wound. Separate thoracotomy incision is made when the nature and location of the missile tract are unsuitable for extension.

Bronchoscopy as a pre and post-operative measure has been done frequently to clear the tracheo-bronchial tree of mucus and blood.

Experience supports the opinion that chest cases must be resuscitated more carefully than other severe casualties, that the too liberal use of intravenous fluids invites pulmonary edema, and that blood is safer in this respect than plasma. The over transfusion of chest cases is to be avoided.

A study of evacuation revealed that too many chest cases were arriving at general hospitals with a large amount of bloody fluid in the chest. Special attention has been directed to this finding in an attempt to correct the fault. It has not been considered feasible to require a routine x-ray or aspiration of the chest before evacuation of each patient.

The number of patients with thoracic wounds admitted to First U. S. Army hospitals from 6 June to 31 December 1944 was 8770 which was 9.1% of the total admissions. The case fatality rate was 8% (pre-operative 3.4%, post-operative 4.6%).

Thoraco-abdominal Wounds.

The fundamental problem in the management of thoraco-abdominal wounds is the question of surgical approach. A combined chest and abdominal operation is difficult to withstand, and is less often employed than a single approach. The choice between a thoracic and abdominal incision is contingent upon many factors and must be made for the individual case.

Thoraco-abdominal wounds are serious injuries which might be expected to have a higher mortality rate than abdominal wounds without associated thoracic injury. In small groups of cases, this is usually true but in a large series the mortality is actually lower. There were 1238 patients admitted to Army hospitals with thoraco-abdominal wounds (1.3% of the total admissions). The mortality by case was, pre-operative 6.9%, post-operative 12.4%, total 19.3%. The mortality for abdominal wounds was 22.4%. This is difficult to understand. Probable explanations are:

The most serious thoraco-abdominal wounds may not have reached a hospital alive.

Surgical procedures carried out through a thoracic approach have been less severe on the patient, and the majority of cases were approached from above.

Chest wounds have a lower mortality rate than abdominal wounds and, in some instances, the abdominal operations were only exploratory in extent.

The statistics given below represent an analysis of thoraco-abdominal operations performed by members of surgical teams:

Number of patients	413
Through thoracotomy approach	238
Suture of diaphragm	226
Splenectomy	57
Closure of GI perforations	34
Through laparotomy approach	193
Exploration only	42
Suture of diaphragm	99
Operations on abdominal organs	168

Abdominal Wounds.

The incidence of abdominal wounds among battle casualties admitted to army hospitals was 4.1%. The mortality rate (case fatality) for 3925 patients was 22.4% which does not take into account the deaths which occur in patients after they have been evacuated from the Army Zone. This represents a striking improvement when compared with the mortality of abdominal wounds in 1917-1918 (AEF) which was 66.8%. It is recognized that a number of variables arise in calculating the mortality rate of abdominal wounds, but the large number of cases handled offsets many of these factors and establishes this figure as an accurate calculation during all types of warfare on the continent.

Reduced mortality may be attributed to several factors among which penicillin and sulfonamides must be given due credit. The time element, the technique and the quality of surgery and post-operative care each contribute to the successful management of these cases. Selection of patients for operation could obviously result in a low post-operative mortality but the figure 22.4% includes both pre and post-operative deaths. The post-operative mortality was only 16.2%. Furthermore, the policy of accepting the risk, and not adjudging bad-risk patient inoperable has, in general, been followed. Some of the pre-operative deaths occurred shortly after the arrival of the patient in the hospital. Evaluation of the patient before operation is an important principle which depends upon the experience and judgment of the surgeon. The recognition of continuing or concealed hemorrhage is a deciding factor in undertaking a poor-risk operation rather than persisting in repeated blood transfusions and futile resuscitative measures. The time factor stressed so graphically by Sir Cuthbert Wallace in the statistics of the last war is still important but to a less extent. Blood transfusions, Levine and Miller abbott tubes and other methods of treatment represent advances in surgery since 1917-18. The availability of blood for transfusion has been an outstanding factor in this campaign. The policy of holding all post-operative cases for ten (10) days or longer decreases but does not eliminate the complications incident to travel, such as evisceration.

Comments on Technical Procedures.

Drainage of the peritoneal cavity for infection is not indicated. In the presence of liver laceration, drainage below diaphragm is done. Drainage of the retroperitoneal spaces for perforation of retroperitoneal portions of the colons and drainage of the space of Retzius following perforation of the bladder are necessary.

Experience has demonstrated the necessity for supporting the incision with an adequate number of well placed retention sutures to prevent evisceration. The sutures should incorporate all layers at least down to the peritoneum and should be tied loosely over the skin, not over gauze or through rubber tubing. Removal of retention sutures before the patient is evacuated should be avoided.

Small bowel injuries are treated by suture of perforations, or when necessary, by resection and anastomosis by an adequate method. Exteriorization of small bowel, enterostomies and Mikulicz procedures are to be avoided.

Large bowel perforations. There is a difference in the management of injuries of the right and the left side of the colon.

For lesions of the rectum and pelvic colon, the indication for complete diversion of feces is met by an ample spur colostomy with complete transverse division of the bowel and covering the distal stoma with vaseline gauze. Wounds of the rectum demand free drainage by incision of the fascia propria in addition to spur colostomy. Proctoscopic examinations are often of diagnostic value in determining the presence of injuries of the rectum.

In dealing with injuries of the right colon, the indication is for decompression of the colon. The dangers of leakage and the known insecurity of sutures makes simple closure of a wound of the colon a hazardous procedure. Large bowel perforations should be exteriorized. Some of the distal perforations in an exteriorized segment may be closed provided the proximal perforation affords sufficient decompression. Otherwise exteriorized perforations are left open. Sigmoid colostomies are opened when they are made.

Combined injuries of the ileum and the right side of the colon have presented the greatest problem. Exteriorization of the ileum and end of the divided colon as a double barrelled ileo-colostomy has not been a satisfactory procedure. End to side anastomosis of the ileum to the transverse colon with exteriorization of the damaged segment of ileum and colon is preferred. The patient's condition will not often permit an additional resection which is the ideal procedure.

The hazards of crushing the spur and the small risk of producing a peritonitis in patients with colostomies has led the surgeons responsible for reconstructive procedures on the bowel to prefer the procedure of taking down the colostomy and completely restoring the continuity of the colon. On this basis, a loop colostomy is preferred. Spur colostomies are indicated when resections of a segment are necessitated by perforations of the mesenteric border, injuries to the mesentery resulting in non-viable segments or extensive lacerations of a segment. Accurate descriptions of operative procedures are of utmost importance to the surgeon responsible for re-establishing intestinal continuity.

The management of injuries of the liver, spleen and kidney are described in the Manual of Therapy. The importance of drainage of liver injuries below the diaphragm has been repeatedly demonstrated by the subsequent development of thoraco-biliary fistulae or bile peritonitis in cases not drained.

Injuries of the ureter have been surprisingly few and not always detected until their presence was revealed by the drainage of urine from a posterior wound.

Patients who have a suprapubic cystostomy can be kept dry by the attachment of a suction apparatus to an indwelling urethral catheter.

urgical Procedures.

An analysis of 1834 abdominal operations by auxiliary surgical teams shows the relative frequency with which various surgical procedures were employed:

42% had closure of gastrointestinal perforations.
34% had colostomies and various exteriorizations.
19% were negative or not amenable to surgery
17% had intestinal resections
14% had operations on the liver
13% had operations on the urinary bladder
5% had acute inflammatory conditions
4% had splenectomy
2% had operations on the biliary tract
2% had transperitoneal nephrectomy

SURGICAL SERVICE

Organization and Professional Policies.

In the organization of the Surgical Service of the First U. S. Army, full advantage was taken of experience gained by units and individuals that had served in the African and Sicilian Campaigns. A careful study of NATOUSA directives and information secured by a visit of the Executive Officer, Colonel James L. Snyder, to the Italian Theater were valuable guides in formulating the professional policies.

The principles of treatment, surgical procedures and technique prescribed or recommended were incorporated in the Manual of Therapy, SFC, 5 May 1944.

Each medical unit was equipped and staffed for its designed function in relation to the basic policy that only primary aid would be rendered by aid stations, collecting companies and clearing stations with definitive treatment restricted to field and evacuation hospitals. Exceptions to this general policy were contemplated and allowed for the landing phase of an amphibious operation and for operations of the airborne units.

Management of Battle Casualties During the Assault Phase.

Glider Landings.

The earliest surgical treatment during the invasion was rendered by the medical personnel of the airborne medical companies and two surgical teams from the 3rd Auxiliary Surgical Group who accompanied the glider assault wave of airborne operations. The mission was to establish aid stations on the fields of the landing zone and to set up an operating room for major surgical procedures. A report of the activities of one of these teams reveals that the aid stations were in operation by H - 1, and that the operating room was functioning by H + 3. Many records were destroyed when the chateau in which the operating room was located received a direct bomb hit but an estimate of the type and volume of surgery performed may be obtained from the following tables:

TABLE I

GENERAL CLASSIFICATION

Date	Total Patients	Multiple Wounds	Total Wounds
6 June	125	Field casualties received emergency treatment.	
6 June	85	7	126
7 June	235	58	303
8 June	407	88	627
9 June	146	52	203
10 June	Day following bombing of station, no records available.		
11 June	224	79	393
12 June	137	48	251
13 June	180	48	272
14 June	52	19	88
15 June	56	16	84
16 June	57	7	68
17 June	94	29	151
18 June	55	20	93
19 June	28	1	29
20 June	26	2	31
21 June	28	3	34
22 June	22	4	31
23 June	45	12	72
24 June	16	4	24
25 June	22	5	29
26 June	16	8	32
27 June	22	1	24
TOTAL	2070	511	2945

TABLE II

REGIONAL CLASSIFICATION

HEAD INJURIES:

Gun shot wounds	37	
Shell fragment wounds	39	
Compound fractures	5	(not due to gunshot or shell fragment)
Concussion	39	
Scalp lacerations	14	
Burns	1	

MAXILLO-FACIAL INJURIES:

Eye injuries	25
Ear injuries	6
(Auricle)	5
Nose injuries	
Fractures	7
Laceration	1
Lip injuries	
Laceration	3
Jaw injuries	
Fractured mandible (Missile)	11
(Gunshot)	6
(Shell fragment)	5
Fractured mandible (Trauma)	12
Face injuries	
Gunshot wounds	24
Shell fragment wounds	39
Contusions	2
Burns	4

NECK INJURIES:

Gunshot wounds	19
Shell fragment wounds	27
Lacerations	1
Fractured cervical spine	2
Burns	3
(Phosphorus)	1

CHEST INJURIES:

Gunshot wounds	59
Shell fragment wounds	15
Contusion	23

ABDOMINAL INJURIES:

Gunshot wounds	27
Shell fragment wounds	15
Contusion	2
Lacerated wounds	3

BACK INJURIES:

Gunshot wounds	52
Shell fragment wounds	88
Fractured spine	14
Contusions	11
Sprains	19
Lacerated wound	1

BUTTOCK INJURIES:

Gunshot wounds	21
Shell fragment wounds	44
Lacerations	1

SHOULDER REGION INJURIES:

Gunshot wounds	105
Shell fragment wounds	209
Lacerations	34
Compound fractures	74
Simple fractures	11
Dislocations	11
Contusions, simple	10
Sprains	5
Burns	1

ARM INJURIES:

Gunshot wounds	151
Shell fragment wounds	108
Lacerations	13
Compound fractures	68
Simple fractures	36
Simple contusions	8
Burns	3

ELBOW JOINT INJURIES:

Gunshot wounds	16
Shell fragment wounds	17
Lacerations	2
Compound fractures	12
Simple fractures	7

FOREARM INJURIES:

Gunshot wounds	26
Shell fragment wounds	19
Lacerations	2
Compound fractures	37
Simple fractures	18

WRIST JOINT INJURIES:

Gunshot wounds	6
Shell fragment wounds	10
Lacerations	3
Compound fractures	8
Simple fractures	14
Burns	1

HAND INJURIES:

Gunshot wounds	53
Shell fragment wounds	51
Lacerations	17
Compound fractures	41
Simple fractures	47
Contusions, simple	3
Burns	10

HIP JOINT INJURIES:

Gunshot wounds	14
Shell fragment wounds	14
Lacerations	1
Dislocations	1

THIGH INJURIES:

Gunshot wounds	62
Shell fragment wounds	47
Lacerations	6
Compound fractures	37
Simple fractures	20
Contusions, simple	4

KNEE JOINT INJURIES:

Gunshot wounds	13
Shell fragment wounds	33
Lacerations	5
Sprains	25
Dislocations	1
Contusions	9

LEG INJURIES:

Gunshot wounds	117
Shell fragment wounds	184
Lacerations	10
Compound fractures	88
Simple fractures	36
Contusions, simple	11

ANKLE JOINT INJURIES:

Gunshot wounds	21
Shell fragment wounds	24
Lacerations	6
Dislocations	1
Fracture dislocations	71
Compound fractures	37
Sprains	33

FOOT INJURIES:

Gunshot wounds	51
Shell fragment wounds	58
Lacerations	7
Simple fractures	28
Compound fractures	26
Contusions	6

The experiences of these surgical teams demonstrate that it is possible and advisable for surgical teams to accompany an assault wave of an airborne operation. By this means, facilities for major surgery are provided at the earliest hour and maintained until casualties can be evacuated through routine channels.

Beach Landings.

Eighteen surgical teams accompanied amphibious medical battalions on the beach landing. They assisted the battalion medical personnel in rendering primary aid to casualties until the beach was cleared of wounded, established and operated aid stations and gave definitive surgical treatment to non-transportable cases after operating rooms had been set up in tents. The surgical teams arrived on the beach at various times from H + 4 to D plus 2.

The first major operation was performed at approximately H + 10 on Utah Beach. On Omaha Beach, major definitive surgery was not begun until D + 1. By the afternoon of D + 2, definitive surgery was being done extensively on both beaches. The following tables show the number and disposition of the cases handled by two (2) surgical teams and the medical personnel of Company J of the 261st Medical Battalion:

TABLE III

Disposition of Cases

	June 6	June 7	June 8	June 9	Total
Total treated	155	711	446	485	1797
Retd. to duty	1	3	1	0	5
Transferred	11	1	0	0	12
Evacuated	38	696	343	382	1459
Died	11	27	0	0	38

TABLE IV

Anatomical Distribution of Wounds

	June 6	June 7	June 8	June 9	Total
Head	5	40	26	10	81
Neck	6	17	6	10	39
Face (Eyes, Jaws)	7	59	20	29	85
Chest	15	42	30	20	107
Abdomen	5	15	7	7	34
Upper Ext.	41	135	56	37	313
Lower Ext.	67	336	164	140	707
Fractures	10	210	89	41	350
Backs	12	38	20	27	97
Buttocks	3	15	5	20	43
Multiple	53	97	66	75	271
					2127

All available surgical teams continued to operate in clearing stations until operating facilities were available in field hospitals. The following list of operations performed by one surgical team in one clearing company during a 5½ day period is illustrative:

Laparotomies	6
Sucking chest wounds	5
Compound fractures	22
Amputations	2
Combined laparotomies and sucking chest wound	1
Combined sucking chest wounds and compound extremity fracture	3
TOTAL	48

Of these 48 cases, there was one (1) post-operative death; a German P.O.W. on whom an extensive intestinal resection was done.

As a test, definitive surgery was ordered for all admissions to one collecto-clearing company until it became apparent that the number of casualties received each twenty-four (24) hours continued to exceed the capacity of the operating room.

In general, early surgical care of casualties on the beach was governed by the tactical situation. Adequate operating room and hospital facilities were provided as early as enemy resistance permitted the landing of personnel and equipment and the selection of a site for hospitals. Adequate post-operative care was difficult until hospitals were established.

In future operations, it would seem advisable that the surgical care of battle casualties during the first twenty-four to forty-eight hours of an amphibious operation should be restricted to the preparation of patients for evacuation. No attempt should be made to render definitive treatment to any patient who can by primary aid measures be rendered transportable.

Surgery in Field Hospitals.

As soon as field hospitals were established, major surgical procedures were discontinued in clearing stations of amphibious medical battalions. This shift of definitive surgery occurred on 3 ≠ 5 with the exception that one surgical team remained at the holding unit on each beach. These two teams continued to operate on patients arriving in the holding units who had developed complications and on casualties occurring in the beach area.

The arrival of the nurses on 3 ≠ 4 and 3 ≠ 5 afforded a welcome contribution to the efficiency of the operating room as well as to the quality of post-operative care.

At first, field hospitals functioned as evacuation hospitals instead of receiving and treating only the non-transportable cases. The normal set-up of hospital installations was accomplished on 3 ≠ 10 on Omaha Sector. On Utah Sector, this was not achieved until several days later when Army took over from Corps.

Experience has shown that the bulk of non-transportable cases consists of abdominal, thoracoabdominal and major chest injuries. Patients with extremity wounds are comparatively few and comprise only those with multiple or extensive wounds associated with profound shock or active bleeding which does not respond to such shock control measures as the clearing stations can provide.

The employment of field hospitals in separate hospitalization units (platoons) sited adjacent to division clearing stations and moving with the clearing stations has provided early and adequate care for non-transportable cases so long as only two platoons are active. When all three platoons of a field hospital are active at the same time or when a division moves forward so rapidly that a change of stations occurs every few days, the system breaks down because professional care and housekeeping personnel and equipment must be left behind each time to care for the non-transportable post-operative patients. The assigned personnel of a field hospital is numerically inadequate when the hospital is functioning in platoons and the personnel is working on a twelve-hour shift of duty. At least two additional officers and four additional nurses per hospitalization unit should be added to the T/O.

Experienced surgical teams from auxiliary surgical groups have provided the professional care of patients in field hospitals. The following statistical report shows the number and type of wounds treated by one general surgical team when attached to an amphibious medical battalion, a field hospital, and an evacuation hospital.

TABLE VI

Unit and Date	Patients	Abdominal Wounds	Chest Wounds	Extremity Wounds	Soft Tissue Wounds
261st Med Bn, Co A (6 - 12 June).	50	16	5	14	0
42nd F.H., 1st Plat (22 - 30 June)	121	41	32	69	7
128th Evac Hosp (12 - 22 June)	87	9	5	77	2
TOTALS	258	66	42	161	9

The value of the field hospital when utilized to care for non-transportable cases is more definitely recognized when an evacuation hospital is in operation without a field hospital between it and the division clearing station. Under these conditions, the evacuation hospital receives non-transportable cases in such numbers that it is unable to give definitive treatment to a large number of casualties until the time-consuming abdominal and chest cases have received definitive treatment.

The policy of siting platoons of field hospitals close to the front lines and adjacent to the division clearing stations is to be commended and should be continued. It has saved many lives since severely wounded patients could not survive transportation to the rear. The mortality rate for surgery in field hospitals will be higher when the hospital is close to the front lines.

Surgery in Evacuation Hospitals.

The first evacuation hospital was opened 11 June at 2100 hours. A record of its activities is contained in the table below:

TABLE VII

Date	Adm.	Total Adm.	Operated	Total Operated	Gas B. Cases	Deaths	Evac.	Total Evac.	Remaining
11 June	123		3		0	0	0	0	123
12 June	223		44		0	3	62	62	284
13 June	185	531	108	155	2(1 POW)	1	123	185	346
14 June	329	860	142	297	1	4	253	438	422
15 June	381	1241	86	383	2	5	333	771	470
16 June	79		94		2	5	171		378
17 June	387	1707	94	571	1	12	278	1220	487
18 June	63		131		1	6	172		378
19 June	186	1956	89	791	3(2 Civ)	4	227	1619	337
20 June	160		77		1	2	145		352
21 June	166	2282	106	974	1	5	122	1886	396
22 June	211	2493	85	1059	1(Civ)	5	184	2070	423
23 June	146		129		0	1	168		401
24 June	261	2900	120	1308	1	6	223		439
25 June	125		149		0	3	156		408
26 June	126		122		2(Trans) From beach with diag gas - 1 POW)	1	171		363
27 June	103	3254	71	1650	0	1	149	2937	317
28 June	0		16		0	1	141	3078	176
29 June	0		5		0	0	71		105
3 July	0	3260	0	1675	0	0	3	3250	10
4 July	394		30		0	3	28		376
5 July	133		136		0	5	129		381
6 July	281		142		0	1	182		480
7 July	164		206		4	0	199		444
8 July	180		196		2	4	242		282
9 July	279		141		1(POW)	0	215		346
10 July	246		148		0	0	195		379
11 July	210		172		1	1	190		417
12 July	181		171		2(POW)	1	153		445
13 July	112		187		1	1	162		395
								Inf. Trans.	
14 July	84		123		0	0	213	21	266
15 July	185		121		1	1	103	23	348
16 July	137		157		0	0	145	12	340
17 July	131		128		0	1	103	13	368
18 July	133		126		0	1	121	5	380
19 July	101		53		0	0	115	4	366
20 July	1		16		0	2	153	0	212
21 July	0		1		0	1			
22 July	0	6112	3		2	0			
23 July			1						
24 July			1	3966					

Evacuation hospitals have been sited well forward and, when moved to new locations, have set up as close to the front lines as safety would permit. Consequently, battle casualties have reached evacuation hospitals in a surprisingly short time after being wounded. For example, one hospital received casualties on an average of four (4) hours after injury for a period of ten (10) days. During the same period, 80% of the surgical cases admitted to this hospital were on the operating table in the first twenty (20) hours after admission.

The outstanding problem of surgery in evacuation hospitals has been the size of the "surgical backlog" i.e., the number of cases awaiting operation. On the beach and subsequently during each drive, it was not uncommon for evacuation hospitals to have 200, occasionally 300 cases awaiting surgery. This situation was met by the addition of surgical teams from auxiliary surgical groups and ward officers and nurses from other hospitals. Mobile surgical and x-ray units augmented the surgical facilities of the hospital. When such measures failed to cope with the situation, a policy for evacuation of the lightly wounded without definitive treatment was invoked. Under such a policy, from 1% to 5% of the patients could be so evacuated depending upon the type of casualties being received at the time.

The influence of the admission rate on the morbility and mortality of a hospital is definite.

When 300 to 500 patients are admitted to a 400 bed evacuation hospital during a 24 hour period, it requires approximately three days to complete definitive surgery. The capacity of the operating room can be increased by the addition of surgical teams but the operative turnover is governed by other factors such as the number of operating tables available, and the percentage of severe injuries.

It is difficult to take patients recovering from shock to the operating room at the optimum time and some of these patients slip back into irreversible shock.

Gas gangrene develops in wounds that are not debrided early.

Pre and post-operative care is not maintained at the highest level.

All facilities are taxed to the utmost and the hospital does not function as smoothly as during periods of normal activity.

Various control measures have been instituted to solve problems of the surgical backlog. These measures have served as temporary expedients to meet the current situation. Obviously, no control can be established over the number of casualties inflicted by the enemy. To increase the number of evacuation hospitals supporting each division would involve an unnecessary increase in the number of available beds and accessory equipment.

From a professional point of view, the solution of the problem would be to increase the staff of a 400 bed evacuation hospital to approximately that of a 750 bed evacuation hospital. Such additional personnel would make the evacuation hospital independent of surgical teams and assistance from personnel of other units.

The number of beds need not be increased over 100 because a large percentage of casualties admitted to evacuation hospitals can be evacuated within 24 hours after definitive treatment has been administered.

In support of this recommendation, attention is directed to the fact the 750 bed evacuation hospital assigned to First U. S. Army has functioned without the assistance of surgical teams except for a few days when one (1) three man team was attached without request and after two of the hospital's assigned officers had been sent to a division. On the other hand, rarely has a 400 bed evacuation hospital been active for more than twenty-four (24) hours without attached surgical teams. The maximum number of surgical teams attached to an evacuation hospital at one time has been eight (8). Often six (6) are attached; usually three (3) or four (4) teams are required.

Mobile Surgical Units.

At the time of the invasion, the Third Auxiliary Surgical Group was equipped with two (2) Trucks, Surgical, Operating and three (3) Frosco Surgical Units.

The mobile surgical units landed on D + 22. On 29 June, the first unit (a Truck, Surgical, Operating) was set up with an evacuation hospital. Since then, both types of unit have been in operational employment, chiefly with evacuation hospitals. Of three (3) units sent to field hospitals, only one (1) (a Truck, Surgical, Operating) was utilized by this type of hospital.

The operational employment of both type of mobile units has been identical.

The practical value of the unit in augmenting the operating room facilities of an evacuation hospital is established. The unit provides an additional self-sustained two (2) table operating room which may be utilized for all types of surgery or only for a special type of surgery, such as neurosurgical, maxillo-facial or orthopedic cases. Little or no additional burden is put on the central supply of the hospital since the unit has its own autoclaves, instruments, gloves and surgical linens.

The mobile unit has been less extensively employed by the field hospitals which have two (2) two-table operating rooms with each hospitalization unit.

The mobile unit should not be employed for <u>definitive</u> surgery forward of a field hospital unless provision is made for post-operative care of all patients until they become transportable.

Mobile X-Ray Units.

Three (3) Mobile X-ray units attached to the 3rd Auxiliary Surgical Group have functioned with evacuation hospitals under the operative direction of the Army Surgeon.

The first unit was set up 2[illegible] June 1944. The other two units went into operation on 5 July 1944 and 12 July 1944, respectively.

Experience to date justifies the opinion that the Mobile X-ray Unit has a definite value and has demonstrated its usefulness in augmenting the X-ray facilities of evacuation hospitals.

Without the assistance of a Mobile X-ray Unit, the hospital X-ray personnel are overtaxed when the hospital continues to receive large numbers of casualties.

Not infrequently, a bottle-neck develops in X-ray when there is a large influx of casualties shortly after the evacuation hospital opens in a new location. A mobile X-ray unit will relieve this situation.

Transfusions.

There has always been a plentiful supply of plasma. It has been used in a ratio of approximately three (3) units to one bottle of blood, but it is not a substitute for blood.

Blood for transfusions has been supplied by the ETO blood bank supplemented by the blood banks operated by evacuation hospitals and fresh blood obtained from non-combat troops and the lightly wounded.

Unfortunately, the major problem in the surgical care of battle casualties developed on the beach in connection with the transfusion of blood. The rate of flow of blood through the apparatus supplied was too slow to permit resuscitation of an exsanguinated patient. Under air pressure, the flow was still unsatisfactory. To overcome the difficulty, it was necessary to transfer the blood to a salvarsan tube. Subsequently, a new filter and larger needles were supplied so that blood could be delivered at a more desirable speed.

Blood has always been a critical item but there was no shortage during the first two weeks of the invasion when an average of 500 pints daily was supplied by the ETO blood bank.

The number of severe reactions to blood transfusions has been negligible.

A comment by the leader of one of the 3rd auxiliary surgical teams reflects the universal opinion about the value of blood, "In this campaign, we believe the greatest single blessing from the medical point of view has been the availability of blood bank blood. In contrast to the African and Sicilian campaigns, we are now being able to operate upon and save patients that could never have survived on plasma alone".

Penicillin.

Penicillin therapy has been carried out according to the directions incorporated in Medical News No. 6, Office of the Surgeon, First U. S. Army, 13 May 1944.

The supply of penicillin was inadequate for approximately two weeks beginning about 14 June. At this time, its local use in wounds was discontinued. Subsequently, the administration of penicillin in clearing stations was interruped until an adequate supply was again available.

No statistical data can be obtained at this date concerning the value of penicillin therapy. The impression is that it has been of definite value in minimizing wound infection. It has not prevented the development of gas gangrene but penicillin and antitoxin have been very effective in controlling the toxemia and spread of infection.

Forward Surgery.

The Manual of Therapy, ETO, 9 May 1944, has met all expectations in providing the basic principles for surgical procedures. However, it has been necessary to issue other directives in the Medical News in order to clarify or elaborate certain procedures or techniques as well as to emphasize policies that are clearly stated in the Manual.

Departures from policy were in most instances attributable to personal preference and to the difficulty of teaching surgeons to do what is known to be safest rather than what the individual surgeon considers best. The discrepancies most frequently observed were:

Failure to split plaster casts to the skin.

Improperly applied plaster.

Reluctance to use retention sutures in closure of abdominal wounds.

Delay in opening colostomies.

Tendency to plug wounds with vaseline gauze.

Too early evacuation of post-operative abdominal cases.

A conservative attitude has been followed concerning amputations and discrimination exercised in the differential diagnosis of gas gangrene.

It has been difficult to establish a policy incorporating definite indications for the removal of foreign bodies in the chest and the aspiration of hemothorax. In general, a conservative attitude has been followed.

Personal visits and letters from the ETO Consultants, Office of the Chief Surgeon, have been valuable in supplying information concerning the condition of casualties upon arrival in the United Kingdom. The cooperative spirit and the constructive suggestions of the ETO Surgical Consultants is acknowledged with appreciation. It has been a contribution to the persistent endeavor to improve forward surgery.

VII. DENTAL.

The present Dental Surgeon of the First U. S. Army having been in this theater only nineteen days of the year covered by this report, it is, by necessity,

compiled from records, observations and notes of the former Dental Surgeon and others. The numerous activities, the almost continuous shifting of units and the frequent changes in the assignment of personnel precludes any continuity in a report upon any certain group or organization. This report, in addition to statistics of dental personnel, contains observations of events and circumstances common to the Dental Service of all Armies of the European Theater.

Credit should be given to the great change in attitude of line officers in that they enforced the POM dental requirements for their men, and quite often exceeded them before leaving the United States and thereby kept everyone dentally conscious. This pressure has reduced emergency treatment almost to zero.

Personnel:

The dental officer personnel as a whole is satisfactory, adequate and well qualified. Some of the officers assigned to maxillo-facial surgery have had very limited experience. Others are constructing complicated apparatus far beyond that necessary to make the patient transportable, rather than giving sufficient attention to routine post-operative care. These conditions have been corrected to a great extent and allowed to continue where an operator of long experience and proven skill is found. The treatment as prescribed by the Office of the Chief Surgeon, ETOUSA, is followed in general.

The officer personnel consists of: Colonel - 1, Majors - 21, Captains - 306, 1st Lieutenants - 17.

The present grades and ratings for enlisted dental laboratory technicians (067) should be higher as many experienced technicians are concealing this fact because of higher ratings as clerks and truck drivers, i.e., (Sgt. Hunt, 460th Amphibious Truck Company).

Supplies and Equipment:

Some difficulty has been experienced in supplying the Army with certain prosthetic supplies i.e., (artificial stone, 18 gauge round wire, and Impression material) and some minor items but this situation has cleared up to a great extent with the opening of new ports and at present is satisfactory.

The T/O & E to meet the prosthetic requirements is entirely inadequate. A recommendation was made on 20 November 1944 for the assignment of one mobile Dental Laboratory with trained personnel, to each Division, two to each Medical Group, and one to each Corps with five prosthetic teams for assignment by Army Headquarters as needed in hospitals under Army control. There are, at present, three mobile dental laboratories operating efficiently as a Central Dental Laboratory in a back area; one incomplete, now being re-equipped, in reserve at Army Medical Supply; and two, on loan from Comm Z in operation, in addition to four converted German vehicles with divisions which have augmented their Chests No. 61 and 62 with captured German equipment. A sufficient number of trained personnel is not provided or available within the Army to operate all Chests No. 61 and 62 or the Mobile Dental Laboratories on hand. Some type of electric lathe should be provided for these prosthetic chests as the present hand lathe is entirely inadequate for any large volume of work.

The most serious deficiencies noted in the Chest No. 60 is some type of a Lamp Operating, and a No. 9 matrix retainer with bands.

Considering the changing military situation, the conditions under which dental personnel work, and replacements coming into units, the standard of dental work both in quality and quantity is satisfactorily maintained.

VIII. VETERINARY.

Planning Phase:

The first part of the year, prior to the assault on 6 June, was devoted to planning. The various responsibilities of the Veterinary Service in connection with pending operations were considered. Some were problematical. Planning covered the following:

Inspection of food supplies: Information was obtained from the Army Quartermaster on types of rations to be used during tentative periods. Possibility of local procurement of food supplies on the continent was considered, including necessity of performing ante mortem and post mortem inspections on animals to be used for food for troops. Inspection of captured food supplies was anticipated. The possibility of being called upon to inspect food supplies contaminated by chemical warfare agents and to supervise decontamination of same was also considered.

Care of animals: It was known that guard dogs and pigeons would be used. Time planned for their arrival on the continent was not known. Plans were made in regard to caring for these dogs and birds, including feeding, housing, etc. The possibility of having captured horses and wounded and diseased civilian livestock to provide service for was also considered. It was recommended by the Army Veterinarian to G-5 of Army that a Veterinary Officer be included in their section, but this recommendation was not favorably considered.

Training: A short course was held for all Veterinary Officers of the command at Army Headquarters during the period 6 to 11 March 1944, for the purpose of discussing various duties which they might be charged with during forthcoming operations. This course included discussions on diseases of livestock on the continent, demonstration and application of ante mortem and post mortem inspection of food animals and processing of captured horses.

Personnel: Due to the changes made in Tables of Organization during the year 1943, which eliminated the Veterinary Officers from headquarters of Corps, Infantry and Armored Divisions, it complicated the problem of planning. On 1 June 1944, there was a total of eight Veterinary Officers with units of this command. Two (2) were with Armored Divisions, which had been authorized to continue to operate under former Tables of Organization. Two (2) were with Infantry Divisions and had been reported as being in excess of Tables of Organization. There being no position vacancies within this command or in other commands under ETOUSA Headquarters, they were authorized to remain with their Divisions. One (1) officer was assigned to a Pigeon Company and one (1) to the Army Medical Laboratory. It was questionable whether officers who were in excess of Tables of Organization would participate in the operations.

Equipment: Although not authorized by Tables of Equipment, it was requested that Veterinary Officer and NCO kits be made available in the Army Medical Depot for all Veterinary personnel. It was also requested that three (3) each of Veterinary Chests 80 and 81 be made available for issue as authorized by the Army Veterinarian. An effort was made to equip all officers with Meat and Dairy Inspection Cases. The Army Veterinarian was also present at the conference when plans were drawn up for veterinary equipment and supplies to be made available to civilian Veterinarians through Civil Affairs channels.

Assault Phase:

Inspection of food supplies: During the first ten (10) days of operations, "C" and "K" rations were used for troops. Some "5 in 1" and "25 in 1" supplement to "5 in 1" ration was available for use in hospitals. Class I depots were established at the two beaches. A considerable amount of "25 in 1" supplement to hospital rations were damaged and required overhauling. This ration, consisting largely of fruit juices and canned milk, was not properly packed for such an operation. "10 in 1" rations started coming in about D + 15, followed by "B" type rations and finally "A" type rations were brought in about D + 35. Cold storage facilities were found at Isigny, France and Le Vey, France, for storage of perishable meats, meat foods and dairy products. Refrigerated trailers were also used for temporary storage and for distribution of such supplies. As the troops pushed inland, truckheads were established to supply troops in forward areas. Arrangements were then made for the Veterinary Officers from the 10th Medical Laboratory and the 282nd Signal Pigeon Company to inspect food supplies at the laboratory. At the request of the Army Quartermaster, food supplies of both animal and non-animal origin were inspected by the Veterinary Service. Veterinary Officers with Divisions checked food supplies at their respective breakdown points. In addition to the above mentioned rations, enemy food stores including fresh chilled beef, frozen pork sides, fresh butter, cervelat style sausage, frozen fish fillets and a large variety of canned and dehydrated foods were captured after the fall of Cherbourg. These supplies were inspected and a considerable amount was issued to troops. The balance was turned over to AG 60 to be salvaged. Due to the limited amounts of fresh frozen meats available through the Quartermaster, some troops purchased cattle for slaughter. Arrangements were made for a Veterinary Officer to perform ante mortem and post mortem inspections on these animals. There were also a number of wounded cattle which were salvaged for food subject to Veterinary inspection. The question of purchasing surplus dairy products in the Normandy area was also brought up, but after a thorough investigation it was recommended that no such purchases be made for the following reasons:

Cattle are not routinely tested for Tuberculosis or Brucellosis.

Milk is not routinely pasteurized. Only cream, to be used for butter is so treated.

Equipment in most dairy plants visited was found to be in a poor state of repair.

Due to heavy traffic on highways and lack of civilian transportation, only about 25 to 30 percent of milk produced on farms was delivered to plants for processing. The balance was processed on farms under varying sanitary conditions.

Care of animals: It was recommended to G-4 and the Army Quartermaster that all horses and cattle captured from the enemy be concentrated in specified areas for processing and identification before being released to civilians through Civil Affairs Detachments. This recommendation was never approved and such animals were issued without any such processing. Approximately 1136 horses were released to civilians through Civil Affairs Detachments. Many other stray enemy horses were collected by civilians without reports being made. There are no records to show number of cattle captured and released to civilians. Army Guard Dogs arrived on the continent with Ordnance Depot Units during August 1944. Five teams with a total of 39 dogs were received during this phase. Animals were inspected by Veterinary Officers of this command shortly after their arrival and units to which they are attached were notified where Veterinary Officers could be contacted in cases of emergency. In some areas, Veterinary Officers of the Ninth Air Force Service Command assisted in providing service for these animals. Arrangements were also made with the Army Quartermaster for suitable rations to be issued for them. There were no diseases prevalent among these animals. Veterinary Officers of this command were frequently called upon by G-5 Sections of their units or Civil Affairs Detachments to provide Veterinary service for wounded civilian livestock. There are no records to show total number of such animals treated. It was estimated that casualties ran from 5 to 10 percent among animals in different areas in Normandy. Non-salvageable animals were destroyed to terminate suffering. Where civilian Veterinarians were found, they were provided with supplies needed to carry on their practices insofar as possible. Civilian Veterinarians were inadequate in number to meet demands for services. Captured supplies were issued in some instances. They were informed of supplies and biologics available from Civil Affairs Detachment lists. It was interesting to find that there were no requests made for Anthrax vaccine or Blackleg aggressin and no outbreaks of these diseases were reported in the Normandy area. One (1) Signal Pigeon Company arrived on the continent in July 1944. Pigeons were kept in portable lofts. Feed was imported from the United States. The Veterinary Officer assigned to the unit rendered Veterinary services. Paratyphoid infections, coryza, and conjunctivitis were the prevailing diseases. A program to vaccinate all dogs acquired by units for mascots and by individual members of the service against rabies was started in July but had to be discontinued due to shortage of vaccine.

Personnel: Of the eight (8) Veterinary Officers assigned to units of this command at the time of the assault, only six (6) arrived on the continent. The two (2) officers with the Airborne Divisions did not accompany their units.

Equipment: During this phase, the only Veterinary equipment available was that which was brought along by individual officers. Most of them had Meat and Dairy Inspection Cases and Veterinary Officer's Kits. Captured Veterinary supplies were negligible. Large quantities of Anti-Tetanic Serum was furnished to civilian Veterinarians upon request. Most of this product was furnished from captured supplies. Civilian Veterinarians, requesting Veterinary supplies, were investigated to determine whether they were recognized practitioners.

Pursuit Phase:

Inspection of food supplies: During this phase, it was very difficult to maintain contact with Veterinary Officers of the various unit and to cover

inspection of all food supplies because of frequent changes of locations of units and installations. Field rations were used by most of the combat troops. Rations were issued from temporary railheads, from QM Class I Depots and from truckheads. Supplies were spot checked at the various installations by Veterinary personnel as arranged during assault phase. Enemy food dumps were found in numerous towns, but many of them contained canned and dehydrated items which could not be readily incorporated into the Army ration. Such supplies were released to local populations through Civil Affairs channels. Inspection of supplies released for civilian use was usually performed by civilian health authorities. Standard operating procedure for handling captured food supplies requires reports through channels to Army G-4, who notifies Army QM and Surgeon's Office. Numerous instances came to the attention of the Army Veterinarian where this procedure was not followed and such supplies were used by capturing units without being inspected by the Veterinary Service. A large store of frozen carcass beef was found at Namur, Belgium. It had been imported from Denmark by the Germans. Quality of carcasses varied from canner grade to good grade. A total of 758200 pounds was issued to Army troops. This plant was then used for storage of Class I perishables.

Care of animals: Guard Dog teams were inspected at least once each month and arrangements were made with each unit to contact the Army Veterinarian in case emergency service was required. Service was then provided from closest organization having a Veterinary Officer assigned. Since all Guard Dogs were obtained from the British, arrangements were made with the Veterinarian, Hq 21st Army Group, to evacuate dogs requiring lengthy treatment to British Veterinary Hospitals. Dogs remained in good health during this phase. Care and treatment of pigeons was supervised by the Veterinarian of the unit. Paratyphoid infections, coryza and conjunctivitis were the prevailing diseases among these birds. Very few enemy horses were captured during this phase and there were not many requests for treatment of wounded civilian livestock.

Personnel: Strength of Veterinary personnel with command remained the same and there were no changes in duty assignments.

Equipment: No additional equipment was received through supply channels and no Veterinary equipment was captured. Equipment was adequate for duties being performed.

Attack of zone defences (Including winter warfare):

Inspection of food supplies: Food supplies consisted of various types of Quartermaster rations supplemented by fresh fruits and vegetables. No captured supplies were inspected during this phase. A large Class I Army Railhead was established for receipt of all food supplies except perishables. A Class I Depot was also established. Operational rations were retained at the railhead and issued to truckheads directly from this installation. Type "B" rations were stored and issued at the depot. Perishables were stored at the large refrigeration plant at Namur, Belgium, and hauled directly to truckheads in refrigerated trailers. There were usually six (6) Army truckheads in operation. A recuperage section was set up at the Army railhead where all damaged supplies and those suspected of being deteriorated were inspected by Veterinary personnel to determine proper disposition. Army truckheads were inspected by a Veterinary Officer once

each week. Inspection of supplies in division and separate unit breakdown points was covered by Veterinary personnel where available. In units having no Veterinary personnel, this responsibility was assumed by other officers of the Medical Department. Heavy rainfall during this period made protection of supplies a serious problem. No closed warehouses were available for storage. Dunnage, tents and tarpaulins were difficult to obtain. There was some loss of food supplies caused by contamination and deterioration due to exposure to weather. Damage due to freezing has been slight.

Care of animals: Dogs were inspected at least once each month. Each unit was notified where emergency Veterinary Service could be obtained. Health of dogs continued to be good. One (1) Quartermaster War Dog Platoon of twenty-four (24) dogs was received from the United States during this period. One (1) Sergeant, MD (VS) is attached to this team for supervision of care and treatment of minor conditions. The unit was informed of location of nearest Veterinary Officers who could be contacted in case of emergency. Sixty (60) horses, draft type, were obtained by 9th Infantry Division during this period for the purpose of packing in supplies and bringing casualties out. Thirty (30) of these animals were obtained by local requisition and thirty (30) were horses which were captured. The captured horses were badly infested with ringworm. Some of these animals were used for a short period but with improved weather, they were disposed of. The Fourth Infantry Division requested riding horses for their command. Sixteen (16) were obtained by local requisition and sixteen (16) were procured through the Army Quartermaster, who obtained them by purchase on reverse lend lease. These animals were only used for a short period and were then turned in to the Army Quartermaster, where they were held for reconditioning and disposition. Nine (9) were returned to owners before the end of the year. Forage was obtained from captured supplies and by requisition. Veterinary Service was provided by the Division Veterinarian, 9th Infantry Division, and the Army Veterinarian. Three (3) outbreaks of Hoof and Mouth Disease were investigated during the period. Two outbreaks were confirmed in Southern Belgium and Luxembourg. Outbreaks affected both cattle and hogs. The infection did not seem to be very virulent and mortality was reported to be low. Control measures were taken over by local health authorities. Disinfectants were requested and furnished from Civil Affairs Medical Supply Depot. Hoof and Mouth Disease Serum, which was requested by local Veterinarians, could not be obtained. It was reported that serum had been used during the German occupation with good results in checking spread of this disease. Destruction of infected animals and contacts is not practised. Quarantine of infected premises and disinfection are the only control measures used. Infected animals are given symptomatic treatment. An outbreak of Rotlauf Disease (Swine Erysipelas) was reported in Luxembourg, 540 hogs being affected. This outbreak was controlled by use of serum, which was obtained from a laboratory in Brussels, Belgium. All control work was performed by civilian Veterinarians. It was reported that all livestock disease control work during the German occupation was supervised by the German Army officials. No requests were received for treatment of wounded civilian livestock during this period.

Personnel: The Veterinary Officer from the 262nd Signal Pigeon Company was assigned as assistant to the Army Veterinarian and placed on detached service at the Army Railhead and Depot. His enlisted assistant from the Pigeon Company was also placed on detached service at these installations. The Veterinary Officer from the 10th Medical Laboratory was detailed as Army Truckhead Inspector. Two (2) Division Veterinarians were lost by transfer during this period. One sergeant MD (VS) arrived with the War Dog Platoon which was assigned.

Equipment: Two (2) Veterinary Chests No. 80 and one (1) Chest No. 81 were received by Army Medical Supply Depot during this phase and were available for use by units which were using horses. Other equipment was adequate for duties being performed.

Enemy counterattack phase:

Inspection of food supplies: Continued as during previous phase. Sanitary inspection of Army QM Bakeries was also taken over by the Veterinary Service at the request of the Army Quartermaster.

Care of Animals: Units with Guard Dogs and War Dogs were visited in new locations and notified where Veterinary Service could be obtained. Two (2) units abandoned kennels and to kennel dogs in buildings until new houses could be built. Health of dogs continued good. Horses from Fourth Infantry Division, which were being cared for at a Quartermaster Salvage Depot, were left temporarily under civilian care. These animals remained in good condition during the period.

Personnel: The Veterinary Officer assigned as assistant to the Army Veterinarian was transferred back to the Pigeon Company, but will continue to carry on inspection of food supplies at the Army Class I Railhead and Depot. In addition to this duty, he will assist the officer from the Medical Laboratory in inspection of Army truckheads. Inspection of Quartermaster Bakery units is being handled by these same officers. One Veterinary Officer was gained during period by transfer.

Equipment: No equipment was lost or acquired during this period. There was adequate equipment for duties being performed.

IX. NURSING SERVICE.

January and February of 1944 was a period of indoctrination for First U. S. Army nurses. Emphasis was placed upon the importance in preparation of adequate supplies, teaching enlisted men nursing technics, conservation of goods, duty assignments, and adjusting personalities to field conditions.

A list of minimal supplies to be prepared and kept available at all times was compiled by the Chief Nurse of the 128th Evacuation Hospital, 1st Lt. Mary Ann Sullivan, N-744015, ANC. A copy of this list was given to each Chief Nurse to be used as a guide. (See attached copy). Two (2) hospitals which had seen service in NAFOUSA and Sicily, the 91st and 128th Evacuation Hospitals, were set up with their Operating Room and Central Supply Room completely equipped. This afforded Operating Room Supervisors, Chief Nurses, and Chiefs of Surgical Service an opportunity to make adjustments or changes in the proposed set-up of their own hospitals. This was of particular importance to these Chief Nurses and Operating Room Supervisors who had never been on maneuvers.

In March, the Nursing Sub-Section was established in the Office of the Army Surgeon. Major Esther R. McCafferty, ANC, reported for duty. The duties of this Sub-Section were defined as follows:

Supervise the activities of members of Army Nurse Corps assigned to First U. S. Army units.

Maintain close liaison with Chief Nurse, European Theater of Operations, to effect necessary interchange of personnel.

Inspect First U. S. Army hospital units to insure the maintenance of high degree of efficiency in the Nursing Service.

Check monthly reports of Army Nurse Corps.

Make suitable recommendations to the Surgeon, First U. S. Army, as regards assignment, reassignment, transfer, etc., to the end that the Nursing Service may be kept at a high point of efficiency.

A conference of First U. S. Army Chief Nurses was held on the 22nd of March outlining the policies of the Army Surgeon, as pertained to First U. S. Army nurses. These policies were:

The officer status of the Army Nurse.

The importance of superior bed-side nursing.

The Army Nurse Corps officers part in teaching enlisted men.

The necessity for physically and professionally qualified nurses in First U. S. Army units.

Short courses of instruction in anesthesia, operating room, Central Supply Room, field transfusion sets, narco-therapy, and diet kitchen were planned. This instruction carried on through April and May. One hundred and ninety-one (191) First U. S. Army nurses attended these courses given in selected Station and General Hospitals.

Several conferences with the Army Quartermaster were held during April, the purpose of which was to have the necessary post exchange and clothing items for nurses. Maintenance units of nurses clothing set up by the ETO QM were incorporated in the general army planning to arrive coincidental with the normal clothing maintenance for men.

The plan devised by Captain Charlotte E. Niemeyer, N-730286, ANC, Chief Nurse of the 3rd Auxiliary Surgical Group, for the utilization of surgical group nurses has contributed immeasurably to the efficiency of First U. S. Army field hospitals. Captain Niemeyer determined by personal observation and examination which nurses were qualified Operating Room Supervisors. These nurses with three (3) other comprising an Operating Room Nurse Team were charged with the responsibility of the Operating Room and Central Supply Room of each field hospital unit, thus permitting the six (6) nurses assigned to the field hospital unit to be solely responsible for patient care. During April and May, the nurses of the 3rd Auxiliary Surgical Group devoted their time to the field hospitals to which they were to be attached - making supplies, sewing, aiding in the teaching of enlisted men, and in general familiarizing themselves with this type organization. These Auxiliary Surgical Group Nurses have remained with the Hospital Units, and without losing their identity have become a part of the field hospital organization.

Hospital commanders were notified of the availability of physically fit and professionally qualified nurses to replace those in First U. S. Army units not entirely fit for, or who did not wish, field duty. Altogether, ninety-five (95) nurses were replaced. These replacements gave each evacuation hospital at least one (1) graduate nurse anesthetist and ten (10) qualified operating room nurses.

An endeavor was made to find a satisfactory solution to the nurse reinforcement problem. Conferences with the First U. S. Army AG Classification Section and Ground Force Replacement System were not entirely successful. A pool of fifteen (15) nurses was established at a hospital in Southern Base Section. This pool functioned efficiently for units under strength prior to embarkation. However, it was not effective for the prompt replacement of nurse personnel on the continent.

At 1550 hours on 10 June 1944, the 45th Field Hospital nurses and 128th Evacuation Hospital nurses arrived on Utah Beach, and at 1600 hours, nurses of the 42nd Field Hospital and 91st Evacuation Hospital arrived on the same beach. Nurses of the 45th Field Hospital were the first Army nurses to do duty in France. These nurses waded ashore in waist deep water and were on duty twenty (20) minutes after arriving at a field hospital unit other than their own. They volunteered their services and went directly on duty.

The first nurses to arrive on Omaha Beach, those of the 51st Field Hospital, disembarked 2300 hours, 11 June 1944. They walked from the beach to one of the hospital units of the 51st Field Hospital situated along side an airstrip on the promontory overlooking the beach. Medical officers and enlisted men in these field hospitals which had been functioning since D + 1 were overjoyed to see the nurses. The technicians had been doing a superior piece of work - nevertheless, the professional orderliness apparent when nurses are present was lacking, and it was only a few hours until these field hospitals assumed the appearance of efficiency and organization noted in a unit having nurse personnel. Prior to the arrival of the nurses, the 42nd and 45th Field Hospitals had been functioning entirely on sterile supplies prepared and packed in the United Kingdom. The time and effort devoted to this phase of planning had paid dividends.

On 2 July, nine (9) German nurses arrived at the 45th Evacuation Hospital. These nurses were to be returned to the German lines. They did not know until after their arrival at this hospital they were to be returned. Needless to say, they were overjoyed. These nurses appeared to be well fed. Their clothing was part civilian and part military, however, all of it was of good quality. All wore the Nazi Ribbon for meritorious service which they very proudly displayed. Captain Eva H. Malin, N-765215, ANC, Chief Nurse of the 45th Evacuation Hospital, had hot water, soap, towels, powder, and lipstick, all ready for the nurses to use. A very special meal had been prepared and it was thoroughly enjoyed. The Commanding Officer, Colonel R. P. Johnson, escorted the nurses through the hospital. They had an opportunity to observe supplies and equipment and talk to German patients and prisoners. They were most curious about the care and treatment given German patients and prisoners in England. They also expressed amazement at the size and amount of equipment and supplies.

After seeing the hospital, the nurses were transported in a closed ambulance to Bellerey. Here, there was a delay of approximately two (2) hours while

final arrangements were made with the German officers to whom they were to be returned. At approximately 1800 hours, they were taken through the lines at Damont.

The first nurse reinforcements, eight (8) in number, arrived on the continent 14 July. At this time First U. S. Army was short eight (8) nurses and Third U. S. Army units assigned to First U. S. Army were short nine (9). With hospitals operating above and beyond normal capacity, it is apparent such a shortage could seriously impair the Nursing Service. Advance Section, Communications Zone, was helpful in supplying nurse personnel upon call, but owing to the opening of General Hospitals and establishment of Base Sections, this personnel was recalled without notice which, in many instances, impaired the nursing service of Army units. This, of course, caused a great deal of inconvenience. Recommendations for a pool of ten (10) nurses to be maintained in the Army area were submitted on 20 July. The plan, as such, has not materialized. However, ten (10) nurse reinforcements came into the Army area periodically and are attached unassigned to a hospital having adequate accommodations, and are placed on duty until permanently assigned.

Early in July, a policy was set forth whereby First U. S. Army nurses would not leave the hospital area singly or in groups unless accompanied by an officer or as passengers in a vehicle. This policy has remained in effect, and has contributed greatly to the absence of "incidents" among First U. S. Army nurses.

The Bronze Star Medal was awarded for the first time to a First U. S. Army nurse on 2 August 1944. 2nd Lt. Alice S. Miller, N-767046, 67th Evacuation Hospital, received this award for "in addition to her duties of caring for 400 seriously wounded patients from 19 June to 9 July, she planned and constructed a traction device of otherwise worthless material which helped to make her patients more comfortable."

At some time during August, each field unit hospital was in bivouac at either Senonches or La Chapelle. These service areas were near enough to Paris to permit most of the nurses to visit the city. This was the first real rest period the nurses had since D + 4.

In September, many of First U. S. Army hospitals were in the vicinity of Eupen. For the first time since the invasion, First U. S. Army nurses were living in buildings instead of tents. A well stocked nurses sale store was provided in this area, and a beauty shop was placed "on limits" in the town proper.

On the 28th of September at 1100 hours, 1st Lt. Agatha P. Raus, N-760384, ANC, 24th Evacuation Hospital, was wounded as a result of strafing by an unidentified plane. Lt. Raus was admitted to the hospital with a fracture, compound, complete, mid-right clavicle, and fracture, compound, complete, right radius. At the time of the injury, Lt. Raus was lifting a pan of instruments from the sterilizer while on duty in the Operating Room. Lt. Raus received the first Purple Heart awarded to a First U. S. Army nurse.

On the 15th of October, a letter from this office was sent to hospital commanders recommending 50% of the T/O for 2nd Lts. be given battlefield promotions. This was one of the greatest single contributing factors to the high morale of First U. S. Army nurses.

One hundred and sixty (160) ETO-type woolen battledress came into the Army area on 20 October. This three-piece suit comprising jacket, skirt, and slacks was placed on sale with priority for Field Hospitals and Auxiliary Surgical Group nurses. This was the first uniform made available to nurses in field units which was warm, smart, and practical.

2nd Lt. Frances E. Slanger, N-725560, ANC, died of wounds at 2320 hours, 21 October, from enemy artillery fire in the vicinity of Sleenborn, Belgium. Lt. Slanger was buried in the American Cemetery in the vicinity of Henri Chapelle, Belgium. 1st Lt. Gladys M. Snyder, N-752475, 3rd Auxiliary Surgical Group, received a shell fragment wound of the right thigh, and two (2) other nurses received minor injuries at this time.

Early in November, a list was compiled of all First U. S. Army nurses thirty-eight (38) years of age and over, together with all data pertaining thereto. This list was submitted to the Office of the Chief Surgeon, European Theater of Operations, for the purpose of rotating these nurses to Communications Zone units.

On 15 November, the fourth conference of First U. S. Army Chief Nurses was held at the 45th Evacuation Hospital in Eupen. All Principal Chief Nurses, Assistant Chief Nurses, and Platoon Leaders were present. The purpose of this conference was to ascertain the status of clothing and Post Exchange supplies for nurses, to re-emphasize the importance of bedside care for patients, and to encourage greater efforts toward standardization within units.

December was not a month most First U. S. Army nurses will look back upon with very much pleasure. On the 17th and 18th of December, nurses of the 44th, 67th Evacuation Hospitals at Malmedy, the 102nd Evacuation Hospital at Ettelbruck, and the 47th Field Hospital at Weims, lost all or a part of their clothing and personal property due to enemy action and civilian looting. The nurses of Hospital Unit #1 of the 47th Field Hospital at 1000 hours on 18 December were confronted by an enemy officer and enlisted men. These nurses were ordered to leave the hospital area, and on their way to a General Hospital were subjected to enemy strafing.

There was very little, if any, Christmas festivity for First U. S. Army nurses. Those on duty with patients had some incentive to be cheerful, those others who had lost their Christmas packages along with practically everything they possessed did their best to make each other happy in a true American way.

Nurses in field units are almost without exception proud to be in such units. There are, however, a few items which could be added to the T/E of field units which would certainly make life in this sort of unit less vigorous. A blister bag and an immersion heater for the nurses area would mean the difference between convenience and comfort and what amounts to drudgery when it is necessary to walk fifty to one hundred yards to the mess tent to obtain hot water and drinking water. A recreation tent for officers and nurses should be provided - at all times - not only when the hospital isn't busy and a pyramidal tent can be spared. There is no provision for a mess tent in a Hospital Unit of the Field Hospital. All summer long, personnel of these organizations ate from mess kits outside in the heat, sun, rain, and cold. This seems unnecessary and unwarranted. A cot, which when unfolded would be twenty-five to thirty inches off the floor instead of eighteen inches as the present ones are would not require any more transportation space and would certainly

lessen the fatigue caused by constant bending and kneeling as is now necessary in using the Army cot. Any one of these items in the T/E of a field unit would make a difference to the Army Nurse Corps officer serving in a field or an evacuation hospital.

Attached is a report on Awards and Decorations, Promotions, Visits, and Personnel Leaves regarding First [illegible] Army nurses.

X. VENEREAL DISEASE.

Venereal Disease Control for the period 1 January 1944 to 5 June 1944.

Coordination of Activities in the United Kingdom.

An attempt was made to coordinate venereal disease control activities in Army organizations by emphasizing the following points to unit venereal disease control officers:

Adequate distribution of mechanical and chemical prophylactics and provision of prophylactic stations in all dispensaries.

Indoctrination of the men in correct usage of the condom and V-packette.

The use of sub-VD Control Officers in organizations where VD rates were high.

Obtaining essential data for the individual report of venereal disease, TSGO Form 302 MD.

Repression of prostitution (This was only applicable through use of "off limits").

Thorough treatment of duty status patients with gonorrhea.

Reduction in passes whenever necessary.

The Planning Phase for Continental Operations.

The Army Venereal Disease Control Officer attended a conference on venereal diseases at the Professional Service Division, Chief Surgeon's Office, ETO, on 26 January 1944. At this meeting, policies applicable to use on the continent were drawn up by representatives of the Service, Ground and Air Force.

By means of education, emphasis should be placed on the value of continence in the prevention of venereal disease.

A stringent attitude should be developed against the legalization of prostitution.

Case finding - This should be carried out at the earliest possible opportunity.

Preventive Measures - There would be no punitive measures except possibly when concealment of venereal disease was apparently attempted.

Diagnostic facilities should be made available as far forward as possible.

Treatment of gonorrhea should be instituted immediately, the smear being sent back for diagnosis.

Duty status treatment of gonorrhea should be used whenever possible.

Penicillin should be used for the treatment of sulfonamide-resistant gonorrhea.

In order to have a suitable number of prophylactic stations available in Army territory, it was decided to have personnel trained to staff a total of 56 stations. Each of two medical groups concerned trained 54 men in the technique of administering prophylaxis. Each team was to consist of 3 men. Directions as to the steps in giving prophylaxis and records to be used in these stations were distributed to both medical groups. The necessary supplies for such stations were obtained by the medical groups from medical supply depots.

The Army Provost Marshal appointed a member of his section as Vice-control Officer for Army territory. It was agreed that activities concerning the placing of brothels off limits would be coordinated through this office.

The Civil Affairs Section, Headquarters, First U. S. Army, and the Surgeon's Office agreed on an SOP for case finding in occupied territory.

The venereal disease rates per thousand per annum for the first five months of 1944 are as follows:

January	15.4
February	15.6
March	15.5
April	17.1
May	17.5

Continental Phase - Period 6 June 1944 - 31 December 1944.

The following policies were pursued on the continent:

Vice surveys of all Army territory were conducted in collaboration with the Army Provost Marshal's Office.

All Civil Affairs detachments were contacted in order to ascertain the status of registered or clandestine brothels, the number of prostitutes in the area, and the procedure used in the treatment of civilians with venereal disease. Whenever brothels were found to be in operation, a recommendation was made to the Army Provost Marshal to place these houses off limits.

Regular visits were made to Corps Surgeons to discuss pertinent venereal disease control problems. Some of the divisions were visited, although their problems continue to be minor in character because of the tactical situation.

Periodic visits were made to Surgeons of various Army troops, especially those organizations in which there was a high venereal disease rate. Pertinent problems were discussed with the Commanding Officer and his Surgeon. Some of the various suggestions offered are as follows:

Increase in educational program, particularly to small groups of men.

Use of sulfathiazole prophylaxis.

Special emphasis was placed on obtaining epidemiological data of value and follow up on this information by the unit venereal disease control officer in so far as was practicable.

Recommending the immediate placing of all suspicious "houses and cafes" off limits if it were thought that they served as sources of venereal infection.

Erection of 125 roadway venereal disease poster signs with a motto such as "Remember Soldier, gonorrhea and syphilis are easy to get".

Initially, information gathered from ETOUSA Form 302 MS was turned over to respective Civil Affairs detachments in order that the individual might be apprehended and examined for venereal disease. Later, an SOP was suggested by the Surgeon's Office to the Public Health Division, G-5, Army. This was concurred in by the latter section and distributed to all Civil Affairs detachments. The contents of the letter are as follows:

* * * * *

726.1 (E) 18 November 1944

SUBJECT: Standing Operating Procedure for Coordination of Venereal Disease Control Procedures with the Office of the Army Surgeon.

TO : Corps, Division and Detachment Military Government Officers, and Detachment Civil Affairs Officers.

1. To facilitate execution of established policies for Venereal Disease Control, increased coordination of Civil Affairs public health procedures is desirable with those control procedures utilized by the Army Surgeon. This will be accomplished as follows:

a. Reporting of Cases. The Army Surgeon's V.D. Control Officer will submit to the CO of the detachment the name, and address of every prostitute who has been reported as a source of V.D. infection, acquired by soldiers in the area of the Detachment's jurisdiction. The Detachment Civil Affairs Officer for public health will then present this information to the local health officer,

or Burgomeister. He will request that the named prostitutes, or suspected source of infection, be placed in custody, and examined for the presence of venereal infection, as authorized under Belgian laws.

Medical Examination of Venereally Infected Persons is authorized, and is required by Belgian law, for all persons named as probable or suspected sources of venereal disease. Under present laws prostitutes or others may be released after one examination, if the findings show no infection. It is the desire of the Army Surgeon that these individuals reported as V.D. "Suspects" should be given a total of three examinations on each of three consecutive days before release, and that release from custody be given only if all three examinations are negative. Civil Affairs Officers will therefore endeavor to enlist the cooperation of the civilian authorities to accomplish this procedure.

Results of Clinical Examination, whether negative or positive, will be requested from the local health officer after the third successive examination. The health officer will be requested to submit the findings of the examination of the reported suspect, and the action taken with regard to compulsory treatment, or release from custody. Such information will be requested within five days after prostitutes, or other suspected individuals, are reported to the civilian authorities. This information will be forwarded as a separate report to the Army V.D. Control Officer, through the Public Health Department, G-5 First United States Army, immediately after receipt by the detachment.

2. A specialist for assisting detachment Civil Affairs Officers, and for coordinating civilian venereal disease control with the Army control program, will be provided by the Public Health Department of G-5, this headquarters. He will work closely with the Army Venereal Disease Control Officer, and will assist detachment Civil Affairs Officers in accomplishing the foregoing instructions.

* * * * *

Twenty-one prophylactic stations were established by the Army Surgeon's Office. These stations gave approximately 2800 prophylactics from the period 1 July 1944 to 31 December 1944.

A list of all prophylactic stations in Army, Corps, and Comm Z territory was distributed to Corps, Division, and Separate Unit Commanders.

Several issues of the Medical News, the bulletin of the Surgeon's Office, First U. S. Army, contained notes on venereal disease. Particular emphasis was placed on the obtaining of pertinent data for the MTOBA form 302 MD. Unit Surgeons were also requested to give information on the monthly sanitary report in regard to the following items:

Whether or not there are brothels in the vicinity or any form of activity in prostitution.

Note on control measures taken if there are isolated instances of activity in prostitution.

Availability of mechanical and chemical prophylactics in addition to the regular dispensary prophylactic station.

Note on control measures taken by unit venereal disease control officers in collaboration with the Provost Marshal or Civil Affairs Office in the locality. The latter office should be consulted in regard to prostitutes who may be known or suspected as sources of contact.

Intensive control campaigns were carried out in Liege, Verviers, and Charleroi with the military police and Civil Affairs Detachments. All houses of prostitution and "suspicious cafes" were posted off limits. In Liege, during the two month period that this city was under Army jurisdiction, over 100 brothels and cafes were posted off limits and checked day and night by military police of the vice squad. In Verviers, and Charleroi the same procedure was carried out.

The venereal disease rates per thousand per year for the month of June 1944 - December 1944 were as follows:

June	-	8.5
July	-	3.6
August	-	1.9
September	-	18.1
October	-	26.6
November	-	23.2
December	-	23.2

The venereal disease rates per thousand per annum, period 1 January 1944 - 31 December 1944, in white and colored troops:

January	White	15.4	July	White	3.1
	Colored	12.6		Colored	29.8
	Aggregate	15.4		Aggregate	3.6
February	White	14.9	August	White	1.6
	Colored	58.3		Colored	19.5
	Aggregate	15.6		Aggregate	1.9
March	White	14.8	September	White	1.6
	Colored	47.7		Colored	150.4
	Aggregate	15.5		Aggregate	18.1
April	White	15.9	October	White	18.8
	Colored	57.9		Colored	181.3
	Aggregate	17.1		Aggregate	26.6
May	White	15.7	November	White	18.5
	Colored	96.6		Colored	162.9
	Aggregate	17.5		Aggregate	23.2
June	White	8.0	December	White	16.5
	Colored	36.8		Colored	175.9
	Aggregate	8.5		Aggregate	23.2

During June, July, and August, all towns were off limits. The territory covered during these first three months consisted mainly of small towns and villages. In September and October, many soldiers had opportunities to go through large cities, where brothels were operating and there were many "Street Walkers". During the month of October, 254 new cases of venereal disease were contracted in Paris. The November rate was slightly lower than that of October, with the majority of cases coming from Liege and Verviers. Houses of prostitution were not a great problem because all known houses were placed off limits as soon as discovered. The greatest sources of infection were from street walkers and cafe bars operating as clandestine brothels. Whenever evidence was obtained to prove that the latter was true, steps were taken by the Provost Marshal to put the place off limits. One of the biggest factors in the attempt to establish a successful control program was the utmost cooperation given by the Army Provost Marshal and G-5.

Treatment of the Venereal Diseases.

In the United Kingdom.

During the stay in the United Kingdom, all patients with venereal disease were treated in station or general hospitals, except gonorrhea cases treated on a duty status. The latter received sulfadiazine in accordance with the procedure outlined in the ETO, Manual of Therapy, 5 May 1944.

For continental operations, a venereal disease treatment center was established in the 4th Convalescent Hospital, utilizing the T/O & E of the regular detention section plus additional personnel and supplies as the occasion demanded. All key personnel were officers who had training and experience in the treatment of the venereal diseases. A portion of the Army Medical Laboratory was set up in the Convalescent Hospital to perform all necessary diagnostic procedures. This was to remain with the treatment center at all times. The following type of patients were to be admitted to the Venereal Disease center through normal evacuation channels:

Ulcerative genital lesions.

Extra - genital lesions characterized by indolence, induration and regional lymphadenopathy.

Acute inflammatory inguinal adenopathy with or without genital ulcer.

Urethritis accompanied by indolent enlargement of related lymph glands.

Sulfonamide - resistant gonorrhea, complicated gonorrhea and gonorrhea not treated on a duty status.

After several conferences with the Senior Consultant in Syphilology, Office of the Chief Surgeon, ETOUSA, it was decided to use penicillin therapy in the treatment of primary and secondary syphilis. The total dosage

per case was originally planned as 1,200,000 units but was later changed to 2,400,000 units in compliance with directions issued by the Office of the Chief Surgeon, ETOUSA.

On the Continent.

The treatment center in the Convalescent Hospital was opened during the last week of June 1944. Diagnostic and treatment procedures were established according to plan. During the month of July, all of the venereal disease patients from ADSEC were admitted, but with the establishment of ADSEC hospitals, these patients were routed to the latter for treatment.

Sulfonamide - resistant and new cases of gonorrhea not treated on a duty status were given 100,000 units of penicillin. Patients not cured by this procedure were given a second course of penicillin, dosage 200,000 units.

Darkfield examinations were performed on three successive days on all penile lesions, when indicated.

Reactions from penicillin were noted in a very small percentage of the patients and were of a mild Herxheimer type. No fatalities occurred as a result of this type of treatment.

Results from penicillin therapy were excellent. The Darkfields that were performed on positive lesions 9 - 12 hours after initial darkfield examination were negative. Lesions epithelialized in from 5 - 7 days.

In September, due to the rapid tactical situation, the personnel and equipment of the venereal disease center were transferred to the 91st Medical Gas Treatment Battalion, which acted as the treatment installation. This was for a period of approximately four weeks. This arrangement proved to be satisfactory, considering the numerous problems involved.

Total number of patients admitted to the 4th Convalescent Hospital Venereal Disease Center - 1620.

Total number of patients admitted to the 91st Medical Gas Treatment Venereal Disease Center - 182.

Total number of Spinal taps performed for diagnostic study and closing of syphilis registers - 355.

Total amount of penicillin given for treatment of syphilis - 867,400,000 units.

Total amount of penicillin given for treatment of gonorrhea - 68,410,000 units.

The Army Venereal Disease Control Officer made several visits weekly to the treatment center for the purpose of seeing patients in consultation, checking records, etc.

Patients needing further study and treatment were evacuated to general hospitals.

At the present time, arrangements are being made to begin the six month follow up of penicillin treat luetic cases, which will be given complete blood and spinal fluid study.

In August 1944, individual medical installations wer given permission to administer penicillin for gonorrhea (Air Ltr 107, 003, 25 Aug 1944). The instituting of this procedure considerably lessened the burden on the venereal disease treatment center and, at the same time, enabled the patient to remain with his organization. In the event of relapse or therapeutic failure, patients were admitted to the venereal disease treatment center for further study and treatment.

XI. NEUROPSYCHIATRIC SERVICE.

Planning Phase.

General. The plan for the operation of the Neuropsychiatric Service of First U. S. Army was derived from a study of the reports and circulars pertaining to neuropsychiatry in other Theaters of Operation and particularly from the report made by Colonel James L. Snyder, M.C., Headquarters First U. S. Army covering his personal observations of the methods used to triage and evacuate neuropsychiatric casualties by Fifth U. S. Army in Italy.

Estimate. As a basis for planning purposes, the number of neuropsychiatric casualties to be expected for the first thirty (30) days of combat was estimated at 2,500 - 3,000 for a ten (10) Division army.

Plan for Operation of First U. S. Army Neuropsychiatric Service - Battalion Level. The battalion surgeons were to conduct a triage at the battalion aid station and, in keeping with the tactical situation, were to hold mild cases for treatment within the battalion or regimental area at some designated point (kitchen area, collecting company). More severe cases were to be evacuated to the division clearing company without delay.

Division Clearing Station Level. The division psychiatrist operating at the division clearing station would examine all neuropsychiatric casualties admitted, and retain for treatment at this station, cases which offered favorable prognosis for return to duty within seventy-two (72) hours. All other cases were to be evacuated.

Army Level.

At the Army level, the Neuropsychiatric Service was to be taken out of the evacuation hospitals and concentrated in installations to be called "Exhaustion Centers". The removal of the Neuropsychiatric Service from the evacuation hospitals and the concentration thereof was done:

To avoid the possible congestion at the evacuation hospital.

To make available a greater number of beds for surgical patients.

To reduce the danger of "infecting" lightly wounded individuals with neuropsychiatric symptoms.

To allow for standardization of treatment.

To provide facilities for special procedures desirable in treatment of N.P. cases, but not necessary for surgical cases.

To eliminate the possibility of having the N.P. cases crowded out of the evacuation hospitals by a rush of surgical cases.

The 622nd Clearing Company of the 134th Medical Group was designated to operate the exhaustion center, either as a single unit or as two (2) units of platoon size, as dictated by the course of the action.

This Company was to be issued sufficient additional equipment, (tents, cots, stoves, bath units, etc) to provide 500 beds (250 in each platoon).

Additional personnel was to be attached to the 622nd Clearing Company in keeping with the planned increase in capacity as well as with the specialized mission given to this unit.

Each evacuation hospital was to supply one (1) psychiatrist and two (2) enlisted technicians on detached service to 622nd Clearing Company.

Each medical group was to provide eight (8) enlisted men in the capacity of cooks and medical technicians on detached service to 622nd Clearing Company.

The total planned increase in personnel for the 622nd Clearing Company was 8 - 10 psychiatrists and forty (40) enlisted men.

The Army Evacuation Officer arranged to have neuropsychiatric patients, evacuated by divisions, by-pass the evacuation hospitals, and to go direct from division to the exhaustion centers.

G-1, First U. S. Army, approved a recommendation which provided for the return of successfully treated patients from the exhaustion center direct to division clearing station, thereby avoiding unnecessary delay in the return to duty which is incident to the use of the replacement system for this purpose.

By arrangement with First U. S. Army Quartermaster, sufficient clothing and equipment, exclusive of arms, was to be kept at the exhaustion center so that patients being returned for duty would report to the divisions fully equipped.

Patients returning to duty with division from exhaustion centers were to be transported in vehicles of the medical groups.

Training Phase.

Division Psychiatrists. War Department Circular 290, 9 November 1943, authorized a position vacancy for division psychiatrist. However, the divisions in First U. S. Army, as of 1 January 1944, had come overseas before this Circular had been put into effect and consequently had no psychiatrists assigned as such, nor was there any pool of surplus psychiatrists from which to draw. Therefore, each division was directed to appoint a medical officer from the division medical service to act in this capacity. The officers so appointed were to be well qualified physicians and as far as possible experienced field medical officers, previous training and experience in psychiatry was desirable but not mandatory.

Medical officers appointed by the divisions are listed together with each individual's prior training and experience in the attached list. Included on the same page is a list of psychiatrists from evacuation hospitals who are attached to the exhaustion centers.

Schools.

Division Medical Officers. During the months November 1943 to April 1944 inclusive, a series of seven (7) day orientation courses in military psychiatry were given by the 312th Station Hospital for representative unit medical officers, particularly battalion and regimental surgeons of combat units.

Evacuation Hospital Personnel. The psychiatrist, two (2) nurses, and six (6) enlisted technicians from each evacuation hospital had the benefit of a two (2) weeks course in neuropsychiatry given at the 312th Station Hospital.

Division Psychiatrists. The 312th Station Hospital offered a one (1) month course in military neuropsychiatry for division psychiatrists. Each division in First U. S. Army sent the medical officer designated as division psychiatrist to the course given in January 1944. An additional medical officer from each of the divisions attended the second course which was given in February 1944.

All courses were presented in excellent and effective manner, and served particularly well in acquainting medical officers not previously experienced in neuropsychiatry with many of the problems which, later, were met under combat conditions.

Orientation in Neuropsychiatry for Line Officers.

Commanding Officer, 312th Station Hospital, (a psychiatrist), gave a series of orientation talks on "combat exhaustion" to line officers of the 28th and 29th Infantry Divisions during October and November 1943.

Several other divisions arranged for the medical officers who had completed the course in military psychiatry at the 312th Station Hospital and or the division psychiatrists to talk to line officers on the subject.

Screening of Combat Units. Division psychiatrists and unit medical officers of most of the divisions of First U. S. Army took steps to eliminate the obvious "mental cripples" from the units prior to actual combat. This procedure had to be somewhat limited in view of the policy of manpower conservation, but it

is believed that where this was carried out, it contributed to the combat efficiency of the units by reducing the incidence of combat exhaustion in subsequent operations.

Training of Exhaustion Center Personnel.

The Surgeon, First U. S. Army, designated the 622nd Clearing Company to act as the N.P. treatment unit for the Army.

Because the 622nd Clearing Company had no experience, as a unit, in caring for N.P. casualties, the psychiatrists of the 45th and 128th Evacuation Hospitals were directed to prepare and to give a series of lectures on military neuropsychiatry to the officers and men of the company.

On 24 April, a six (6) weeks training course in military neuropsychiatry was started for the officers and men of this company. This training consisted of didactic lectures, field demonstrations and actual case study. The latter was made possible by the courtesy of nearby station and general hospitals which arranged clinics for this purpose.

During this training period, a standard operating procedure was drawn up; the station as proposed was set up in the field and the personnel were assigned to sections in which they were to work during the actual operation of the "exhaustion center".

The above mentioned schools, indoctrination courses, and training measures contributed materially to the functioning of the N.P. Service of First U. S. Army under combat conditions.

Operations.

General. The build-up of the N.P. Service during the development of the Normandy beachheads, naturally, was dependant upon the time of arrival of medical units upon the continent. Three (3) phases were contemplated; initial, intermediate, and final.

The initial phase (D Day to D 4 - 5) included the period during which only division medical units were in operation. In line with the experience gained in the African and Sicilian campaigns, a low incidence of N.P. disabilities was anticipated for the first three (3) or four (4) days of the operation. The tabulation shown below includes the First U. S. Army total reported admissions for neuropsychiatric disabilities during the first five (5) days.

DAY		TOTAL N.P. CASUALTIES	RETURNED TO DUTY	EVACUATED TO U.K.
D Day	6 June	0	0	0
D + 1	7 June	4	-	1
D + 2	8 June	10	1	2
D + 3	9 June	12	1	12
D + 4	10 June	47	2	41

In line with the above estimate, it was planned to evacuate to the United Kingdom all the N.P. casualties sent to the rear of divisions, at least until the evacuation hospitals were in operation.

A slight deviation from this plan resulted from a misunderstanding in the Utah sector where it was believed that the total evacuation policy did not apply to "combat exhaustion" cases.

In consequence of this misunderstanding, about three hundred (300) N.P. cases had been accumulated in the sector on D 7 - 8. Many of these casualties had been transferred to the 42nd Field Hospital which was not adequately staffed nor equipped to receive them, and from the 42nd Field Hospital they were transferred to the beach medical installations and then transferred back to Field Hospitals or a Clearing Station. The VII Corps Surgeon designated the 649th Clearing Company, a Corps unit, to act as a holding unit for N.P. casualties to meet this problem. Most of these cases were ultimately evacuated to the United Kingdom and a few to the 622nd Clearing Company Exhaustion Center when it opened 19 June.

Intermediate Phase. This phase included the period prior to the opening of the "exhaustion centers" during which some evacuation hospitals were in operation as shown below.

128th Evacuation Hospital opened D + 5 (11 June) and received twenty-five (25) or thirty (30) N.P. patients. However, because of the hospital rapidly became greatly overcrowded by the admission of surgical cases, it was necessary to close out the Neuropsychiatric Service and evacuate the patients to the United Kingdom before indicated treatment could be completed.

91st Evacuation Hospital opened D + 6 (12 June). A total of thirty-four (34) N.P. cases were received and treated from that date until D + 16 (22 June).

41st Evacuation Hospital opened D + 8 (14 June). A total of twenty-eight (28) N.P. cases were received and treated from that date until D + 18 (24 June).

5th Evacuation Hospital opened D + 10 (16 June). A total of ninety-one (91) N.P. patients were received and treated between that date and D + 22 (28 June).

The Final Phase started with the opening of the exhaustion centers. Thereafter, the First U. S. Army Neuropsychiatric Service was complete. This service includes the work done at the combat battalion level, the division level, and the army level.

Division Psychiatric Service - Battalion Aid Level. The battalion surgeon has been the most advanced element of the N.P. service because he is the first officer who comes in contact with casualties - surgical, medical, or psychiatric. This officer can do much in the prevention of "combat exhaustion" by early recognition and treatment for 24 - 36 hours of mild or incipient cases. While the place of treatment has varied greatly between units, in general these mild cases selected for treatment forward of the division clearing station by the

battalion surgeon have been held in the vicinity of the aid station, in the kitchen area, or in some instances at the collecting company. Of course, the tactical situation determines the place of treatment and the length of time of treatment. Treatment has consisted of sedation, hot food, a chance to clean up and then explanation of symptoms and reassurance to the soldier by the surgeon, where such a procedure as the above has been carried out satisfactory results have accrued.

Division Clearing Station Level. Within the division medical service, the division psychiatrist has been responsible for the triage and treatment of psychiatric casualties at the clearing station and liaison with medical officers of forward elements on matters of psychiatry. Throughout the entire operation, the work of the division psychiatrist has been outstanding, and has definitely justified the creation of the T/O vacancy. The most important single element in the treatment of psychiatric casualties in the Army Zone is the division psychiatrist. The psychiatrist with the division is in a key spot to accomplish more than can one located to the rear, particularly in the field of prevention and treatment of all except the severe reactions. He can materially assist in the preparation of the division for combat, by eliminating those individuals who are obviously mentally unsuited for combat. In combat, he is recognized by the casualty as "one of the family" and as such can readily reenforce the soldier's identification with his unit. The psychiatrist knows the traditions and combat performance of the division in the past and the tactical situation at the present, and can understand and explain many of the etiological factors in the emotional breakdown much more acceptably. The psychiatrist knows the officers in command and can deduce from the personalities involved certain reactions upon the men they lead. In addition, because of this personal relationship with the command, his recommendations in the field of preventive psychiatry bear more weight. In general, the Division Psychiatrists, by their practical approach to problems, their adaptability to military requirements, and their common sense recommendations, have convinced line officers that they have a real contribution to make toward the success of military operations. The line officer, with few exceptions, has come to recognize the psychiatrist as a valuable Staff Officer, an individual, and not just an exponent of a school of abstract thought.

Initially, it was believed that the division psychiatrist should not keep patients at the division level who would require more than seventy-two (72) hours of treatment, however, after the first few weeks, it became apparent that another 24 - 48 hours was required in order to achieve the best results. Treatment in general was along accepted lines and included sedation for 24 - 48 hours followed by explanation of symptoms and reassurance by the psychiatrist to the patient; hot food and a chance to clean up and usually some attempt at physical reconditioning. In a few cases, sodium pentathol hypnosis was used here but this procedure is usually reserved for use at the army level.

Early in the campaign, all of the division psychiatrists functioned at the division clearing stations where, as a rule, one (1) or two (2) ward tents were set aside for neuropsychiatry and two (2) or three (3) enlisted technicians provided to assist the psychiatrist. This worked out satisfactorily in situations which were relatively slow moving and where the incidence of casualties was not overwhelming.

However, after three (3) or four (4) weeks experience, several of the divisions, notably the 29th, 35th, and 83rd Infantry Divisions and later the 9th, 28th, and 30th, on their own initiative, established installations for the care of the so-called "combat exhaustion" cases, which were separate from the clearing station. In some instances (9th, 28th and 29th), this separate N.P. installation operated in conjunction with a casual company in the division rear echelon, set up to receive, equip and orient replacements. In these three (3) divisions, "combat experienced" infantry officers and enlisted men were assigned to assist the psychiatrist especially in the rehabilitation phase of treatment. This plan has worked out well and is believed to be the one of choice because:

It provides for holding a greater number of such casualties within the division, thereby continuing the individual's identification with his unit as a soldier and avoiding the danger of over emphasis of the medical aspects of his condition.

It reduces the possibility of overloading the clearing station with this type of patients and is not as greatly affected by the tactical situation as is the clearing station which must move frequently and on short notice.

Keeps the casualty close to the front.

uch an installation was found to be the solution to the problem of the psychiatric casualties by the divisions themselves as the result of experience in combat.

<u>Neuropsychiatry - Army Level.</u> In accordance with the plan evolved prior to the invasion, one (1) army clearing company (622nd Clearing Company of the 134th Medical Group) was equipped and trained to act as a special psychiatric hospital called the "Exhaustion Center". Initially, this company provided two (2) exhaustion centers each having a capacity of 250 beds. After one week of operation, it was necessary to assign an additional company (618th Clearing Company) to this mission because of the number of psychiatric casualties being admitted. From 1 July to 31 December 1944, two (2) exhaustion centers operated by the 618th and 622nd Clearing Companies have been available. On several occasions, (July and August), additional clearing companies or platoons thereof have been attached to either or both of these exhaustion centers to meet sudden increases in the admission rate.

<u>The Exhaustion Center Professional Services.</u> Each time that the Exhaustion Center was established, a surgical and dental section was set up in addition to the neuropsychiatric section which was the major section of the installation. The surgical and dental section was set up to care for any casualties that might occur within the unit or in the vicinity of the unit and to provide medical and dental care for the neuropsychiatric section of the unit. The neuropsychiatric section was under the direct supervision of the attached psychiatrists who were assisted by the regular assigned medical officers of the company. Some of the general medical officers have received valuable training in the installation and are qualified to handle any of the departments in the installation. The psychiatric service of the exhaustion centers has been subdivided into admission, observation, sedation, rehabilitation, and evacuation sections.

Admission. Each patient is given a complete physical examination to rule out organic disease and a careful history is taken.

Observation. Patients are admitted to this section if it is thought that they require prolonged observation or if it is impossible to take a history from the patient on admission. All the hysterical paralysis, aphonia, amnesia, etc., are also sent to observation.

Sedation or Treatment. The form of therapy used in the department is the maintenance of a sound state of sleep, for a period of 48 to 72 hours, short periods being allowed for the patient to eat, exercise, and have latrine privileges. The drug employed is sodium amytal.

Rehabilitation. Patients are admitted to this section after a period of 12 - 24 hours after their last medication on the treatment section. They remain for approximately 72 hours and follow a schedule in which time is allowed for bathing, re-equipping, group discussions, close-order drill, calisthenics, organized sports, movies, letter writing, and religious guidance.

Evacuation. Patients ready for return to duty and those who are to be evacuated out of Army were sent to this section to await transportation. The average length of time patients spent on this section is 3 - 4 hours.

Diagram of the physical layout of the station under canvas is attached. However, since 20 September, the exhaustion centers have been in buildings which has required a number of alterations to this original plan.

Extracts of the annual reports submitted by the two exhaustion centers are attached to give a chronological account of the operation of these centers.

Consulting Services. In addition to the treatment and disposition of patients, the N.P. Service provides consulting service for the Judge Advocate and the Inspector General. The Judge Advocate General's Department request N.P. examination on all individuals who are referred for trial by General Court. Originally, this work was done by the psychiatrist in the exhaustion centers. More recently, however, one psychiatrist has been doing all of these examinations and this procedure appears to be working out satisfactorily. During the past eight (8) months, approximately 400 examinations of this type have been conducted and the greater part of that group have been examined during the past three (3) months.

Another consulting service is carried out in conjunction with the Inspector General's Department. All officers who are evacuated to the exhaustion centers because of neuropsychiatric conditions are interviewed by a representative of the Inspector General's Department, together with the psychiatrist in charge of that particular case. The determination as to whether or not such officers should be evacuated to the Communications Zone for further observation and treatment is considered to be a medical question to be finally determined by appropriate medical authority but, aside from this, the policy of the Inspector General's Department is that incompetence or cowardice must not gain for the officer an assignment safe from danger and therefore no officer who has exhibited

lack of leadership qualities and inefficiency will be permitted a less hazardous assignment by reason of his demonstrated deficiencies. The disposition of officers resulting from this investigation may be:

Evacuated as a medical casualty.

Return to full combat duty.

Reclassification or court martial.

It might be added that in only three (3) or four (4) instances have court martial charges been brought and further that while a smaller percentage of officers return to full duty than in the case of enlisted men, most of those who have returned have done fairly well, four (4) of them have been decorated for bravery and at least three (3) have been promoted subsequent to their hospitalization.

Statistics.)

During the period 6 June to 31 December 1944, inclusive, 28,475 neuropsychiatric casualties have been admitted to the First U. S. Army medical service (Division Clearing Stations, Evacuation Hospitals, and Exhaustion Centers). This has constituted 11.66% of the total admissions for the army. The following tabulation indicated the relationship between total admissions and N.P. admissions as well as the disposition of such cases, by month. (These figures do not include a quite sizable group of cases which were treated and returned to duty at the battalion aid station level).

ADMISSION AND DISPOSITION

MONTH	TOTAL ADMISSIONS	N.P. ADMISSIONS	% OF TOTAL ADMISSIONS	N.P. CASES RET TO DY	% NP ADM RET TO DY	N.P. CASES EVAC TO REAR OF ARMY	% NP ADM EVAC
June	33623	2049	(6.09)	644	(31.43)	1323	(68.57)
July	61549	9101	(14.79)	6296	(69.18)	1798	(30.82)
August	34235	5766	(16.84)	3661	(63.49)	2807	(36.51)
September	19620	2609	(13.30)	986	(37.79)	1760	(62.21)
October	22877	1944	(8.50)	602	(30.97)	1643	(69.03)
November	33669	3560	(10.57)	1336	(37.53)	2061	(62.47)
December	38663	3446	(8.91)	1263	(36.65)	2328	(63.35)
TOTAL	244236	28475	(11.66)	14788	(51.93)	13790	(48.07)

Analysis of this Tabulation by Months. (See attached Graph).

June. The relatively low incidence of N.P. casualties during the month of June is due to several factors:

All divisions in contact with the enemy had excellent morale, were well trained and were accustomed to working as a team and were fresh.

A relatively high proportion of the troops ashore were in service units and therefore did not usually have the personal contact with the enemy as was the case with combat units.

A definite goal was apparent to all, namely, the establishment of a beachhead, and while resistance was stiff, our initial success could be followed from day to day.

Return to Duty. During the early part of the month, all N.P. casualties evacuated by divisions were sent to the United Kingdom in accordance with the existing total evacuation policy. Consequently, many patients were evacuated who could have been returned to duty if they were treated within the Army Zone.

July. The marked increase in N.P. casualties during this month is attributed to the change in the character of the conflict. The beachhead had been established, but the very difficult terrain (hedgerows, flooded areas, etc.) and the stubborn resistance offered by the enemy (North of St Lo - outside of Carentan, the La Haye Du Puits action and Cherbourg) made progress slow. Furthermore, after a month of constant fighting, the initial vim and vigor of the infantryman had been reduced by continued stress of battle.

Return to Duty. The sharp increase in the rate of return to duty of N.P. patients was the result of experience gained by the line and medical officers as well as the psychiatrists during the preceding weeks; moreover throughout July, the N.P. Service was fully established and functioning.

August. The tremendous push required to break through at St Lo, Vire, and La Haye Du Puits during the last few days of July and the first ten (10) days of August, was responsible for the high incidence of N.P. casualties during this period. (80% of the N.P. casualties for August occurred during the first two (2) weeks).

September. The race across France into Belgium up to the Siegfried Line from 15 August to 15 September produced the lowest incidence of N.P. casualties of any period during the campaign, for obvious reasons. During September, on the other hand, the percentage of N.P. cases returned to duty dropped to about one-half (½) of the previous month, this was because lines of evacuation were severely stretched. The division clearing stations were moving so rapidly that very little treatment of combat exhaustion cases could be accomplished. The exhaustion centers were often out of touch with the front or were in the process of moving so that these installations could accomplish little in the way of treatment, furthermore during ten (10) days of this month, a total evacuation policy was in force.

October and November. The tactical situation during these two (2) months, except for the localized severe fighting in the Hurtgen forest, 20 November to 1 December, was largely static, hence the low rate of incidence of neuropsychiatric conditions.

During this period, the ratio of N.P. patients returned to duty was influenced by two (2) factors. First, many of the casualties

showed a very low tolerance for emotional stress and therefore did not make good risks for return to duty, a large percentage of this group were replacements. In this same category was found a number of previously wounded soldiers who discovered, upon return to combat duty, that they were "not able to take it anymore". Second, incident to the long continued action (4 - 5 months) with proportionally few breaks - an increased number of excellent veteran soldiers appeared to be emotionally "burned out" and offered poor prognosis for duty without prolonged rehabilitation which is not available within a field army.

December. The interesting conclusion in reference to the figures for this month is that the German breakthrough in the Ardennes region did not produce the high incidence of psychiatric disabilities as was expected. Perhaps because the individual soldier suddenly realized the personal implications of the war to himself, in other words, the conflict changed from being "game" to an unpleasant action motivated by hatred, or perhaps because many of the individuals who suffered emotional "blow-ups" became battle casualties or prisoners as a result of their mental and emotional state.

Tabulation by Diagnosis.

DIAGNOSTIC TOTALS

Neurosis	16190
Psychosis	368
Psychopaths	668
Mental Defectives	46
Other Psychiatric	1763
Concussion	1240
Spilepsy	46
Other Organic	566
TOTAL	20887
Combat Exhaustion*	386
TOTAL CASES DISPOSED OF BY EXHAUSTION CENTERS	21273

* Combat Exhaustion - These cases were all carried as such because there was no treatment given due to the total evacuation policy that was in effect at that time.

Survey of Results of Treatment. A survey is being conducted to determine the ultimate fate of individuals returned to duty from Army Exhaustion Centers. To date, reports have been received on 708 men, many of these were returned to duty during July and August. The results of this survey to date is shown below.

SURVEY OF RESULTS OF TREATMENT

Total Cases Reported	708
Still on Duty with their Units	217
Killed in Action	21
Wounded in Action	84
Evacuated for Medical Disabilities	108
Evacuated for Neuropsychiatric Disabilities	278

SURVEY OF RESULTS OF TREATMENT (Cont'd)

Decorations (exclusive of Purple Heart)	30
Promoted	11
Commissioned	2
Average time on duty since release from exhaustion center	4 weeks

The majority of those who had a recurrence of "Combat Exhaustion" were evacuated within the first 48 - 72 hours after their return to duty.

Recommendations. Experience gained through observation of the Neuropsychiatric Service of First U. S. Army during the campaign of Western Europe (6 June to 31 December 1944) lead to the following recommendations.

As a means toward preserving the highest degree of combat efficiency of troops, a rotation policy which would give the individual a goal, in terms of time overseas as well as merit, to work toward, would reduce the number of so-called "burned out" soldiers who will be evacuated because of psychiatric disabilities.

Army Neuropsychiatric Centers. Within a field army, there is a real need for a medical unit, in addition to and separate from the evacuation hospitals, to care for neuropsychiatric casualties. Therefore, it is recommended that a field hospital table of organization and equipment be made available for this purpose. Such a unit is suggested because it has a three (3) platoon organization under one (1) administrative head and therefore would fit well into an army of three (3) corps. Each platoon can handle 250 - 350 patients with minor alterations in the existing table of organization and equipment. The major alterations required in the T/O would be the deletion of all nurses; the addition of three (3) or four (4) psychiatrists to each platoon and the increase of the enlisted strength of the platoon to 85 men. In the matter of equipment, most of the surgical equipment could be eliminated, and bath units, a few typewriters and some specialized diagnostic equipment (including an electro-encephalograph) added. An increase in tentage and mess equipment would also be necessary.

XII. STATISTICS.

General.

This section of the annual report of the Medical Section is intended primarily to provide factual and quantitative data regarding the medical phase of operations of the First U. S. Army during the calendar year 1944. It was thought, however, that a narrative account of the medical reporting experiences of the group responsible for this function in the Office of the Army Surgeon might be of some value in the mounting of future operations - therefore such an account has been prepared and included herein.

Tabular and graphic material are provided which give information as to the numbers and rates of battle casualties, the incidence of disease and non-

battle injuries, the numbers and proportions of combat exhaustion cases, evacuations from the Army area, anatomical distribution of wounds, and so forth.

In First U. S. Army, the approach to the problem of securing complete, accurate, and prompt medical reports has been based on a two-fold objective; first, to secure daily and with the absolute minimum of delay, the essential facts regarding the current medical situation which are needed to effect the most efficient disposition and employment of medical units and personnel; second, to insure that the more detailed and comprehensive reports covering longer periods of time are received, consolidated, tabulated and analysed in order that all of the factors which comprise the medical situation may be seen in their proper perspective and proportion and may be used for a long range planning of succeeding phases of this campaign and of subsequent campaigns.

As may be seen from the foregoing, the primary concern has been for the operational rather than the historical aspect of medical reporting, but it is felt that in so placing the emphasis, both purposes are really served. The historical validity of military medical statistics lies in their actual and potential future military usefulness.

Narrative Account of Reporting Experiences - 1944.

The highlight of the year 1944 was the passing of First U. S. Army in early June from the quiet comparatively uneventful phase of planning and preparation in England to a combat operational status on the continent of Europe.

From January through April 1944, the work of the Statistics Section was of two distinct types carried on simultaneously; the first was that of receiving, consolidating, analysing and disseminating data relative to the health of the troops, such data being provided by the routine Medical Department reports required by Army Regulations and Theater directives. This process was almost indistinguishable from that carried on at corresponding headquarters in the States. It was important, of course, in that it provided the means of detecting danger spots with reference to the occurrence of injuries, respiratory diseases, diarrheas, the acute communicable diseases in general. High overall rates, by comparison with E.A. and Theater standards, led to examination of the circumstances extant in the commands where they occurred to the end that all preventive or corrective measures possible might be taken. As was previously stated, this work was highly important. Its importance was, however, secondary to that of the other type of work being conducted at this time; this second type of work was that of planning the necessary supplementation of the system of medical reporting which would enable it to provide during combat operations the additional essential items of information relative to combat medical service.

In approaching the problem of what modifications should be made in the reporting system in order that it might adequately fill the needs of a field army under combat conditions, the first thought was to secure as much information as possible concerning the reporting experiences of other field armies in other campaigns of the present war. This was done in various ways - by personal interview, by letter, by questionnaire, by perusal and close study of the directives, forms and completed reports of other units in North Africa, Sicily, and Italy.

Although many valuable ideas were gained in this way, it was not felt that any one of these systems in its entirety ideally suited to our requirements. It became apparent that the requirements unsatisfied by the established reporting system were threefold:

For a basic record of all cases admitted and disposed of by each medical unit; this was needed in order that even though reporting might be impeded or disrupted by intense tactical activity, a means would be at hand whereby, even at a much later date, it would be possible to go back and prepare complete and accurate reports.

For a daily report obtainable with an absolute minimum of delay which would provide the essential facts regarding the current medical and casualty situation needed to effect the most efficient disposition and employment of medical units and personnel and thereby to provide the best possible care and treatment of the sick and wounded of the command.

For a monthly report from the hospitals which would give certain data regarding the incidence of wounds by anatomical location and by causative agents, the relative mortality caused by wounds of these various types and other specific items of medical and surgical interest which normally would not be available from tabulation of the individual sick and wounded records for many months.

To fill these requirements, three reports were devised:

The Daily Admission and Disposition Report (ETOUSA MD 324a) - this was originally called the Nominal Patient List and was assigned the Form Number of ETOUSA MD 324. During this stage of the planning, it was intended that only hospitals would use this form and that clearing stations would use a somewhat abbreviated version to be called the Clearing Station Nominal List - later, however, in line with the suggestion of the Surgeon, Twelfth Army Group, it was decided that there was much merit in the use of a single form by all types of installations and the present Form 324a was adopted. In addition to the use of this report as the basic medical report, the Casualty Division of AG was much interested in receiving it from hospitals for use in correcting casualty reports of individuals originally shown as "missing in action".

The Combat Medical Statistical Report (ETOUSA MD Form 325) - this report was a greatly modified version of the old War Department MD Form 86f "Report of Casualties". It had undergone a number of metamorphoses in previous campaigns and, in the present version, every effort was made to capitalize on the experience of others. The motivating idea was to provide, on as short and simple a report form as possible, as much as possible of the prime numeric data needed for effective operation of a field army's medical service in combat.

The Monthly Classification of Wounded Report - no printed form was provided for this report, but a sample outline was provided in accordance with which all hospitals were to provide the numbers of admissions and deaths for wounds of each of the principal missiles or causative agents as well as the number of amputations, number of transfusions, amounts of penicillin administered and so forth.

With these reports approved and decided upon by the Army Surgeon, the next step was to secure the concurrence and approval of all higher authorities concerned. After discussion and explanation, the approval of the Deputy Chief of Staff, and of the Surgeon, Twelfth Army Group, was obtained and the entire plan was presented to the representatives of the Chief Surgeon of the Theater. A word of appreciation is in order here for the very helpful and cooperative attitude exhibited by the Office of the Chief Surgeon throughout this phase of planning and arrangement, every technical aid was offered in arranging for the reproduction and distribution of forms, the layout and provision of work-sheets and so forth. The requirements of the Chief Surgeon's Office were held by them to the very minimum and the persons responsible for this phase of the planning in the Office of the Chief Surgeon made quite clear that insuring that Army had its reporting needs and requirements met was their primary concern. Largely due to this attitude, a period that otherwise might have been a very trying one was passed through smoothly and without friction.

The reporting directive giving procedures for the transition in reporting from a static to an operational status were prepared in draft form. This directive could not, however, be distributed before the publication of the new Circular Letter from the Office of the Chief Surgeon. The publication of this latter document (Circular Letter No. 20) which had been in preparation for several months was being delayed because of the paper and labor shortage and other technical difficulties. It was, however, distributed the latter part of April or the first of May, and immediately thereafter, the First U. S. Army directive amending, amplifying, modifying certain portions of it to make it applicable to combat reporting was distributed.

In the interim, every effort was made to acquaint those concerned with the procedures that would be followed in combat reporting. This was done in various ways. Trips were made to the various corps and division headquarters, sometimes in the company of a representative of the Office of the Chief Surgeon. Lectures were given to all of the classes at the Medical Field Service School of the American School Center, Shrivenham. Meetings were held with all the records people of the Army hospitals and, later, with all of the medical records people of tactical organizations.

The Statistical Consultant of the Army Surgeon's Office sat in on a number of the operational planning conferences which were held sometimes jointly with the U. S. Navy and the British representatives. It may be pointed out here that the security classification accorded the statistical officer was such that in theory, he had access to all information except that relating to the target area and date of assault. However, in practice so much of the information important for statistical planning was in documents which also contained one or the other of these "forbidden" items that planning of detailed specific procedures for various phases of the assault was hampered. It is suggested that in future operations, at least one member of the statistical section should have whatever security classification is necessary for him to be fully conversant with the reporting problems that are likely to arise in order that he may have the necessary plans and procedures devised to avoid any gaps or breakdowns in the system of providing this essential medical information when and as it is needed.

Plans were made for dividing the Statistical Section personnel into two groups, one of which would cross to the far shore early in the invasion, the other of which would remain on the near shore to receive and consolidate for a period of approximately thirty days the reports of units still on the near shore.

All of the new reporting procedures were to become effective as of the time of arrival on the far shore. Units on the near shore were to submit final weekly statistical reports as of the date their dispensaries closed for movement to the marshalling area. All statistical data for near and far shore were to be kept entirely separate.

At last the big day arrived, the Statistical Section personnel of the "far shore" group was now a part of First U. S. Army Medical Detachment "A" which had been sitting in the Thames estuary on a hospital carrier for several days waiting for word of the "kickoff". With word of the commencement of the invasion on 6 June, the hospital carrier steamed down the Thames out into the Channel past the Cliffs of Dover to the Isle of Wight where it anchored for the night - starting out again the next morning, it arrived in the waters off the Omaha Beach on the afternoon of 7 June - D + 1. That evening a small party of medical officers and men went ashore while most of the remainder who stayed on board were busy the greater part of the night treating and operating on battle casualties and survivors of vessels which had been torpedoed, shelled or damaged by mines. The next morning the remainder of Detachment "A" went ashore. The personnel bivouacked on the hill overlooking Omaha Beach. Foxholes were dug in close proximity to the collecto-clearing station of one of the Engineer Special Brigades. The First Infantry Division's clearing station was in the process of moving inland at this time. Since Army Headquarters was not officially ashore at this time, medical service was technically under control of the Surgeon, V Corps. A call was made on the Corps Surgeon by certain of the representatives of the Army Surgeon's Office who were in this Medical Detachment. The reason for having personnel of the Statistical Section in this group was to insure that in the critical days of initial operation of the new combat reporting system, supervision would be available and a source of information would be at hand to answer the inevitable questions that would arise when new reports were being submitted under somewhat strange and difficult conditions. It is felt that the work which was done in the first few days in correcting erroneous procedures, explaining the reasons for certain practices and establishing a close liaison with the persons in the various organizations who were responsible for the preparation of the reports undoubtedly saved many weeks of correspondence and contacts which would have been required to begin at a later date to solve the many problems that could not have been foreseen and to secure report corrections made necessary by minor misconceptions so easily cleared up when caught early.

As the various medical organizations came ashore, Medical Detachment "A" was gradually broken up and individuals rejoined their units. The Army Surgeon and his Executive Officer had come ashore D-Day and as soon as Army Headquarters was set up, the personnel of the Army Surgeon's Office who were in this Detachment joined them and operations on a somewhat more formal and official basis were started. The Preventive Medicine Division of which the Statistical Section was a part, was assigned space in a large storage tent and began the task of assembling, consolidating, and analysing the statistics of what had happened from the viewpoint of wounds, injuries and, to a lesser degree, disease, in these first few hectic

days beginning 6 June 1944. As soon as the land route to Utah Beach was opened, a representative of the Statistical Section was dispatched to establish contact with the VII Corps Surgeon's Office, the 1st Engineer Special Brigade, and the evacuation and field hospitals which had landed on that beach. Although the situation found was, in general, good, there were certain correctable conditions found and remedied.

During the period of time between the initial establishment of Army Headquarters on the continent and the arrival of the Base Echelon some thirty days or so later, the Office of the Army Surgeon was all together and functioned as a unit in the Supply Echelon of Army Headquarters. From the point of view of efficiency and ease of operations, this was ideal for the Statistical Section. It was possible for a representative of the Section to attend the conference held each morning by the Army Surgeon, immediately after the Chief of Staff's conference, at which the commanding officers of the hospitals and separate Army medical units as well as the members of the Army Surgeon's staff were brought up to date on the current tactical situation, changes of policy or procedure were announced and explained, changes in the assignment or attachment status of units were made known, and all other information available having a bearing on the medical service of the Army was disseminated. Very frequently, these meetings were also attended by the surgeons of the divisions and of the Engineer Special Brigades. It can easily be seen that this was of very great value in maintaining close liaison with the reporting units and in securing prompt, adequate reports. In the first few days of operation, it became evident that if the Combat Medical Statistical Report were to serve the purpose for which it was designed, its submission would have to be expedited to such an extent that the consolidated report for the entire Army could be completed some time during the day following that covered by the report. For this to be possible, it was necessary that the reports be received in the Army Surgeon's Office not later than twelve hours after the close of the period. Naturally, message center or APO channels could not be used in a case like this where the time differential was so small, therefore other means had to be sought. Eventually, it was decided that the Medical Groups would be given the responsibility of establishing a special courier service for the transmission of these reports from units within their respective areas. The Medical Groups further delegated this responsibility in part, at least, to the battalions under their command until it evolved into a supplemental function of the evacuating agencies in the lower echelons. In this way, it was in most instances possible to obtain these essential reports within the time limits imposed by circumstances without violating the letter or the spirit of the policy and program of conservation with respect to vehicles, tires, gasoline, and manpower. It was necessary, however, for the first several weeks that a representative of the Statistical Section spend from five to ten hours daily on the road securing reports and missing information from division and corps clearing stations and from hospitals whose reports had, for any one of a number of reasons, failed to arrive by the deadline. Needless to say, it was somewhat difficult to impress those not directly concerned with the consolidation or use of this data of the imperative need for meeting the deadline established. Apparently not everyone was able to realize the extent to which correct, complete, and prompt quantitative information on the current medical and casualty situation can aid in the making of the proper plans and decisions for the use and deployment of the Army's medical facilities. Being conscious of these facts, the Statistical Section was determined not to admit that it was impossible

to have this system of preparation and transmission of this daily report function like clockwork and, therefore, when a report for a given unit was not received on time, both the unit and the Medical Group responsible were certain of having, on that same day, a visit from a member of the Surgeon's staff. Eventually the prompt, efficient handling of this report became largely a matter of habit and the situation was easier on all concerned.

The Base Echelon of Army Headquarters arrived on 6 July, D + 30, with the remainder of the personnel of the Army Surgeon's Office including the rest of the Statistical Section. Shortly thereafter, a large part of the Surgeon's Office personnel previously ashore, including all of the Statistical Section personnel, was assigned to the Base. This was undoubtedly necessary due to the enforced limitation of size of the Supply Echelon but in many ways it complicated the functioning of this section. It had been Standard Operating Procedure to contact newly arrived units immediately and to assist them in every way possible until it was evident that the receipt of complete and correct reports was assured. It had also been S.O.P. to check with all units leaving this command prior to their departure in order to insure that the proper final reports would be received at the time indicated. The separation from the forward section of the Surgeon's Office made this a more difficult and uncertain proposition primarily because of the time element involved, and because of the lack of direct contact with the units and persons concerned. Then, too, in addition to the road trips necessary to secure missing reports, a daily trip to the Army Surgeon's Office, Supply Echelon, was necessary to provide him with the completed reports and analyses. At the time the Base Echelon was in Valognes, this was a round trip of approximately eighty miles through the Carentan area which was under shell fire a large part of the time. Although the feeling was general that operations would be simplified were it possible for the entire Surgeon's Office to be in one echelon, it was recognized that for the present, at least, it was not feasible so the necessary adjustments were made to the situation as it existed.

Close liaison which, it is felt, was mutually beneficial was maintained with the reports and statistics personnel of the Surgeon's Office, Advance Section, Communications Zone and the Office of the Surgeon, Twelfth Army Group.

When the Third U. S. Army arrived on the continent, conferences with their medical records personnel were arranged in order that they might see and become familiar with what we had done and were trying to do and in order that they might benefit from our failures and our successes. The reporting system they adopted was based on the same forms and reports as our own although there were some rather important variations in procedure.

Essentially the same procedure was gone through when the Ninth U. S. Army arrived and became operational. Their reporting practices were probably more nearly the same as those of First U. S. Army although some differences did exist.

In September, a part of the Medical Records Division, Office of the Chief Surgeon, ETOUSA, was established in Paris to process the Weekly Reports (86ab and 310) and to receive and transmit the other Medical Department reports to that portion of the Medical Records Division still remaining in the United Kingdom.

Some difficulties were being encountered because of the differences in methods of preparing and consolidating the Weekly Statistical Reports (Form 86ab) and the Combat Medical Statistical Report (Form 323) and because of other variations in procedure which existed among the Armies. At least partly because of this condition, a meeting of Medical Records personnel from all the Army and Base Section headquarters was called the latter part of October. The Director of the Medical Records Division, ETOUSA, flew to Paris from London to conduct this meeting. Representatives from First, Third and Ninth Armies and of all the Base Sections on the continent attended. The informal preliminary conferences and a major portion of the principal meetings were devoted to analysis of the reporting procedures and problems of the field Armies. The methods of report preparation and consolidation within each Army were explained, major variations were studied and compromises were agreed upon which would serve to aid in the approach to uniformity of methods. The feeling was general that an opportunity of this sort to exchange ideas and to attempt to find answers to common problems in an atmosphere of friendly discussion was beneficial to all concerned - and especially so in view of the fact that when agreement was reached on a given point, a representative of the Chief Surgeon was present and could give immediate approval to the institution of changes which involved variation from practices set up in current directives where this was indicated. The Director of the Medical Records Division, ETOUSA, indicated that, in his opinion, the calling of a conference of this type each month would be well worth while.

Around the first of December 1944, a second meeting of the Medical Records personnel of the Armies was called. The prime purpose of this conference was to consider and explore the possibilities of revamping entirely the medical the medical reporting system as it applies to field Armies to eliminate overlapping and duplication of reports and to decrease to the greatest extent possible, the reporting burden on units in the field. A draft outlining, in general terms, First U. S. Army's suggested plan for the attainment of these objectives was presented to the representatives of the Third, Seventh, and Ninth U. S. Armies for consideration and discussion. This plan which met with general approval in principle suggested the discontinuance of the present Weekly Statistical Report (Form 86ab) and Hospital Statistical Report (Form 310). A modification of the Combat Medical Statistical Report form would be used for both the daily and weekly information desired. The weekly reports from the clearing stations and from hospitals would be prepared by a simple summation of the entries on the daily reports for the period covered. Aid stations and dispensaries would submit a report weekly on this standard form covering only those cases of which they make final disposition. It was decided that the medical statistics group in each Army would prepare a draft of a proposed revised Combat Medical Statistical Report and submit it to the Office of the Chief Surgeon for correlation of the ideas contained and for preparation of the final form and issuance of the directive putting the new reporting system into effect.

And so at the end of the calendar year 1944, we find ourselves with a little more than six months of combat reporting experience behind us. Six months of providing medical information in its most effectively used forms, numbers, rates and graphs - six months of obtaining this information under greatly varying circumstances: - on the invasion beaches of Northern France, in the slow, tough hedgerow fighting in Normandy, in the rapid, mechanized dash across France, in the bitterly contested hills and forests of the Belgian-German frontiers and through the ferocious German counter offensive in mid-December. It goes without

saying that all this has provided the self test of the reporting system itself. Its strengths have been manifested - and its weaknesses. In addition to the information of immediate operational use provided, a wealth of invaluable data of historical interest has been gathered which can aid in the planning of future campaigns.

It is to be hoped that early in the new year, the streamlined and simplified reporting system towards which our past experience has pointed will become a functioning reality instead of just a plan and that still better and more useful statistical data can be made available with less effort required on the part of the men working under difficult conditions in the field to provide the basic reports.

Tables and Charts.

The following tables and charts have been prepared to reflect the important facts and situations relative to the medico-military experiences of the First U. S. Army in 1944:

Table - Annual Summary, Basic Admission Rates
Chart - Graphic Rate Summary of Admissions by Type
Table - Annual Summary, Admission Rates (Communicable Disease)
Table - Anatomical Location of Wounds
Table - Wounds by Causative Agent
Chart - Classification of Wounded (by anatomical location and by causative agent)
Table - Comparative Data - Anatomical Location of Wounds (First U. S. Army - Western Europe - Fifth U. S. Army - Italy)
Table - Combat Medical Statistics
Chart - Admissions and Dispositions by Type
Table - Percentage Analysis of Combat Medical Statistics
Chart - Graphic Percentage Analysis of Combat Medical Statistics
Chart - Basic Ratios - Combat Medical Statistics
Table - Patients Evacuated - by mode of Transport
Chart - Evacuation by Type
Table - Medical Statistics Summary - January 1944
Table - Medical Statistics Summary - February 1944
Table - Medical Statistics Summary - March 1944
Table - Medical Statistics Summary - April 1944
Table - Medical Statistics Summary - May 1944
Table - Medical Statistics Summary - June 1944
Table - Medical Statistics Summary - July 1944
Table - Medical Statistics Summary - August 1944
Table - Medical Statistics Summary - September 1944
Table - Medical Statistics Summary - October 1944
Table - Medical Statistics Summary - November 1944
Table - Medical Statistics Summary - December 1944
Chart - Daily Incidence of Trench Foot - 1944

JOHN A. ROGERS,
Brigadier General, USA,
Surgeon.

PART I
SELECTED COMMUNICABLE DISEASES
Numbers and Annual Admission Rates
FIRST U. S. ARMY
1944

MONTH	Common* Respiratory		Pneumonia Primary* Non-Atypical		Pneumonia Atypical**		Influenza**		Jaundice*		Chicken Pox*	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
JANUARY	5724	363.4	59	3.8	2	.1	265	16.8	89	5.7	-	-
FEBRUARY	5331	298.4	78	4.4	5	.3	192	11.0	36	2.0	5	.3
MARCH	6589	239.0	108	3.9	-	-	190	6.9	34	1.2	11	.4
APRIL	3720	146.1	84	3.3	1	.1	105	4.1	19	.8	10	.4
MAY	1965	81.4	73	3.0	6	.3	42	1.7	17	.7	3	.1
JUNE	933	32.7	42	1.5	7	.3	8	.3	11	.4	6	.2
JULY	731	22.9	22	.7	33	1.0	11	.4	38	1.2	1	.03
AUGUST	601	24.0	13	.5	32	1.3	12	.5	13	.5	-	-
SEPTEMBER	801	31.3	14	.6	20	.8	24	.9	9	.4	1	.04
OCTOBER	2145	94.3	29	1.4	55	2.4	14	.6	16	.7	-	-
NOVEMBER	2155	88.9	47	1.9	84	3.5	7	.3	23	1.0	-	-
DECEMBER	2880	90.3	73	2.3	122	3.8	13	.4	30	.9	-	-
TOTAL	33575	111.7	642	2.1	367	1.2	883	2.9	335	1.1	37	.1

Source: * Statistical Report, MD Form 86ab
** 1. Statistical Report, MD Form 86ab through May
2. Hospital Statistical Report, ETOUSA MD Form 310 through December

INTESTINAL DISEASES
NUMBERS AND ANNUAL ADMISSION RATES
FIRST U. S. ARMY
1944

MONTH	Common* Diarrhea		Food* Poisoning		Gastritis and* Enteritis		Dysentery**						** Typhoid		Para-** Typhoid	
							Bacillary		Protozoal		Unclassified					
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
January	95	6.0	-	-	110	7.0	1	.1	1	.1	9	.6	-	-	-	-
February	401	22.4	-	-	63	3.5	-	-	-	-	7	.4	-	-	-	-
March	119	4.3	-	-	18	.7	-	-	7	.3	7	.3	-	-	-	-
April	80	3.1	4	.2	2	.1	-	-	-	-	2	.1	-	-	-	-
May	88	3.7	-	-	-	-	-	-	1	.04	2	.1	-	-	-	-
June	70	2.5	-	-	-	-	2	.1	1	.1	5	.2	-	-	-	-
July	151	4.7	-	-	-	-	3	.1	-	-	21	.7	-	-	-	-
August	177	7.1	-	-	-	-	1	.04	3	.1	10	.4	-	-	-	-
September	328	12.8	-	-	-	-	9	.4	-	-	13	.5	-	-	-	-
October	376	16.5	-	-	-	-	4	.2	8	.4	3	.1	-	-	-	-
November	349	14.4	-	-	-	-	1	.04	5	.2	5	.2	-	-	-	-
December	595	18.7	-	-	-	-	5	.2	3	.1	6	.2	-	-	1	.03
TOTAL	2829	9.4	4	.01	193	.6	26	.09	29	1.0	90	.3	-	-	1	.003

Source: * Statistical Report, MD Form 86ab
** 1. Statistical Report, MD Form 86ab through May
2. Hospital Statistical Report, ETOUSA MD Form 310 through December

PART II
SELECTED COMMUNICABLE DISEASES
NUMBERS AND ANNUAL ADMISSION RATES
FIRST U. S. ARMY
1944

MONTH	Diphtheria**		Scarlet Fever**		Measles*		German* Measles		Mumps**		Meningococcal Infections**		Poliomyelitis**	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
JANUARY	2	.1	3	.2	7	.4	3	.2	72	4.6	15	1.0	2	.1
FEBRUARY	2	.1	7	.4	22	1.2	11	.6	121	6.8	13	.7	-	-
MARCH	4	.2	14	.5	86	3.1	36	1.3	293	10.6	24	.9	-	-
APRIL	2	.1	7	.3	78	3.1	86	3.4	264	10.4	17	.7	-	-
MAY	-	-	12	.5	40	1.7	36	1.5	144	6.0	5	.2	-	-
JUNE	1	.04	-	-	8	.3	10	.4	13	.5	3	.1	-	-
JULY	8	.3	9	.3	1	.03	-	-	70	2.2	17	.5	-	-
AUGUST	-	-	4	.2	1	.04	-	-	25	1.0	7	.3	-	-
SEPTEMBER	1	.04	1	.04	-	-	-	-	5	.2	5	.2	-	-
OCTOBER	2	.1	-	-	4	.2	3	.1	3	.1	3	.1	2	.1
NOVEMBER	3	.1	1	.04	1	.04	5	.2	12	.5	4	.2	-	-
DECEMBER	11	.3	3	.1	3	.1	4	.1	20	.6	6	.2	1	.03
TOTAL	36	.1	61	.2	251	.8	194	.7	1042	3.5	119	.4	5	.02

Source: * Statistical Report, MD Form 86ab
** 1. Statistical Report, MD Form 86ab through May
2. Hospital Statistical Report, ETOUSA MD Form 310 through December

CONDITIONS OF
SPECIAL INTEREST TO COMMAND
Numbers and Annual Admission Rates
FIRST U. S. ARMY
1944

MONTH	Malaria*		Total "New" V.D.*		Scabies*		Neuro-Psychiatric*		Trench Foot**		Frost-Bite**	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
JANUARY	32	2.0	234	14.9	71	4.5	49	3.1	-	-	-	-
FEBRUARY	105	5.9	262	14.7	71	4.0	83	4.7	-	-	-	-
MARCH	307	11.1	446	16.2	95	3.5	93	3.4	-	-	-	-
APRIL	374	14.7	428	16.8	90	3.5	87	3.4	-	-	-	-
MAY	781	32.4	389	16.1	27	1.1	65	2.7	-	-	-	-
JUNE	896	31.4	281	9.8	44	1.5	1481	51.9	-	-	-	-
JULY	753	23.6	115	3.6	43	1.4	5832	183.0	-	-	-	-
AUGUST	564	22.6	43	1.7	12	.5	5046	201.7	-	-	-	-
SEPTEMBER	474	18.6	501	19.6	12	.5	2597	101.6	-	-	-	-
OCTOBER	370	16.3	585	25.7	28	1.2	1844	81.0	156	6.9	-	-
NOVEMBER	240	10.0	576	23.8	31	1.3	2578	106.4	2715	112.0	-	-
DECEMBER	189	5.9	713	22.4	78	2.5	3556	111.5	5172	162.2	12	.4
TOTAL	5085	16.9	4573	15.2	602	2.0	23311	77.5	8043	26.8	12	.04

Source: * Statistical Report, WD MD Form 86ab
** Combat Medical Statistical Report, ETOMD Form 323

HEADQUARTERS
FIRST UNITED STATES ARMY
Office of the Surgeon
APO 230

17 July 1944

OPERATIONS MEMORANDUM)
:
NUMBER 2)

P E R I O D I C R E P O R T

1. The provisions of par 6 a & b, Section II, Operations Memorandum No. 1, Office of the Surgeon, Hq. First U. S. Army, 16 May 1944 and par E 1& 2, Section II, Medical News No. 10, Office of the Surgeon, Hq. First U. S. Army, 29 June 1944 are rescinded and the following substituted therefor:

2. Form of Report - Written report, one (1) copy only, to the Army Surgeon, giving the following essential elements of information: Code name of unit. Field Hospital platoons will precede the code name of the hospital with the designation of the platoon as "first", "second", or "third".

ABLE - Total beds - Four hundred bed evacuation hospitals will report their organic beds as "400", and seven hundred and fifty bed evacuation hospitals will report their organic beds as "750", even though additional organic beds are set up. All evacuation hospitals will report one hundred (100) additional beds when one platoon of either a clearing company or gas treatment company is attached, and report two hundred and twenty-five (225) additional beds when an entire clearing company or gas treatment company is attached.

BAKER - Total patients in the unit at reporting time plus patients awaiting admission.

CHARLIE - Patients with disease (subtotal of "BAKER").

DOG - Gas casualties (subtotal of "BAKER") resulting from the effects of chemical warfare agents.

EASY - Injured and wounded (subtotal of "BAKER", Note: "CHARLIE", "DOG", AND "EASY" must total "BAKER".)

FOX - Number of ambulatory patients to be evacuated in the next twelve hours.

GEORGE - Number of litter patients to be evacuated in the next twelve hours.

HOW - Number of patients for transfer to the Convalescent Hospital or Exhaustion Centers in the next twelve hours.

ITEM - Number of patients ready for return to duty in the next twelve hours.

JIG - Number of vacant beds - to be determined by subtracting "BAKER" from "ABLE" and adding to the result the sums of "FOX", "GEORGE", "HOW", and "ITEM".

KING - Total admissions in past twelve hours.

LOVE - Total of evacuations, formal transfers and returns to duty in past twelve hours.

MIKE - Surgical back-log.

NAN - Total of informal transfers of preoperative patients to holding units in past twelve hours. Note that patients for informal transfer are not to be included in any other part of this report.

3. Periodicity: This report will be rendered twice daily as of 0600 and 1800 hours, by all active field hospital platoons, evacuation hospital, the convalescent hospital and Army Clearing Stations.

4. Transmission of report: It is imperative that this report reach the Office of the Army Surgeon by 0800 and 2000 daily. The report will be placed in an envelope marked "PERIODIC REPORT"; no other report will be included in the same envelope. A courier leaves the Headquarters of the 31st and 68th Medical Groups for the Army Surgeon's Office daily at 0700 and 1900. The Commanding Officers of the 31st and 68th Medical Groups have been charged with the responsibility of delivery of these reports to the Army Surgeon. Commanding Officers of units rendering this report are responsible for the delivery of the periodic report to their respective sector Medical Group Headquarters, or to such places as the Medical Group Commanders may designate in such time as to comply with courier services as indicated above.

For the Surgeon:

JAMES L. SNYDER,
Colonel, Medical Corps,
Executive Officer.

PERIODIC REPORT

Date

Hour	
Hospital	
1. Total Beds (a)	
2. Total Patients (b)	
a. Disease (c)	
b. Gas Casualties (d)	
c. Wounded & Injured (e)	
3. For Evacuation (f)	
a. Ambulatory (g)	
b. Litter	
4. For Transfer (N.P., Convelescent, etc.) (h)	
5. To Duty (i)	
6. Vacant Beds (#1 less (j) 2 plus #3,4, and 5)	
7. Total Admissions in past 12 hours (k)	
8. Total Evacuated, Transferred, or to Duty, past 12 hours (l)	
9. Surgical Backlog (m)	
10. Total Informal Transfers, past 12 hours (n)	
11. Total Evacuated past 24 hours (o)	

EUROPEAN THEATER OF OPERATIONS
UNITED STATES ARMY
Office of the Chief Surgeon
APO 887

File: 710 18 October 1944

CIRCULAR LETTER NO. 126

War Department Technical Bulletin TB MED No. 81, dated 4 August 1944, is herewith reproduced for the information and guidance of all concerned:

Trench Foot

1. Definition.

a. Trench foot is the term applied to the condition resulting from prolonged exposure of the feet to cold and moisture, usually associated with dependency and immobility of the lower extremeties and with constriction of the limbs by shoes or clothing. The condition is closely related to immersion foot and shelter foot. Prolonged standing or long hours spent in an upright or crouching position in cold, wet trenches or foxholes, especially if they have previously become mud-soaked by rain and the weather then changes to frost, and the continual wearing of wet socks and footgear, are the most frequently responsible circumstances leading to the development of the syndrome. The period of exposure varies from several hours to several weeks.

b. Factors influencing the occurrence and severity of the condition include degree of cold, duration of exposure, and footwear which, although affording some protection during short exposure, causes constriction and is harmful after long exposures. Contributory factors are dependency and immobility which reduce peripheral circulations body cooling as from wind and inadequate, damp, or wet clothing and footwear, resulting in loss of body heat and production of general vasoconstriction with consequent circulatory stagnation; trauma; and dehydration and nutritional and vitamin deficiency. Men over 40 and youths under 17 appear to be less resistant to the general effects of cold than those of intermediate ages. Racial hypersusceptibility to cold has not been definitely established, but it appears that individual accustomed to a warm environment do not have the same defenses as those who have been accustomed to colder climates.

2. Pathogenesis and Morbid Anatomy.

a. The essential vascular change during the period of exposure and hypothermia is peripheral vasoconstriction which involves predominantly the arteriolar vessels but may affect even the larger arteries and which results in a decreased blood flow to the part. This is induced both reflexly and as a result of the direct action of cold. The resultant ischemia causes anoxia of the capillaries with consequent increased permeability, exudation, and edema. Existing arterial disease or compression of the part by tight shoes or leggings may

accentuate this mechanism. Direct thermal injury to the skin from prolonged exposure to cold may also be a factor as well as the traumat incurred from walking on the damaged feet.

b. Immediately after the part is exposed to warmth, there occurs an intense inflammatory hyperemia with excessive vasodilatation which may be due to several factors, including the release of histamine-like substances resulting from tissue injury by the cold, actual damage of vessels, and nerve injury causing vasomotor paralysis. This phase of hyperemia is accompanied by swelling of the tissues and edema. The transudation of fluid may be due either to mechanical factors or, in most instances, to increased permeability of the damaged capillary endothelium. A vicious circle is thus established, in which transudation contributes further to an already existing oxygen deficiency in the involved part. Involvement of peripheral nerves is suggested by paresthesias, dysthesias, anesthesia, and sudomotor disturbances. Meager histological studies have revealed mixed degenerative and regenerative changes in peripheral nerves. The significance of these findings is not established but local interference with neurogenic control of peripheral blood vessels is probable. The tissues appear edematous and contain perivascular collections of lymphocytes, extravasated blood cells, and some polymorphonuclear leucocytes rather similar to any sterile inflammatory reaction. The exudates are fibrinous and the finer lymphatics may be blocked. The vessels themselves may show intimal thickening and vacuolization of the muscle fibers or more complete disorganization with extending thrombosis in the vessels adjacent to the traumatized area. In the more severe forms, histological studies made during the late stages of the condtion, i.e., several months after exposure, show atrophy and thinning of the epidermis with much fibrosis and deposition of collagen around the nerve endings and blood vessels in the subcutaneous tissues. Fibrous infiltration of the muscles is also evident. This is believed to be the explanation for the late pain, rigidity, and weakness of the feet in this group of patients. The observation that these patients tend to improve spontaneously after 6 to 8 months, the time at which collagen ceases to contract, supports this belief.

3. Clinical Manifestations.

a. Classification. The clinical manifestations are variable. Depending upon the period of exposure and extent of tissue damage, the condition as it appears clinically during the period following admission may be classified according to degree as mild, moderate, and severe. The mild type is characterized by erythema, slight sensory changes, and little or no pitting edema. In addition to these manifestations, there are, in the moderate type, blebs, ecchymotic spots, and definite pitting edema. In the severe forms, these manifestations are more pronounced with evidence of massive extravasations of blood and incipient or actual gangrene.

b. Signs and Symptoms.

(1) During onset and period of exposure, there is first

an uncomfortable sensation of coldness of the feet, and this is soon followed by numbness. There may be temporary tingling, and mild aching or cramping pain about the arches, ankles, and soles of the feet. In general, discomfort is not pronounced during this period, and the most prominent manifestations are numbness and a heavy wooden sensation of the feet. The patients complain of ataxia, walking is clumsy, and they feel as if they were "walking on blocks of wood." Swelling of the feet occur after several hours or days but is usually not pronounced at this time. The skin, which is at first red, later becomes pale, "waxy white," "sickly yellow," mottled blue, or purplish. Blisters usually develop at a later stage.

(2) At the time of admission and after the shoes are removed, the signs and symptoms enumerated above are present and may be more pronounced. The feet are cold and may be anesthetic to pain, touch, and temperature. The peripheral pulses may be absent. The signs and symptoms during this period are considerably influenced from the standpoint of onset, duration, and degree by the method of treatment, as well as by the degree of damage which resulted before treatment was instituted. However, the condition progresses through three more or less distinct stages, each with characteristic signs and symptoms:

(a) Prehyperemic or ischemic stage. This may last for several hours or more. The feet remain cold, somewhat swollen, discolored, and numb. Areas of purplish discoloration may sometimes be observed particularly in or about the toes. Although in the milder cases there may be hyperesthesia, most cases are characterized by anesthesia of varying extent. In the more severe case, there is fairly extensive "sock anesthesia," and in the less severe forms, these areas involve the toes and extend around the margins of the foot and over its plantar aspect. In some cases in which exposure has been sufficiently prolonged, areas of incipient or even actual gangrene may be already apparent, particularly about the toes. Some patients experience a poorly localized, dull, aching sensation in the feet. The peripheral pulses may remain absent for some hours. As the feet grow warm, swelling increases rapidly and a severe burning pain begins, marking the onset of the send stage.

(b) Hy[redacted]mmatory stage. This may last from a few days to a few weeks. Swelling increases rapidly, and the feet become red, hyperemic, hot, and dry. The peripheral pulses are full and bounding. Damage is greatest in the toes, the distal part of the dorsum of the foot, and the ball of the foot. These parts remain edematous and hot and assume a livid cadaveric appearance. Blebs appear, except in the very mild cases, and may be filled with straw-colored fluid or extravasated blood. Patchy areas of ecchymosis are commonly found over the medial aspect of the first metatarsophalangeal joint, and of the longitudinal metatarsal arch, and over the sides of the foot. The rigid swelling, the redness, and the local warmth of the part indicate an intensive hyperemia. Superimposed damage to the peripheral vessels is suggested by the ulceration and actual gangrene which sometimes involves the more vulnerable parts, particularly the toes. The sensory disturbances are quite characteristic and may begin at once or be delayed for several days to a week. The initial anesthesia and hypesthesia are replaced by intense paresthesia. This has been described as an intense burning pain over the surface of the entire foot which seems to be relieved by cold and aggravated by heat or even by warmth. It is sometimes followed by intense, intermittent, stabbing, shooting pains beginning in the ankle joint or in the midtarsus and radiating to the tips of the toes. A generalized tingling sensation is often felt in the skin but is overshadowed by the burning pain. The periphery of the foot is usually anesthetic and this merges more proximally into areas of hyperesthesia and paresthesia. As these sensations subside, they gradually recede distally to the toes. The affected parts may ache or throb, and the pains are made worse by warmth and dependency. Anhydrosis or lack of sweating is evident and seems to coincide with sensory loss. The degree of edema varies with the extent of injury and, in the severe cases, may extend as high as the knee. Usually reaching its height by the fourth to sixth day, it gradually subsides to be followed by fine wrinkling of the skin. The red color slowly fades and usually within a week to 10 days may take on a waxy pallor. In the majority of cases, in which the injury has not been

greatly [redacted] assumes a normal color after some exfoliation. In a few cases, however, the feet become cold, blue, and sweaty. The subsidence of edema, heat, and redness marks the end of this stage.

Complications include localized infection, cellulitis, lymphagitis, and septicemia. Phlebothrombosis along the course of the veins of the dorsum of the feet and along the course of the saphenous veins has occurred and may be associated with petechiae in the nearby skin. Rarely transient hematuria and albuminuria, enlargement of the liver, and mild febrile reaction have been observed in cases of immersion foot but have not been reported in trench foot.

(c) Posthyperemic stage. The clinical manifestations during this stage vary and depend upon the degree of involvement and type of therapy. In the milder cases, the end results are satisfactory, and there is apparently complete recovery. In the more severe cases, there may be recurrence of pain, tingling, and swelling especially on walking, prolonged standing, or exposure to cold. In many of these cases, the transition from the second to the third stage is not sharp but occurs gradually and, during this period, the manifestations may vary from hour to hour or from day to day from those characteristic of the third stage to those characteristic of the second. In a few cases, deep-seated aching pain persists and may be associated with tenderness in the joints, usually the first metatarsophalangeal joint, or may be localized deep in the arch of the foot. This is usually worse at night. In still others, there may be limitation of motion in the joints, muscle weakenss and wasting, and difficulty in walking. Some complain of hyperhidrosis of the feet, and anesthesia and paresthesia in the tips of the toes are not uncommon. The late pains, the paresthesias, and rigidity of the part may be due to compression of nerve endings and infiltration of muscle bundles with scar tissue. Hypocalcification or evidence of osteoporosis has been demonstrated in some of the cases and appears on the roentgenogram as diffuse or rounded areas affecting the distal part of the metatarsal bones and the proximal part of the phalanges. Occasionally, the extremities may become excessively sensitive to cold so that

Raynaud's phenomenon or simple coldness may persist form hours after return to a warm environment. These sequelae have been observed for months or years after exposure.

4. Prophylaxis. Disabilites from trench foot are to be avoided only by the strict application of preventive measures. These measures are directed toward conserving body heat and avoiding unnecessarily prolonged exposure of the feet to moisture, coldness, and other factors that decrease peripheral circulation.

a. Shoes or combat boots should be kept as water resistant as possible through the adequate application of dubbin and polish. Fitting of shoes and boots should always be made over heavy wood socks or over two pairs of light wool socks. Care must be exercised to prevent constriction of the foot or ankle; a "loose" fit being preferable to a "snug" fit for cold weather wear.

b. Every effort should be made to keep the feet dry and, if the socks or innersoles become damp or moist as a result of perspiration or perlonged immersion in wet mud or snow, they should be replaced by dry ones as soon as possible. An extra pair of heavy woolen socks should be carried by each soldier and others made available by an exchange service when troops are on duty in wet cold regions for periods longer than several days.

c. Standing in water or mud-soaked areas should be avoided as much as possible even though waterproof boots are worn. If the trench or foxhole contains water, it should be bailed out, if possible, and stones or branches of a tree placed at the bottom on which to stand

d. The shoes should be removed at least once daily and feet cleansed and dried. Innersolessand socks should be well dried before being replaced.

e. Cramped positions, prolonged immobility, and dependency of the extremities should be avoided. Frequent exercises and temporary elevation of the feet are desirable. If this is impractical, exercise of the toes and ankles within the shoes and elevation of the feet should be done as frequently as possible.

f. The upper part of the body should be kept warm and dry, and exposure to cold winds reduced to a minimum. Gloves should be worn, if possible.

g. Constriction by tight clothing, shoes, socks, garters, and leggings should be avoided.

h. Nutrition should be maintained at as high a level as circumstances permit. Whiskey and other alcoholic beverages should be avoided.

i. Whenever feasible, the feet should be inspected at least once weekly and injuries or infections properly treated.

j. Whenever circumstances permit, in cold wet weather, troops should be relieved from front-line action after several days exposure.

k. Unit commanders should be cognizant of the factors concerned in the causation and prevention of trench foot and of the importance of foot discipline and, in accordance with section IV, War Department Circular No. 312, 1944, are held responsible for the diligent application of the protective measures.

5. Treatment. The principles of treatment consist essentially of rest, avoidance of local trauma and infection, elevation of the feet to promote drainage of edema fluid, and reduction of metabolism in the affected part. The rationale of treatment is to reduce the metabolic demands of the part until edema subsides, extravasted blood is absorbed, and vasomotor tone is reestablished. Under these conditions, rapid tissue repair is favored. During the recovery stage, the reactive hyperemia, if too intense and if induced too rapidly, can be not only painful but also harmful. Therefore, rapid warming should be avoided.

a. Initial or emergency treatment.

(1) As soon as the symptoms of trench foot appear, the patient should be sent to the hospital. He should be carried and not permitted to walk on damaged feet

(2) Wet clothing should be removed and the patient wrapped in warm blankets leaving the involved extremities exposed to the air in a moderately cool room.

(3) The involved extremities should be handled very gently. The limbs should not be rubbed or massaged. If necessary, the feet may be cleansed carefully with plain white soap and water, dried, and then allowed to remain exposed, and elevated on pillows. While it is desirable to warm the patient, the feet should always be kept cool by exposure to the room air.

(4) Strict asepsis must be maintained to avoid infection which may readily develop and rapidly spread in the damaged tissue of the feet. If sulfonamide drugs are available, they may be administered orally until the danger of spreading infection is past.

(5) Protection against pressure necrosis especially in the region of the heel is desirable and may be accomplished by frequent turning, by doughnut dressings, or by supporting the back of the legs down to the ankles on a pillow.

(6) During evacuation to the hospital, loose covering of the feet with sterile, or at least, clean towels, or sheet is desirable in order to protect against bacterial contamination.

b. Definitive treatment. The same principles which underlie the initial treatment measures (that is, conservation of body heat and avoidance of trauma, infection, and heat to the involved part) are continued in the definitive treatment.

(1) Patients should be kept in bed, with the affected parts on a horizontal level with or elevated on pillows only slightly above heart level, and protected from external pressure either by complete exposure or by means of a cradle. Elevation of the extremities should be done only if there is evidence of inadequate circulation, that is, incipient gangrene, otherwise they should be maintained on a horizontal level. The period of bed rest is determined by the degree and rate of subsidence of edema

(2) Massage or rubbing of any sort in the early stages must be avoided, and the part should be handled as little and as gently as possible. All antiseptics and ointments should be avoided, and blisters ordinarily should not be disturbed.

(3) Although the feet should remain exposed to the to the moderately cool room-air (65° F. to 70° F.), the body should be kept warm by means of blankets.

(4) In the early prehyperemic or ischemic stage when vasospasm is still evident and persist for longer than 6 hours, whiskey in 1-ounce dosessmay be administered for its vasodilating effect. Sympathetic block, using 1 percent procaine hydrochloride solution, may also be done for this purpose. These measures are not indicated after the hyperemic stage begins and should be discontinued.

(5) Maintenance of minimal tissue metabolism in the affected parts in important especially during the hyperemic type and may be accomplished by strictly avoiding the application of external heat and, if necessary, by actually cooling the limbs, in those in which persistent pain indicates the need for such treatment. In instances where the room temperature is not above 70° F., simple exposure of the parts may be sufficient. Cooling may be enhanced by directing the air from an electric fan against the exposed feet. Still greater cooling can be accomplished by spraying cold water from an atomizer through the fan blades. In the more severe cases with intense hyperemia and severe neuritic pains, these measures may be inadequate and greater cooling

is required. This may be achieved through the application of ice bags or the use of a special refrigeration cabinet. If ice bags are to be used, sterile pledgets of cotton or gauze are placed between the toes and the whole foot loosely wrapped with sterile cotton batting and covered with a sterile sheet or towel. Carefully dried ice bags are then placed around each foot over the towel and the whole inclosed in an oiled-silk bag, around which, in turn, is wrapped thick layers of cellucotton or other eqivalent insulating material. As an outer covering, a rubber pillowcase may be used, loosely tied about the upper calf. Ordinarily, it is sufficient to change the ice bags about every 4 hours. At this time, palpation of the toes may be done to make sure that the part is not too severely chilled. Ordinarily, a skin temperature of about 70° F. is optimum whether ice bags or a refrigeration cabinet is used. In cases with extreme hyperemia, more frequent changing will be necessary, but as hyperemia subsides, fewer ice bags will be needed to reduce the temperature of the foot to the required degree. It may be necessary to continue the ice-bag treatment for several days to 2 weeks. Care should be exercised to avoid wetting and maceration of the skin by the ice bags.

(6) Measures to prevent secondary infection including tetanus should always be instituted. Sulfadiazine by mouth should be used in cases with threatening infection. Blisters ordinarily should not be disturbed but, if opening becomes necessary, this should be done aseptically using a needle. Dressings, except when cooling is done by ice bags, and all local medication should be avoided. Areas of necrosis and ulceration which may subsequently develop should be treated conservatively as long as possible. In patients with gangrene, amputation should be delayed as long as possible and done early only in the presence of superimposed infection.

(7) A generally nutritious high protein, high vitamin diet should be supplied.

(8) After the hyperemia and edema have subsided, graduated vascular exercises should be instituted. These consist of: elevating the extremities 1 to 2 minutes at an angle of 30° to 50°; hanging the extremities over the side of the bed for 2 to 4 minutes during which the patient should flex and extend the toes; and assuming the supine position with the feet in the horizontal position for 2 to

4 minutes. This cycle is to be repeated for periods of 30 minutes, three to four times daily, for at least a week before the patient is allowed out of bed. Gradually, increasing activity should then be urged.

(9) Physiotherapy, including warm baths, massage, and passive exercises, is of value in the late stages and should be used, especially when the movement of the toes is limited by late fibrosis or edema.

(10) In cases with intractable edema and pain not controlled by ordinary measures, sympathetic block, using 1 percent procaine hydrochloride solution, compression dressings or an elastic bandage may be cautiously employed even though the value of these measures has not yet been established. Sympathectomy is indicated only in cases in which there is objective evidence of circulatory insufficiency or in which manifestations resembling Raynaud's phenomenon develop and persist months or years after the acute phase of the disease and can be shown to be relieved by "test" sympathetic blocks.

By order of the Chief Surgeon:

H. W. Doan

H. W. DOAN,
Colonel, Medical Corps,
Executive Officer.

NEUROSURGICAL STATISTICAL REPORT

Hospitals	Penetrating Brain	Post-op Deaths	Opd. Skull Fractures	Post-op Deaths	Laminectomies	Post-op Deaths	Pre-op Deaths
2nd Evac Hosp	135	34	31	1	15	3	28
5th Evac Hosp	77	27	13	0	6	0	11
24th Evac Hosp	97	12	21	1	4	0	34
41st Evac Hosp	84	14	15	0	20	2	25
44th Evac Hosp	95	5	54	0	25	2	18
45th Evac Hosp	69	12	32	1	18	1	27
67th Evac Hosp	43	5	12	0	3	0	9
91st Evac Hosp	134	12	69	4	13	1	16
93rd Evac Hosp	38	8	14	2	9	1	27
97th Evac Hosp	57	3	14	0	6	0	18
128th Evac Hosp	94	5	59	0	3	0	35
Major Haynes	249	33	98	0	50	3	55
Capt Mateson	64	5	27	0	4	0	--
Totals	1236	175	459	9	176	13	303
		14.1%	1.95%			7.4%	
		10.9%					

STERILE GOODS ON HAND

LAP PACKS (40)

5 Gowns	1 Lap Sheet
10 Towels	2 Half Sheets
1 Mayo Cover	2 Wound Towels
24 Sponges	6 Tape Sponges
2 ABD Pads	2 Applicators
2 Safety Pins	

AMPUTATION PACKS (10)

5 Gowns	6 Towels
2 Half Sheets	4 ABD Pads
1 Mayo Cover	36 Sponges

SINGLES IN EACH TENT

12 Lap Sheets
24 Half Sheets
24 Large Sheets
400 Towels (4 in each pack)
Applicators

72 Packs Tape Sponges (6 in each pack)
40 Gowns
36 Mayo Covers with one towel in each
8000 4 x 4 Sponges
400 2 x 2 Sponges
200 ABD Pads

GLOVES IN EACH TENT

24 Pairs, size 6½
36 Pairs, size 7
48 Pairs, size 7½
36 Pairs, size 8

8 Bulb Syringes
24 Penrose Drains
24 Medicine Glasses

INSTRUMENTS

LAP INSTRUMENTS

12 Curved Kellys
12 Straight Rankins
4 Oschners
4 Allis
4 Mosquito Forceps
4 Sponge Forceps
4 Hysteractomy Forceps
2 Needle Holders
2 Skin Retractors
1 Probe and groove director
5 Sets in each tent

DEBRIDEMENT SETS

2 Straight Hemostats
2 Curved Kellys
1 Tissue Forcep
1 Thumb Forcep
12 Sets in each tent

Retractors put up in pairs
Large Army
Deavers
Bake
Balfour put up single

SUPPLEMENTARY INSTRUMENT SETS (PUT UP COMPLETE)

2 Genito Urinary Sets
2 Abdominal Sets
2 Chest Sets
2 Eye Sets
4 Orthopedic Sets
1 Maxillo-Facial Set

SOLUTION FOR SHARPS

5 per cent Phenol - 30 minutes
95 per cent Alcohol - 10 minutes

THE ABOVE SUPPLIES ARE SUFFICIENT FOR 150 OPERATIONS

SECRET

AWARDS AND DECORATIONS

Bronze Star Medal	47
Purple Heart	6
Total Awards	53

PROMOTIONS

To Captain	12
To 1st Lt.	265
Total	277

VISITS

During the period 10 June to 31 December 1944, one hundred and ten (110) visits were made by the First U. S. Army Chief Nurse to First U. S. Army hospitals, and sixty-one (61) visits were made to this office by Chief Nurses of First U. S. Army hospitals.

EVACUATED TO COMMUNICATIONS ZONE - LOSSES

Personnel losses from 1 January 1944 to 31 May 1944 —— 22

Diagnosis

Pregnancy	9	Arthritis	1
Chest Conditions	5	Raynauds Disease	1
Kleptomania	1	Abdominal Operations	2
Fractures	2	Neuropsychiatric	1

Personnel losses from 1 June to 31 December 1944 ——— 40

Diagnosis

Pregnancy	10	Fractures	4
Neuropsychiatric	8	Neuritis	1
Malaria	2	Pneumonia	2
T.B.	1	Catarrhal Jaundice	1
Arthritis	2	Back Injuries	2
D.O.W.	1	Miscellaneous	4
Amoebic Dysentery	2		

PSYCHIATRISTS ASSIGNED TO EVACUATION HOSPITALS

UNIT	NAME	CIVILIAN TRAINING AND EXPERIENCE
2nd Evacuation Hospital	Capt. Robert Birchall	Neuropsychiatry
5th Evacuation Hospital	Maj. David F. Johnson	Neuropsychiatry
24th Evacuation Hospital	Capt. Pierre J. Nyvall	Neuropsychiatry
41st Evacuation Hospital	Capt. George L. Wadsworth	Neuropsychiatry
44th Evacuation Hospital	Capt. Henry R. Douglas	Neuropsychiatry
45th Evacuation Hospital	Maj. Phillip S. Wagner	Neuropsychiatry
67th Evacuation Hospital	Capt. Everett F. Lombard	Neuropsychiatry
91st Evacuation Hospital	Capt. William L. Harris	Neuropsychiatry
96th Evacuation Hospital	Maj. Theodore Gebirtig	Neuropsychiatry
97th Evacuation Hospital	Capt. Bernard Rattner	Neuropsychiatry
128th Evacuation Hospital	Maj. Harry G. Rainey	Neuropsychiatry

PSYCHIATRISTS ASSIGNED TO DIVISIONS

UNIT	NAME	CIVILIAN TRAINING AND EXPERIENCE
1st Infantry Division	Capt. Joseph Bradley	Obstetrics
2nd Infantry Division	Maj. Gilbert A. Kelly	General Practice
9th Infantry Division	Capt. Donald M. McIntosh	Obstetrics
28th Infantry Division	Capt. Arthur L. Burke	Neuropsychiatry
29th Infantry Division	Capt. David I. Weintraub	General Practice
82nd Airborne Division	Maj. William G. Lindstrom	Obstetrics
101st Airborne Division	Capt. Harry A. Rock	Neuropsychiatry
2nd Armored Division	Capt. Herman Miller	Neuropsychiatry
3rd Armored Division	Capt. Edward Cawley	Neuropsychiatry
4th Armored Division	Maj. Karl Meriole	Neuropsychiatry